Evaluation in substance abuse prevention

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Difficulties of the evaluation

• Levels of evaluation
• Subjects responsible for evaluation
• Tools for evaluations
• cost/benefit of evaluations
• Study design
• Study conduction
• Interpretation of results
• Communication
Levels of evaluation in substance use prevention (I)

- Intervention
- Addiction and related diseases
- Impact on health
Health Impact Assessment

- **Definition**: evaluation of the effects of an intervention on the health of the population

- Its main goal is to collect evidences on *potential impacts on health of the interventions*, to select the best intervention for reducing harm or increasing a health benefit (Mindell, 2003)

- Policy makers must design and conduct this kind of studies
Levels of evaluation in substance use prevention (II)

- Intervention
- Substance use
- Addiction and related diseases

- Effectiveness
- Etiology
- Impact on health
Evaluation of effectiveness

• Definition: evaluation of the extent to which an intervention produces a significant change in the behaviour

• Appropriate research design: randomized controlled trials, possibly multicentric, with big sample size

• Research institutes must design and conduct this kind of studies
Levels of evaluation in substance use prevention (III)

- Intervention
- Intermediate variables: knowledge, intentions
- Substance use
- Addiction and related diseases

- Intermediate outcomes
- Relationships between outcomes

- Effectiveness
- Etiology
- Impact on health
Evaluation of intermediate outcomes

• **Definition:** measure of relation between intermediate and final outcomes of an intervention

• **Research design:** *ad hoc* studies

• Research institutes must design and conduct this kind of studies

• **Current state of research:** quite delayed
Responsibility of evaluation

• Impact evaluation → policy-makers
• Effectiveness evaluation → research
• Relationships between outcomes: → research
Responsibility for practitioners

- **ex-ante (a priori) effectiveness evaluation**
  - Evidence-based Prevention: the use of the best evidence on the effectiveness of the interventions for the choice of intervention

- **process evaluation**
  - evaluation on how a program was implemented and operated, compared with the effective (standard) intervention.
  - it may include the evaluation of intermediate outcomes
  - Standardized tools must be used as much as possible (EMCDDA)
Levels of evaluation in substance use prevention (IV)

ex-ante effectiveness evaluation

- intervention
- intermediate variables
- knowledge
- intentions
- substance use
- addiction and related diseases

Impact on health
- intermediate outcomes
- relation between outcomes
- effectiveness
- etiology
Levels of evaluation in substance use prevention (V)

Process evaluation

- Intervention
- Intermediate variables: knowledge, intentions
- Substance use
- Addiction and related diseases

Impact on health

- Intermediate outcomes
- Relation between outcomes
- Effectiveness
- Etiology
Systematic reviews

- Useful tool to make choices
- They must be conducted in a rigorous way
- Cochrane collaboration is the standard
- Population level interventions are poorly studied

systematic reviews on public health interventions are needed
School-based prevention for illicit drugs' use: a systematic review
This review was published in the Cochrane Library (Issue 2 – 2005):

"School-based prevention for illicit drugs' use"

Authors:
Background: (I)

- School is an appropriate setting for illicit drugs use prevention programs
  - 4 out of 5 drug users begin before adulthood
  - a large number of young persons can be reached
  - schools can adopt and enforce a broad spectrum of educational policies
• There is a huge variability in schools-based programmes

• Some evaluations demonstrated a higher drug consumption among intervention harm (Dukes 1997; Hawthorne 1996)

• A systematic review has been considered a priority by the Cochrane Drug and Alcohol Review Group (CDAG)
• Why is that important to apply effective programs

  – Primary prevention intervention: the target population is healthy, our aim is to prevent a risk behaviour (use of drugs) in a population where most people are non-user

  • We are responsible for adolescents who start using drugs because of the intervention

    – Adolescent are involved
    – The target population did not ask for an intervention
Methods: Literature search

- The search strategy was elaborated according to the Cochrane Collaboration method
- The following sources were searched
  - Psychinfo (1967 - February 2004)
  - Cochrane Central Register of Controlled Trials (1st update 2004)
  - Cochrane Database of Systematic Reviews (1st update 2004)
  - Database of Abstracts of Reviews of Effects (1st update 2004)
  - Cochrane Drug and Alcohol Review Group Register (1st update 2004)
- Specific search strategies were used for each database
- No language restrictions were adopted
Methods: Inclusion criteria

All RCTs and Controlled Prospective Studies (CPSs) evaluating any intervention program

versus a control condition

- usual curricular activities
- another school-based drug prevention program

and designed to prevent substance use in a school setting

were considered
Methods: Data collection and evaluation

• Review articles, and all the included studies were scanned to identify other significant studies

