



Can school-based prevention programs reduce health inequalities?

The example of Unplugged, from research to practice

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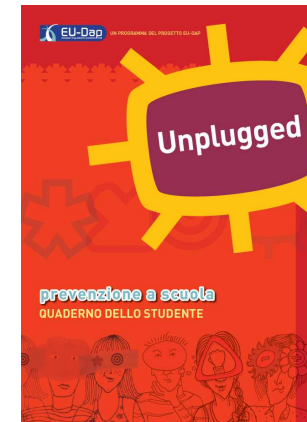
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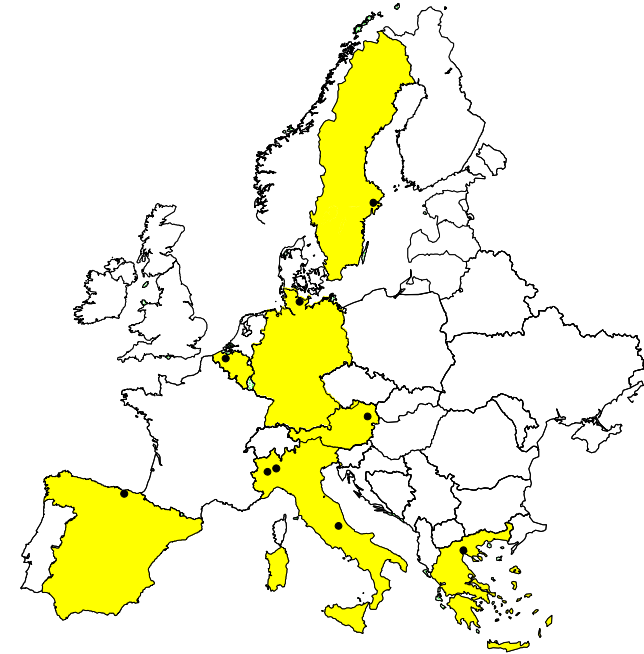
Unplugged

- Universal school-based program for preventing tobacco, substance use and alcohol abuse among adolescents
- Based on **social influence** approach
- It includes the following components
 - Social skills
 - Personal skills
 - Knowledge
 - Normative education
- It is administered by **teachers** trained in a 3-days course
- It is made by **12 units**, 1 hour each
- It is designed for **12-14 years old** students
- It was tested through a **randomized controlled trial** in 7 European countries in 2004-2007 school years



Unplugged

- 170 schools were randomly assigned either to one of three experimental arms (Unplugged alone, complemented by parents seminars or peer sessions) or to a control group receiving the usual health education curriculum
- **7079** students of 143 schools participated in the *baseline survey* (November 2004)
- The program ("**Unplugged**") was administered between November 2004 and February 2005 in the intervention arms
- **6604** (93%) students participated in the *first follow-up survey* (May 2005), 3 months (at least) after the end of the program
- **5812** (82%) students participated in the *second follow-up survey* (May 2006), 15 months (at least) after the end of the program



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Unplugged effectiveness on use

Cluster RCT, 7 EU countries participating

Unplugged vs control group (usual curriculum)

Outcomes at 3 and 15 months after the end of the program

Prevalence Odds Ratios estimated through multilevel adjusted models

BAS vs FUP1	Controls n/N	Interventions n/N	Adjusted POR (95%CI)	
			3 months	15 months
ALO smoking	605/2968	496/2979	0.88 (0.71-1.08)	0.94 (0,80-1,11)
Regular smoking	387/2968	297/2979	0.86 (0.67-1.10)	0.89 (0,72-1,09)
Daily smoking	277/2968	193/2979	0.70 (0.52-0.94)	0.92 (0,73-1,16)
ALO drunkenness	353/3054	253/3083	0.72 (0.58-0.90)	0.80 (0,67-0,97)
Regular drunkenness	120/3054	76/3083	0.69 (0.48-0.99)	0.62 (0,47-0,81)
ALO cannabis	225/3130	152/3150	0.77 (0.60-1.00)	0.83 (0,65-1,05)
Regular cannabis	137/3130	88/3150	0.76 (0.53-1.09)	0.74 (0,53-1,01)
ALO drugs	293/3156	222/3185	0.89 (0.69-1.15)	0.85 (0,69-1,05)

Mechanisms of effect

Reduction of positive attitudes towards drugs, improvement of refusal skills and reduction of perception of prevalence of users friends are mediators of program effects

Mediators (Path a*b)	Tobacco p value	Drunkenness p value	Cannabis p value
<i>Positive attitudes towards drugs</i>	.070	.046	.060
<i>Negative attitudes towards drugs</i>	n.s.	n.s.	n.s.
<i>Positive beliefs</i>	n.s.	.096	n.s.
<i>Negative beliefs</i>	n.s.	n.s.	n.s.
<i>Knowledge</i>	n.s.	n.s.	n.s.
<i>Refusal skills</i>	.040	.078	.078
<i>Perception of number of users friends</i>	.016	n.s.	.048
<i>School climate</i>	n.s.	n.s.	n.s.

