

## Chapter #25

### EFFECTIVENESS OF THE PROGRAM UNPLUGGED ON DESCRIPTIVE NORMATIVE BELIEFS WITH RESPECT TO DOSAGE AS A PART OF FIDELITY MEASUREMENT

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#### ABSTRACT

**Objective:** The main aim of the study is to examine the shorter-term and the longer-term effectiveness of the school-based drug prevention program Unplugged on alcohol and drunkenness descriptive normative beliefs as well as the moderation effect of gender. The aim of the study is also to highlight the importance of measuring the implementation fidelity.

**Method:** In the school year 2013/2014, the program Unplugged was implemented in Slovak primary schools. The study was a cluster randomized controlled trial with data collection conducted immediately before the program implementation (T1), immediately after the program implementation (T2) as well as 12 months later (T3). The schools were randomly assigned to an experimental (N=641) and a control group (N=654). The experimental group was exposed to the drug prevention program consisting of 12 lessons. **Results:** The results confirmed that the Unplugged program works differently for boys and girls in a longer-term. The girls in the experimental group had a lower level of descriptive normative beliefs regarding the number of friends who use alcohol and who get drunk compared to boys. Also, the results show that completing the whole preventive program is important for assessing its effectiveness.

*Keywords:* schoolchildren, drug prevention program, fidelity, normative beliefs.

#### 1. INTRODUCTION

Adolescence is a crucial period for using addictive substances which may continue to adulthood. Therefore, schools provide a natural and suitable environment for prevention and, in fact, most preventive activities are implemented in school facilities. Social learning theories suggest that teens often face a considerable level of pressure from various sources such as from their peers, parents and also from the mass media which may be very influential (Tobler et al., 2000; Wynn, Schulenberg, Maggs, & Zucker, 2000). These factors affect their behavior in both the positive as well as the negative direction (Botvin, 2004; Botvin & Griffin, 2007). Complex strategies which are used in prevention address this complex issue and focus on the social impact and this way can be highly effective (Giannotta, Vigna-Taglianti, Galanti, Scatigna, & Faggiano, 2014). The social influence approach in addition to increasing adolescent's awareness of social influences also includes normative education (Dhawan & Mandal, 2017). Current prevention programs such as Unplugged (Faggiano et al., 2010) include modules aimed at correcting the perception of drug use among peers and adults because adolescents usually overestimate the prevalence of smoking, drinking and use of other drugs (Botvin & Griffin, 2007). Consequently, these inaccurate descriptive normative beliefs are considered to be the strongest predictors of

substance abuse. Furthermore, there is a significant association between normative beliefs and risky behavior which has been confirmed in many studies (Dempsey et al., 2016; Padon, Rimal, Jernigan, Siegel & DeJong., 2016; Perkins, 2002; Schwinn, Schinke, Hopkins & Tom, 2016). Descriptive normative beliefs are characterized as the perception of what many people do. In the case of drug use, descriptive normative beliefs are related to the perceived quantity and frequency of peers' drug use (Cialdini, Kallgren, & Reno, 1990). A change in descriptive normative beliefs can be achieved by educating young people about the actual prevalence of substance use among their peers (Botvin & Griffin, 2007). The existing research further shows that preventive programs can reduce the use of addictive substances if they include the correction of normative beliefs (Walters, & Neighbors 2005).

Although, primary prevention in school environment is generally considered to be one of the most appropriate prevention strategies, Faggiano, Richardson, Bohrn, Galanti & EU-Dap Study Group (2007) point out that empirical evidence has generally shown weak effectiveness of school prevention programs. It has been found that only those programs that support the development of social skills and use the model of complex social impact are likely to be effective. Finding an effective intervention to prevent drug use is only the first step towards improving health and preventing risk behaviors. It is further necessary to transfer this effective intervention into the conditions of the real environment which requires the monitoring the fidelity during the implementation process (Durlak & DuPre, 2008). A low implementation fidelity of preventive programs may be the main reason why programs that meet all effectiveness criteria and work well in controlled studies fail when implemented in real life conditions (Elliot & Mihalic, 2004).