• Research teams, and 18 authors of the included and excluded studies were contacted to discover unpublished researches/results

• The search strategy identified 9657 reports
  – 7441 reports were excluded based on titles
  – 2216 abstracts were evaluated by two reviewers
  – 1538 reports were excluded based on abstracts
  – 678 full reports were obtained
  – 613 reports were excluded (374 for methodological reasons, 128 were reviews, 76 were community programs, 35 were alcohol focused programs)
Flow chart of the review

9657 reports screened for retrieval

2216 abstracts evaluated

678 full reports obtained

65 reports prov. included (40 RCTs)

41 reports included (29 RCTs)

15 RCTs included in meta-analysis

7441 reports excluded

1538 reports excluded

613 reports excluded

24 reports excluded (21 RCTs)

14 RCTs without useful data for meta-analysis
Methods: Data extraction

• **678 studies** were independently assessed by two reviewers

• **65 reports** met the inclusion criteria (40 RCTs)
  – 24 (21 RCTs) of them were excluded for methodological reasons

• **41 reports** were included (29 RCTs)
  – Data were independently extracted by two reviewers using a standardized checklist

• Disagreements were settled by a third reviewer

• 14 authors were contacted in order to provide supplementary analysis data

• Only **15 RCTs** provided data useful for meta-analysis
The interventions and control arms of the studies were classified as:

- **skills focused**, aimed to enhance students' abilities in generic, refusal, and safety skills
- **affective focused**, aimed to modify inner qualities (personality traits such as self-esteem and self-efficacy, and motivational aspects such as the intention to use drugs)
- **knowledge focused programs**, aimed to enhance knowledge of the effects, and consequences of drug use
- **usual curricula**
The interventions were also classified according to:

- **type of teaching:**
  - *interactive programs:* participants were actively involved in the activities
  - *passive programs*

- **people involved in program administration:**
  - *teachers*
  - *external educators*
  - *peers*
Methods: Outcomes

• The following outcomes were considered
  – Final outcomes
    • use of drugs
  – Intermediate outcomes
    • drug knowledge
    • drug attitudes
    • acquirement of personal skills
    • peers/adults drug use
    • intention to use drugs
Methods: Quality assessment

• The quality of the studies included was assessed by two reviewers.

• According to the CDAG's check list studies were grouped in 3 classes:
  – A: low risk of bias (scores 9-11)
  – B: moderate risk of bias (scores 6-8)
  – C: high risk of bias (scores 0-5)

• Disagreements were settled by a third reviewer.
Methods: Statistical analysis

- Data were analysed with RevMan software

- A **standardized effect size** was calculated for each study, in function of its outcome

- Wherever possible, **summary relative risks and 95% confidence intervals** were calculated with a random effects model; for continuous outcomes measured in different ways a standardized mean difference (SMD) between groups was calculated

- When two or more studies were included in the meta-analysis, a test of **heterogeneity** was applied

- The effect of the low quality studies on the overall results was determined by a **sensitivity analysis**, with inclusion or exclusion the class C studies (no differences emerged)
Included studies

• 29 studies (41 reports) were included
• 14 did not present data useful for the inclusion in the meta-analyses
• 18 studies were of 6 and 7th grade students
• in 18 studies the evaluation was based on post-test assessment; 13 provided data at 1 year follow-up
• all but one were conducted in the USA. Only 1 RCT was conducted in the UK
• Most studies evaluated skills focused programs (n=25); affective programs were assessed by 6 studies, and 6 included a knowledge focused arm
• interactive techniques were used in 27 studies.
• Administrators were external educators in 20 studies, teachers in 10, peer leaders in 4, and others (policemen) in 2
## Results

**Skills versus usual curricula drugs use**

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>RR (random) 95% CI</th>
<th>Weight %</th>
<th>RR (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ringwall 1991</td>
<td>65/685</td>
<td>77/585</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snow 1992</td>
<td>63/575</td>
<td>63/526</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>1260</td>
<td>1111</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 128 (Treatment), 140 (Control)
Test for heterogeneity: Chi² = 1.06, df = 1 (P = 0.30), I² = 6.0%
Test for overall effect: Z = 1.80 (P = 0.07)
Results

Skills versus usual curricula

hard drugs use

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>RR (random) 95% CI</th>
<th>Weight %</th>
<th>RR (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sussman 2002</td>
<td>9/200</td>
<td>15/176</td>
<td>0.53 [0.24, 1.18]</td>
<td>61.43</td>
<td></td>
</tr>
<tr>
<td>Furr-Holden 2004</td>
<td>5/192</td>
<td>13/178</td>
<td>0.36 [0.13, 0.98]</td>
<td>38.57</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>392</td>
<td>354</td>
<td>0.45 [0.24, 0.85]</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Total events: 14 (Treatment), 28 (Control)
Test for heterogeneity: Chi² = 0.36, df = 1 (P = 0.55), I² = 0%
Test for overall effect: Z = 2.47 (P = 0.01)
### Results