Standardized effects (β and standard errors) of path a, path b, and path a*b of multilevel multiple mediation models on use (controlling for age, gender, and baseline levels of mediators and outcome), short term follow-up.

Unplugged effectiveness on mediators

	Mediator	Path a	
		β (S.E.)	p value
	Youth cigarettes use in the past 30 days		
→	Positive attitudes towards drugs	-.041 (.020)	.038
	Negative attitudes towards drugs	-	n.s.
→	Positive beliefs tobacco	-.044 (.021)	.034
	Negative beliefs tobacco	-.029 (.017)	.086
→	Knowledge about tobacco	.049 (.021)	.022
→	Refusal skills tobacco	-.030 (.015)	.040
→	Perception of number of smokers friends	-.051 (.020)	.010
→	Perception of positive class climate	-.047 (.021)	.022
	Youth's ever being drunk		
→	Positive attitudes towards drugs	-.040 (.019)	.036
	Negative attitudes towards drugs	-	n.s.
→	Positive beliefs alcohol	-.038 (.018)	.040
	Negative beliefs alcohol	-	n.s.
→	Knowledge about alcohol	.153 (.017)	.000
	Refusal skills alcohol	-.032 (.018)	.072
	Perception of number of drunk friends	-	n.s.
→	Perception of positive class climate	-.047 (.021)	.022
	Youth's ever use of cannabis		
→	Positive attitudes towards drugs	-.041 (.021)	.044
	Negative attitudes towards drugs	-	n.s.
→	Positive beliefs cannabis	-.050 (.019)	.006
	Negative beliefs cannabis	-	n.s.
→	Knowledge about cannabis	.137 (.022)	.000
	Refusal skills cannabis	-.033 (.019)	.074
→	Perception of number of users friends	-.042 (.020)	.034
→	Perception of positive class climate	-.048 (.021)	.022

Effectiveness by area SES indicator

Statistical models investigating the effectiveness of Unplugged on alcohol related outcomes at 15 months follow-up have been run by subgroups according to an **indicator of socioeconomic status of the school** (including neighborhood affluence, type of schools, family affluence)

Table 2 Programme effects by socioeconomic level of the school area from multilevel models

	Socioeconomic level of the school area							
	Low (n = 1819)		Medium (n = 1742)		High (n = 1980)		Whole sample (n = 5541)	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Any current drinking	0.84	0.64-1.09	1.08	0.77-1.52	0.93	0.69-1.24	0.95	0.81-1.12
Weekly drinking	0.83	0.61-1.12	1.14	0.82-1.58	0.91	0.69-1.21	0.92	0.77-1.09
Intention to drink in the next year	0.76	0.58-1.00	1.12	0.83-1.50	1.18	0.91-1.53	0.99	0.85-1.16
Episodes of drunkenness in the past 30 days	0.63	0.47-0.88	0.92	0.65-1.31	0.88	0.62-1.23	0.79	0.65-0.95
Intention to get drunk in the next year	0.61	0.48-0.79	1.00	0.75-1.32	0.96	0.73-1.26	0.82	0.71-0.96
Alcohol-related problem behaviour in the past 12 months	0.68	0.44-1.06	0.97	0.63-1.49	0.85	0.58-1.25	0.78	0.62-0.98

Results from multilevel models adjusted for gender, age, family living situation and baseline status of the outcome: odds ratios (OR) and 95% confidence interval (95%CI) of alcohol-related behaviour for students in the intervention group compared to the controls, by socioeconomic level of the school area. The EU-Dap Study, 18-month follow-up.

Effectiveness by individual indicator of..