Fidelity represents the loyalty with which interventions are implemented. It generally reflects the quality of an implementation process and adherence to its principles (James Bell Associates, 2009). According to Dane and Schneider (1989), fidelity consists of five key dimensions: adherence, exposure (dosage), quality of program delivery, participant responsiveness and program differentiation. While all dimensions of fidelity are equally important, we will pay attention specifically to the dimension of exposure. The quality of this dimension is partly reflected in the number of lessons completed, their duration and intensity which may provide important information about the program's fidelity. It is also advisable to obtain feedback directly from the target group to assess the number of hours of exposure (Dusenbury, Brannigan, Falco & Hansen, 2003). Botvin, Baker, Dusenbury, Botvin & Diaz (1995) noted that pupils who underwent the whole intervention reported a lower use of addictive substances compared to those who underwent only a part of it.

To sum up, research on effectiveness of preventive programs should include an assessment of the implementation process, providing a clear quantification of fidelity with which the intervention was implemented (Carroll et al., 2007). Therefore, the present study which addressed the effectiveness of drug use in the prevention program Unplugged and focuses on descriptive normative beliefs pays specific attention to the extent of the exposure of schoolchildren to the intervention.

## **2. OBJECTIVE**

The main aim of our research was to examine the shorter-term and longer-term effect of the school-based drug use prevention program Unplugged on descriptive normative beliefs as well as the moderation effect of gender in these relationships among schoolchildren in Slovakia. The exploration focused on descriptive normative beliefs (DNB) regarding the number of friends who use alcohol and who get drunk at least once a week.

The aim of the study was also to emphasize the importance of measuring the program's fidelity. The attention was focused on the effectiveness of the program Unplugged with respect to normative beliefs among schoolchildren in terms of the number of the lessons of the preventive program they had attended.

### 3. DESIGN

This study has an experimental design and is based on the evaluation of the effectiveness of the preventive program Unplugged. The Unplugged program was designed by a group of experts who aimed to develop a program suitable for the European school environment (Faggiano et al., 2007). Based on the fact that the Unplugged program is a comprehensive European program which combines effective preventive methods and has been proved to be effective in reducing drug use (Gabrhelík et al., 2012; Jurystová, Gabrhelík & Miovský 2009; Faggiano et al., 2008), we have decided to implement it in Slovakia as well. The verification of the Unplugged program's effectiveness in Slovakia started in the school year 2013/2015 during which it was implemented on weekly basis. The program was carried out by teachers, psychologists, or special educators who underwent a three-day training course. The data were obtained prior to the program implementation (T1), immediately after its implementation (T2) as well as 12 months post implementation (T3).

The Unplugged program is a part of the project EU-DAP "*The European Drug Addiction Prevention Trial*". The universal drug prevention program Unplugged is designed for schoolchildren aged 12 to 14. The Unplugged program is based on the Comprehensive social influence model focusing on the development of specific skills to manage social impact and deconstruct normative beliefs (Kreeft et al., 2009). The next principle used in the program is the Knowledge-attitude-behavior model which is focused on providing information about drugs and their consequences. A combination of these two principles has an impact on the use of addictive substances (alcohol, tobacco and illicit drugs). The goal of the program is to reduce the number of adolescents who start using addictive substances and to delay the first contact with drugs as well as to delay the transition from experimentation to regular use (Charvát, Jurystová & Gabrhelík, 2012). Its essence lies in the combination of these prevention methods which focus on the development of personal and social skills as well as the perception of social norms. Another important objective of the program is the development of interpersonal and intrapersonal skills and in the correction of normative beliefs. The main emphasis is put on normative beliefs about the use and acceptance of addictive substances (Mioviský et al., 2012). The curriculum consists of 12 lectures within the framework of the teaching process.