**Skills versus usual curricula**

**marijuana use**

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>RR (random) 85% CI</th>
<th>Weight %</th>
<th>RR (random) 85% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sussman 2002</td>
<td>46/199</td>
<td>44/172</td>
<td></td>
<td>10.09</td>
<td>0.90 [0.63, 1.29]</td>
</tr>
<tr>
<td>Botvin 1990</td>
<td>147/1128</td>
<td>160/1142</td>
<td></td>
<td>28.69</td>
<td>0.93 [0.76, 1.15]</td>
</tr>
<tr>
<td>Ellickson 2003</td>
<td>332/2553</td>
<td>293/1723</td>
<td></td>
<td>55.38</td>
<td>0.76 [0.66, 0.88]</td>
</tr>
<tr>
<td>Furr-Holden 2004</td>
<td>25/192</td>
<td>34/178</td>
<td></td>
<td>5.85</td>
<td>0.68 [0.42, 1.10]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td>100.00</td>
<td>0.82 [0.73, 0.92]</td>
</tr>
</tbody>
</table>

Total events: 550 (Treatment), 531 (Control)

Test for heterogeneity: Chi² = 3.15, df = 3 (P = 0.37), I² = 4.8%

Test for overall effect: Z = 3.43 (P = 0.0006)
Results
Skills versus usual curricula
marijuana use (without C class study)

Review: School-based prevention for illicit drugs' use.
Comparison: 02 skills vs usual curricula
Outcome: 09 marijuana use (only A-B quality class studies)

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>RR (fixed) 95% CI</th>
<th>Weight %</th>
<th>RR (fixed) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botvin 1990</td>
<td>147/1128</td>
<td>160/1142</td>
<td>29.22 0.93 [0.76, 1.15]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ellickson 2003</td>
<td>332/2553</td>
<td>293/1723</td>
<td>64.29 0.86 [0.66, 0.88]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furr-Holden 2004</td>
<td>25/192</td>
<td>34/178</td>
<td>6.48 0.68 [0.42, 1.10]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>3873</td>
<td>3043</td>
<td></td>
<td>100.00</td>
<td>0.81 [0.72, 0.91]</td>
</tr>
<tr>
<td>Total events: 504 (Treatment), 487 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: Chi² = 2.80, df = 2 (P = 0.25), I² = 28.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 3.64 (P = 0.0003)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Results

**Skills versus usual curricula decision making skills**

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment N</th>
<th>Mean (SD)</th>
<th>Control N</th>
<th>Mean (SD)</th>
<th>SMD (random) 95% CI</th>
<th>Weight %</th>
<th>SMD (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow 1992</td>
<td>581</td>
<td>38.29 (7.02)</td>
<td>528</td>
<td>30.65 (5.35)</td>
<td>64.01 [0.90, 1.02]</td>
<td>0.90</td>
<td>0.90 [0.77, 1.02]</td>
</tr>
<tr>
<td>Hurry 1997</td>
<td>65</td>
<td>5.10 (2.40)</td>
<td>55</td>
<td>3.60 (2.90)</td>
<td>35.99 [0.96, 0.93]</td>
<td>0.96</td>
<td>0.96 [0.20, 0.93]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>645</strong></td>
<td></td>
<td><strong>533</strong></td>
<td></td>
<td></td>
<td><strong>100.00</strong></td>
<td><strong>0.78 [0.46, 1.09]</strong></td>
</tr>
</tbody>
</table>

Test for heterogeneity: Chi² = 2.84, df = 1 (P = 0.09), P = 64.6%

Test for overall effect: Z = 4.67 (P < 0.00001)
## Results

### Affective versus usual curricula drug knowledge

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment N (Mean (SD))</th>
<th>Control N (Mean (SD))</th>
<th>SMD (random) 95% CI</th>
<th>Weight %</th>
<th>SMD (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corbin 1993</td>
<td>22 (18.23 (1.19))</td>
<td>18 (12.63 (4.57))</td>
<td>1.70 [0.38, 2.43]</td>
<td>71.71</td>
<td></td>
</tr>
<tr>
<td>Jones 1995</td>
<td>14 (18.14 (1.41))</td>
<td>8 (12.50 (3.42))</td>
<td>2.34 [1.18, 3.49]</td>
<td>28.29</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>36 (18.19 (1.19))</td>
<td>27 (12.59 (3.42))</td>
<td>1.88 [1.27, 2.50]</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity: $\chi^2 = 0.83, df = 1 (P = 0.36), I^2 = 0$
Test for overall effect: $Z = 6.00 (P < 0.00001)$
### Results