The analysis shows a better effect of the program among a subgroup of pupils .. maybe disadvantaged? -- at risk? (those whom parents allow drinking alcohol at home)

	Whole sample (n = 6370)	Parents would not allow alcohol drinking (n = 3704)	Parents would allow alcohol drinking (n = 2522)
	OR* (95%CI)	OR* (95%CI)	OR* (95%CI)
Intention to drink in the next year	0.91 (0.77–1.08)	0.99 (0.81–1.2)	0.83 (0.66–1.04)
→ Intention to get drunk	0.94 (0.79–1.13)	1.05 (0.83–1.32)	0.79 (0.63–0.99)
→ Perceived prevalence of peer drunkenness	0.79 (0.62–0.99)	0.85 (0.62–1.17)	0.72 (0.53–0.97)
→ Positive expectations	0.81 (0.70–0.94)	0.86 (0.71–1.05)	0.71 (0.58–0.87)
→ Negative expectations	1.07 (0.93–1.24)	1.00 (0.83–1.21)	1.19 (0.98–1.44)
→ Alcohol resistance skills	1.21 (1.04–1.42)	1.17 (0.94–1.47)	1.25 (1.04–1.51)
Risk perception for daily drinking	1.02 (0.87–1.20)	1.08 (0.87–1.33)	1.01 (0.82–1.24)
→ Knowledge on alcohol	2.25 (1.87–2.70)	2.14 (1.71–2.67)	2.46 (1.85–3.27)

Baseline use characteristics by area SES

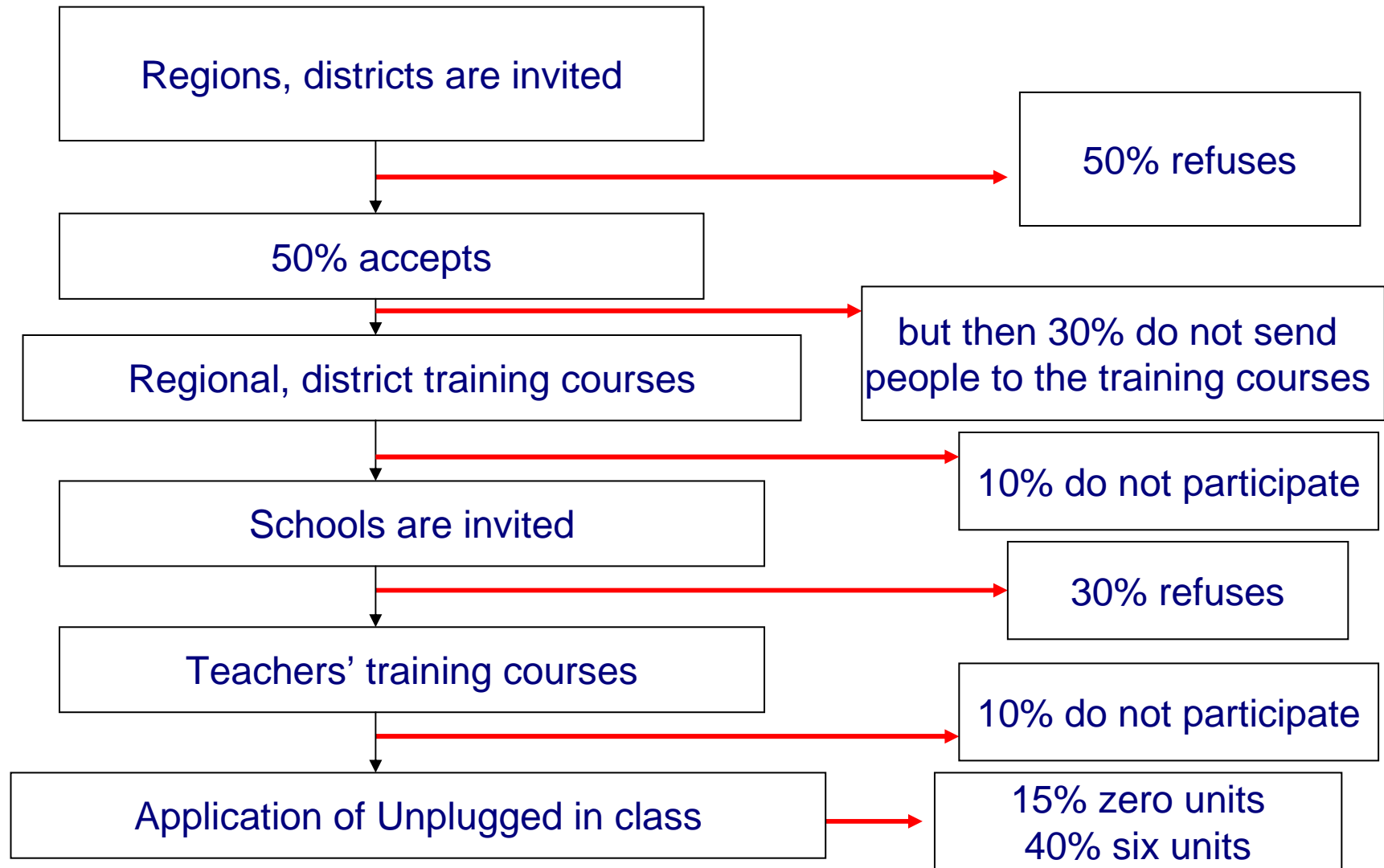
At baseline:

- Students in schools of **high socioeconomic level** were more likely than students in other schools
 - **to drink at least monthly** (17.2% vs. 14.6%, $p=0.01$)
 - **and to have intention to drink in the next year** (43.7% vs. 39.0%, $p<0.01$)
- However, students in schools of **low socioeconomic level** were more likely than students in other schools
 - **to report recent episodes of drunkenness** (7.0% vs. 4.0%, $p<0.01$)
 - **to have intention to get drunk in the next year** (20.0% vs. 17.6%, $p=0.03$)
 - **and to report alcohol-related problem behaviours** such as quarrels or arguments, scuffles or fights, damages to objects, problems in relationships, hospitalisation (4.2% vs. 3.0%, $p=0.02$)

“Naturalistic” adoption and dissemination

- After the publication of effectiveness results, the program has been adopted and implemented in several European and non-European countries, thanks to several projects and funding
 - Eudap Faculty: network of trainers
 - Project IKEA 5 East European countries
 - UNODC project 6 North Africa and Middle East countries
 - Others, nationally funded
- In **Italy** a big dissemination plan was acted, involving many regions, in North, Centre and South of Italy
- This kind of dissemination follows a “**naturalistic**” model, working through invitation of schools, spontaneous applications, training, implementation, monitoring

Losses of target population



A “model” of losses applicable to several prevention interventions..

- The program will be then applied
 - In a subgroup of regions/districts
 - Here, in a subgroup of local health authorities
 - Here, in a subgroup of schools
 - With a different fidelity
- If we did not govern the process, can we expect that the population receiving Unplugged is
 - **Positively selected** (affected by less risk factors)?
 - Negatively selected (affected by more risk factors)?
- Which effect can we expect in terms of health inequalities reduction?

Complicated balance

- It is very unlikely that a prevention intervention is “neuter” as regards health inequalities
- However, **studies investigating the effects of prevention interventions by indicators of socioeconomic status are very scarce**
- Prevention interventions applied on a large scale face with problems in involving target populations, likely resulting in the application of the intervention on selected populations (positively selected, having less risk factors)
- It is very difficult at the moment to make a **balance** between the potential effect of reduction of health inequalities of a program like Unplugged and the limitations due to selection of target population
- We **can tell that Unplugged is not socially neuter**
- But **we can't tell is the application of Unplugged is now reducing health inequalities**
- **And we can tell that it's needed NOW to GOVERN the process**

Scenario 1

- You are implementing Unplugged (or a very similar prevention program) on the **entire school population of your region**, with mix sample, some high SES schools, some medium, some low
 - You are probably getting a **prevention effect** on overall
 - You are probably having a **better effect on low SES schools**
 - So you are probably **reducing health inequalities** (at present and in the future life of your pupils)

 **GO ON,
IF YOU DO NOT HAVE RESOURCES PROBLEM**

Scenario 2

- You have the impression of implementing Unplugged (or a very similar prevention program) on a **positively selected school population** (=your implementation model is based on voluntary application of schools, you have difficulties in involving problematic schools, only high SES schools participate)
 - We are **not sure** that you are getting a prevention effect
 - If your population is positively selected it is likely that **your effort is being useless** in terms of prevention
 - We can't exclude you are having a prevention effect on your population, so it is difficult to tell if your efforts are neutering in terms of health inequalities or you are **even increasing health inequalities**

→ STOP AND THINK ABOUT IT

→ TRY TO GOVERN THE IMPLEMENTATION INVOLVING PROBLEMATIC SCHOOLS

Scenario 3

- **You are short in resources and money**, so you need to draw a strategy
 - To get the better from the program
 - To reduce health inequalities



FOCUS YOUR EFFORTS ON LOW SES SCHOOLS

- You will have a **stronger effect** in term of pupils prevented from use
- You will **reduce health inequalities**

RESEARCH ARTICLE

Open Access

The influence of socioeconomic environment on the effectiveness of alcohol prevention among European students: a cluster randomized controlled trial

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Thanks for your attention!