### 4. RESEARCH SAMPLE

The program involved 1295 participating schoolchildren (M=11.52; 46.8% boys) from sixty Slovak primary schools. These schools were selected to provide the most representative sample based on the geographical location (27 schools from Western, 15 schools from Central and 18 schools from Eastern Slovakia) and different cities with 6 clusters based on the population size regardless of whether they were private or public schools (Berinšterová, 2015). The participation of schools in this research was voluntary. The schools which have agreed with participation in the study were randomly assigned to an experimental (N=641) or a control group (N=654). The schoolchildren in the

experimental group were exposed to 12 lessons of the program Unplugged. The program was delivered via lectures by teachers or psychologists who underwent a 3-day training course. However, some schoolchildren did not attend all intervention sessions. Based on the amount of lessons they had attended, schoolchildren were divided into two groups: a group which attended less or equal to 10 lessons (EG1; n=112) and more than 10 (EG2; n=329). Two hundred schoolchildren did not indicate the number of attended lessons.

## 5. METHODS

The data collection was carried out based after the informed consent of the legal representatives of the schoolchildren had been obtained and was carried out via anonymous questionnaires administered in the class.

Descriptive normative beliefs regarding the number of friends who use alcohol and who get drunk at least once a week were measured by single item measures from the questionnaire of the international study ESPAD (Hibell et al., 2011). The wording of the selected items was as follows: *How many of your friends would you estimate drink alcoholic beverages? How many of your friends would you estimate get drunk at least once a week?* The items were rated on a 5-point scale (1 = none, 5 = all). The variables were dichotomized by using the visual binning method for the purposes of binary logistic regression.

Participation in the program Unplugged was monitored through two categories: an experimental group (with intervention) and a control group (without intervention) and through the number of attended lessons (described in the Research sample part).

The Kruskal-Wallis test was used to examine the differences in descriptive normative beliefs between groups differing in the number of attended lessons. In addition, follow-up Mann-Whitney U tests were used to examine differences in normative beliefs between each group. A Bonferroni adjustment to the alpha level was applied with the alpha level being set to .016 for each comparison.

Binary logistic regression was used to examine the effectiveness of the program Unplugged on descriptive normative beliefs with respect to the descriptive normative beliefs before the program implementation (T1). A moderation effect of gender was also explored. A significance level of  $p < .05$  was adopted for the analysis.

## 6. RESULTS

Table 1 presents differences in normative beliefs regarding the number of friends who use alcohol and who get drunk at least once a week between groups differing to the number of attended lessons in T2 (in a shorter term) and T3 (in a longer term).

*Table 1.*  
*Descriptive normative beliefs among schoolchildren differing in the number of attended lessons.*

Alcohol use	T2			T3		
	N	Median	$\chi^2$	N	Median	$\chi^2$
EG1	111	1.00	3,579	76	2.00	12,306*
EG2	316	1.00		233	1.00	
CG	494	1.00		439	2.00	
<b>Drunkness</b>						
EG1	111	1.00	2,431	76	1.00	12,802*
EG2	318	1.00		234	1.00	
CG	491	1.00		438	1.00	

T2: Immediately after the program implementation; T3: 12 months after the program implementation;  
EG1: Experimental group - attended less or equal to 10 lessons; EG2: Experimental group - attended more than 10 lessons; CG: Control group;  $p < 0.05^*$

The Kruskal-Wallis test confirmed a significant difference in normative beliefs between three groups in T3. To identify group differences the follow-up Mann-Whitney U-Test with application of Bonferroni adjustment to the alpha values ( $0.05/3=0.016$ ) was used. It means that the significance level of  $p < 0.016$  was used to assess the statistical significance. The schoolchildren who attended more than 10 lessons (EG2) scored significantly lower in normative beliefs regarding the number of friends who use alcohol when compared the control group (CG),  $U=44332.5$ ,  $z=-3.132$ ,  $p < 0.016$ ,  $r=0.12$  and also scored significantly lower in normative beliefs regarding the number of friends who get drunk in comparison to the control group,  $U=46085.5$ ,  $z=-2.822$ ,  $p < 0.016$ ,  $r=0.11$ . EG2 also had lower normative beliefs regarding the number of friends who use alcohol when compared with the schoolchildren who attended less or equal to 10 lessons (EG1),  $U=7177.5$ ,  $z=-2.766$ ,  $p < 0.016$ ,  $r=0.16$ . The schoolchildren in EG1 scored significantly lower in comparison to the control group but only in normative beliefs regarding the number of friends who get drunk,  $U=14192.5$ ,  $z=-2.644$ ,  $p < 0.016$ ,  $r=0.12$ .

