Can school-based prevention programs reduce health inequalities?

The example of Unplugged, from research to practice

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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
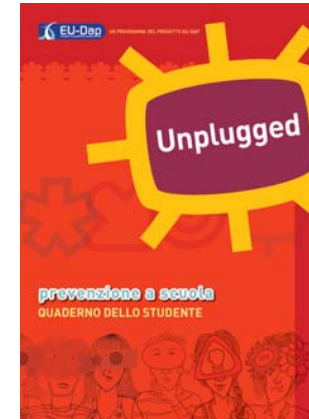
Unplugged

- 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
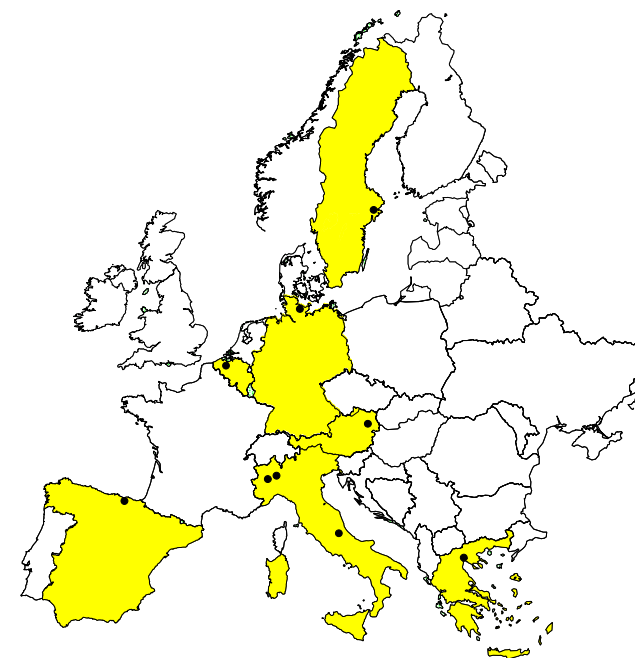
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Unplugged effectiveness on use

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 <u>positive attitudes towards drugs</u>, improvement of <u>refusal skills</u> and reduction of <u>perception of prevalence of users friends</u> are mediators of program effects

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

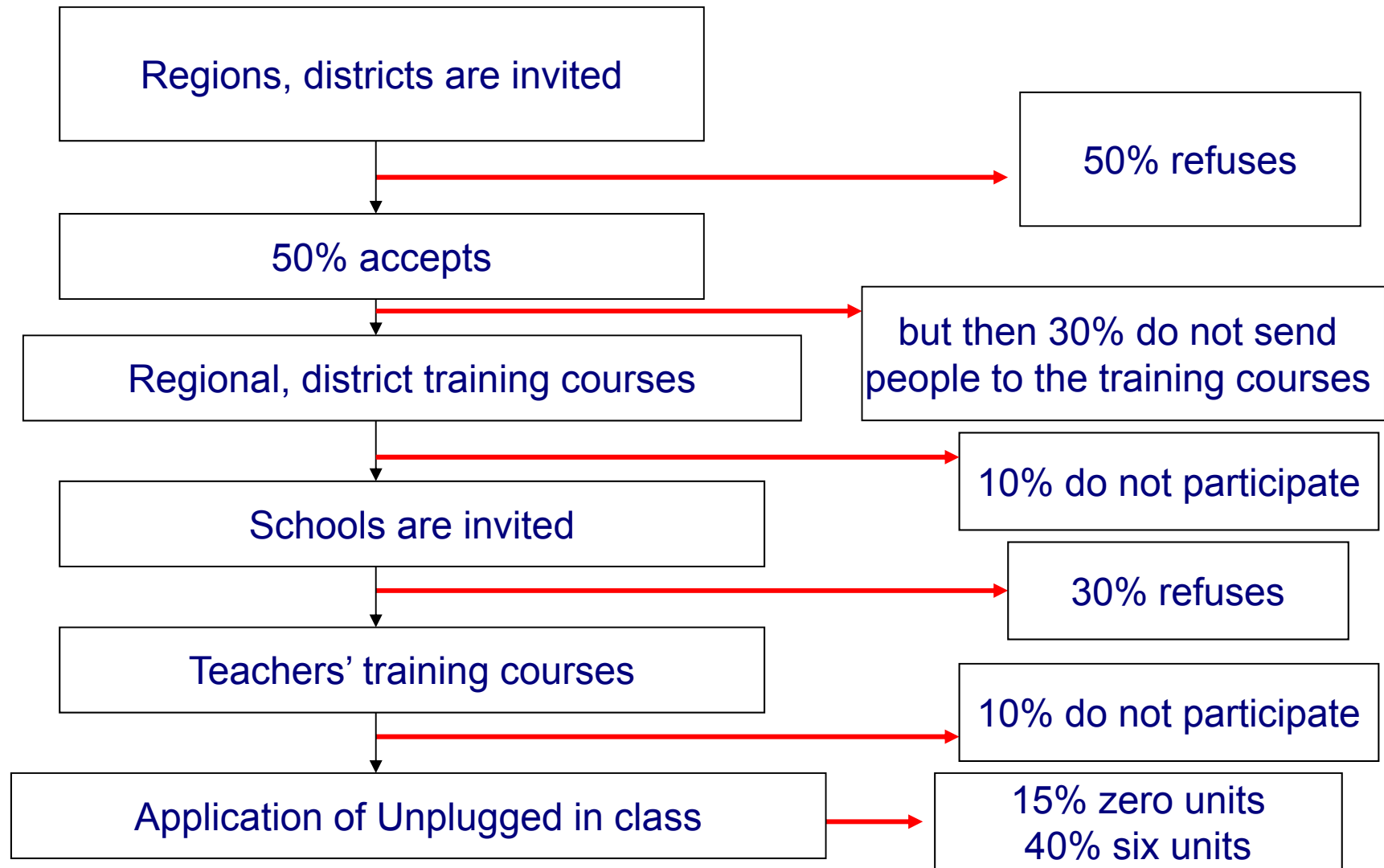|	Whole sample (n = 6370)	Parents would not allow alcohol drinking (n = 3704)	Parents would allow alcohol drinking (n = 2522)
	OR* (95%CI)	OR* (95%CI)	OR* (95%CI)
Intention to drink in the next year	0.91 (0.77–1.08)	0.99 (0.81–1.2)	0.83 (0.66–1.04)
Intention to get drunk	0.94 (0.79–1.13)	1.05 (0.83–1.32)	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

Regions, districts are invited

→ 50% refuses

50% accepts

→ but then 30% do not send people to the training courses

Regional, district training courses

→ 10% do not participate

Schools are invited

→ 30% refuses

Teachers' training courses

→ 10% do not participate

Application of Unplugged in class

→ 15% zero units
40% six units

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 neuters 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**

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RESEARCH ARTICLE   **Open Access**

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

Maria Paola Caria[1,2*], Fabrizio Faggiano[2,3], Rino Bellocco[4,5] and Maria Rosaria Galanti[1]

- www.eudap.net

Thanks for your attention!