Table 2 presents the results of the binary logistic regressions concerning the shorter and longer-term effect of the Unplugged in descriptive normative beliefs regarding alcohol use and drunkenness.

Table 2 is divided into two parts. The first part presents models of logistic regression where participation in the Unplugged was monitored through two categories - experimental and control (reference) group. The results revealed that there was no significant main effect of either the program Unplugged or gender at T2 (shorter-term) and T3 (longer-term) for descriptive normative beliefs regarding the number of friends who use alcohol and who get drunk at least once a week. The moderation effect of gender at T2 was not confirmed. However, a significant moderation effect of gender was found at T3. The girls in the experimental group had a lower level of descriptive normative beliefs regarding the number of friends who use alcohol in comparison with the boys. The whole regression model explained 10.1% of the variance and correctly classified 85.2% of the cases.

Similar results also showed that girls in the experimental group had a lower level of descriptive normative beliefs of friends who get drunk at least once a week in comparison with the boys. The regression model explained 11.3% of the variance and correctly classified 77.0% of cases.

The second part of Table 2 presents models of logistic regressions where participation in Unplugged was monitored through three categories - experimental group which attended less or equal to 10 lessons (EG1); experimental group which attended more than 10 lessons (EG2); and a control (reference) group.

*Table 2.*  
*The binary logistic regression models of descriptive normative beliefs regarding the number of friends who use alcohol and who get drunk at least once a week.*

	Alcohol use			R <sup>2</sup>	Drunkness			R <sup>2</sup>
	OR	95% C.I			OR	95% C.I		
<b>T2</b>								
DNB T1	<b>6.973**</b> *	5.173	9.399	23.3%	<b>8.562**</b> *	5.581	13.138	17.1%
Unplugged	1.022	0.768	1.361		0.969	0.664	1.415	
Gender	0.968	0.738	1.317		0.726	0.497	1.061	
<b>T3</b>								
DNB T1	<b>3.178**</b> *	2.144	4.712	10.1%	<b>4.299**</b> *	2.694	6.860	11.3%
Unplugged	1.166	0.677	2.007		0.750	0.461	1.219	
Gender	0.939	0.555	1.588		0.995	0.643	1.541	
Unplugged*Gender	<b>0.347*</b>	0.154	0.780		<b>0.428*</b>	0.214	0.859	
<b>T2</b>								
DNB T1	<b>0.141**</b> *	0.103	0.192	23.6%	<b>8.251**</b> *	5.328	12.776	17.3%
EG1	1.130	0.706	1.810		0.876	0.462	1.660	
EG2	1.104	7.99	1.525		1.239	0.822	1.868	
Gender	0.952	0.704	1.287		1.390	0.947	2.042	
<b>T3</b>								
DNB T1	<b>0.313**</b> *	0.204	0.480	10.6%	<b>5.017**</b> *	3.034	8.297	12.6%
EG1	1.311	0.699	2.456		<b>0.242*</b>	0.081	0.720	
EG2	<b>0.420**</b>	0.243	0.725		<b>0.368**</b>	0.206	0.659	
Gender	1.433	0.935	2.195		0.998	0.643	1.549	
EG1*Gender	-	-	-		1.545	0.339	7.050	
EG2*Gender	-	-	-		<b>2.506*</b>	1.096	5.732	

T2: Immediately after the program implementation; T3: 12 months after the program implementation; DNB T1: Descriptive normative beliefs before the program implementation; OR: odds ratio; CI: confidence interval; EG1: Experimental group which attended less or equal to 10 lessons; EG2: Experimental group which attended more than 10 lessons; Reference group = control group; p<0.001\*\*\*, p<0.01\*\*, p<0.05\*

There was no shorter-term effect of the program on either the normative beliefs about alcohol or the normative beliefs about the drunkenness in terms of the number of lessons the pupils had attended. Furthermore, the main or moderating effect of the gender was not confirmed.

However, the longer-term effectiveness of the program Unplugged was confirmed. In the case of normative beliefs about alcohol, it was shown that pupils who attended less than 10 lessons had lower normative beliefs than the control group. The whole regression model explained 10.6% of the variance and correctly classified 85.5% of the cases. The main or moderating effect of the gender was not confirmed. In the case of normative beliefs about drunkenness, it was shown that both experimental groups had lower normative beliefs compared to the control group. Like in the previous case, the main effect of gender was not confirmed. However, the moderation effect of gender was found. The girls in the experimental group who had attended more than 10 lessons had lower normative beliefs than boys in this group. The whole model explained 12.6% of the variance and correctly classified 77.2% of the cases.

## 7. DISCUSSION AND CONCLUSION

At the first glance, based on the results of this study, it may seem that the Unplugged program is not effective from a shorter or longer-term perspective in correcting normative beliefs about alcohol use and drunkenness. This proved to be true when we compared the experimental and control groups when no attention was paid to the fidelity- quality of the implementation. However, when we assessed the effectiveness of the preventive program in terms of fidelity it turned out that the program had a longer-term effect. This result is consistent with other studies that indicate that the effectiveness of the preventive program has only been demonstrated after taking into account the quality of the implementation (Bast, Annette, Ersboll & Due 2018; Turhan, Onrust, Ten Klooster & Pieterse, 2017). We have especially focused on the number of lessons that students had attended and used it as an indicator of program's fidelity. The results have shown that schoolchildren who attended the whole intervention had a lower level of normative beliefs (regarding the number of friends who use alcohol and who get drunk) in comparison with control group and also had lower level of normative beliefs (regarding the number of friends who use alcohol) in comparison with the schoolchildren who had not attended all the lessons 12 months after the program implementation. The results also show that the number of attended lessons is a significant predictor of normative beliefs in long-term. Based on our findings it could be stated that completing the whole preventive program is important for its effectiveness (Bloomquist et al., 2013), but some studies suggest that the impact of the number of attended lessons on the effectiveness of the program is not unambiguous (Espada, González, Orgilés, Lloret & Guillén-Riquelme, 2015; Cuijpers, 2002).

The results also show a significant interaction effect between gender and participation in the program Unplugged. The girls in the experimental group had lower descriptive normative beliefs regarding the number of friends who use alcohol and who get drunk at least once a week in comparison to the boys. It means that the Unplugged program influences the descriptive normative beliefs of girls more than boys. Our conclusion is consistent with previous research (Gabrhelík et al., 2012; Vigna-Taglianti et al., 2009) confirming the gender differences in the effectiveness of the Unplugged.

Monitoring and evaluating the implementation quality of preventive programs is absolutely necessary in evaluating its effectiveness. Sufficient fidelity of the implementation is essential for accurate interpretation of the results in any intervention. The

credibility of the program affects not only the primary behavioural outcomes such as substance abuse (Bast et al., 2018) but also the attitudes and beliefs (Pettigrew et al., 2015). Understanding how program's fidelity supports its effectiveness can be decisive in improving interventions (Dusenbury, Brannigan, Falco & Hansen, 2003).

There are some limitations to this study that should be mentioned. Multiple item indicators would have been more suitable. The limit of research lies in the use of single-item measures to measure normative beliefs in this age group. Another limit is the use of the visual-binning method for the dichotomization of the dependent variable. In the future research, it is important to take into account other indicators of fidelity because the exposure to a program indicated by the number of attended lessons (Ennett et al., 2011) may be an insufficient indicator of the implementation fidelity and additional variables should be considered. Therefore, in the next verification of the effectiveness of the preventive program, it is necessary to include methods for the detection of other fidelity components such as the quality of implementation of the individual lessons of the program, the fulfilment of the objectives of the program, the involvement of the lecturers and their characteristics or the approach of the target group towards the program which also greatly affects the quality implementation.

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Effectiveness of the Program Unplugged on Descriptive Normative Beliefs with Respect to Dosage  
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## ADDITIONAL READING

European drug addiction prevention trial: <https://www.eudap.net/>

## KEY TERMS & DEFINITIONS

**Unplugged:** European universal drug prevention program

**Fidelity:** quality of implementation

**Normative beliefs:** perceived behavioural expectations. Three groups of normative beliefs: descriptive, injunctive and personal norms.

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