**Affective versus usual curricula decision making skills**

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment Mean (SD)</th>
<th>Control Mean (SD)</th>
<th>SMD (random) 95% CI</th>
<th>Weight %</th>
<th>SMD (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corbin 1993</td>
<td>8.18 (1.14)</td>
<td>6.26 (1.73)</td>
<td>0.98 [0.56, 1.39]</td>
<td>67.73</td>
<td>1.31 [0.62, 1.99]</td>
</tr>
<tr>
<td>Jones 1995</td>
<td>7.29 (1.44)</td>
<td>5.12 (1.46)</td>
<td>0.85 [0.56, 1.14]</td>
<td>32.27</td>
<td>1.44 [0.45, 2.43]</td>
</tr>
<tr>
<td>Total (85% CI)</td>
<td>8.69 (1.34)</td>
<td>6.18 (1.67)</td>
<td>1.00 [0.79, 1.21]</td>
<td>100.00</td>
<td>1.35 [0.79, 1.91]</td>
</tr>
</tbody>
</table>

Test for heterogeneity: $\chi^2 = 0.05$, df = 1 ($P = 0.82$), $P = 0$

Test for overall effect: $Z = 4.71$ ($P < 0.00001$)
## Results

**Knowledge versus usual curricula**

### Drug knowledge

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>N</th>
<th>Treatment Mean (SD)</th>
<th>Control Mean (SD)</th>
<th>SMD (random) 95% CI</th>
<th>Weight %</th>
<th>SMD (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corbin 1993</td>
<td>15</td>
<td>17.06 (2.86)</td>
<td>12.63 (4.57)</td>
<td>1.11 [0.39, 1.83]</td>
<td>27.96</td>
<td></td>
</tr>
<tr>
<td>Jones 1995</td>
<td>12</td>
<td>17.00 (2.52)</td>
<td>12.50 (3.42)</td>
<td>1.48 [0.45, 2.52]</td>
<td>16.87</td>
<td></td>
</tr>
<tr>
<td>Sigelman 2003</td>
<td>88</td>
<td>0.91 (0.11)</td>
<td>0.81 (0.20)</td>
<td>0.62 [0.31, 0.94]</td>
<td>55.87</td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td>114</td>
<td>1.11 [0.39, 1.83]</td>
<td>1.48 [0.45, 2.52]</td>
<td>0.62 [0.31, 0.94]</td>
<td>100.00</td>
<td>0.91 [0.42, 1.39]</td>
</tr>
</tbody>
</table>

Test for heterogeneity: \( \chi^2 = 3.55, df = 2 \) (\( p = 0.17 \), \( \gamma = 43.6\% \))

Test for overall effect: \( Z = 3.68 \) (\( p = 0.0002 \))

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- **Favours control**
- **Favours treatment**
Results
Knowledge versus usual curricula
decision making skills

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>N</th>
<th>Treatment Mean (SD)</th>
<th>N</th>
<th>Control Mean (SD)</th>
<th>SMD (random)</th>
<th>Weight %</th>
<th>SMD (random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coron 1993</td>
<td>16</td>
<td>5.81 (1.68)</td>
<td>19</td>
<td>6.25 (1.73)</td>
<td>-0.26 [-0.92, 0.41]</td>
<td>64.47</td>
<td></td>
</tr>
<tr>
<td>Jones 1995</td>
<td>12</td>
<td>5.75 (2.45)</td>
<td>8</td>
<td>5.12 (1.46)</td>
<td>0.28 [-0.62, 1.18]</td>
<td>35.53</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>28</td>
<td>-0.06 [-0.60, 0.47]</td>
<td>27</td>
<td></td>
<td></td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity: Chi² = 0.90, df = 1 (P = 0.34), I² = 0%
Test for overall effect: Z = 0.24 (P = 0.81)

the result is the same for assertiveness
Summary of meta-analytic results

- Skills-based programs **reduce**
  - drug use (RR=0.81; CI95%: 0.64, 1.02)
  - hard drug use (RR=0.45; CI95%: 0.24, 0.85)
  - marijuana use (RR=0.82 CI95%: 0.73, 0.92)

- Skills-based programs **improve**
  - drug knowledge (WMD=2.60; CI95%: 1.17, 4.03)
  - decision making skills (SMD=0.78; CI95%: 0.46, 1.09)
  - peer pressure resistance (RR=2.05; CI95%: 1.24, 3.42)
  - self-esteem (SMD= 0.22; CI95%: 0.03, 0.40)
Results

Interactive vs passive techniques

• Only three studies provided data suitable for meta-analysis: results were not statistically significant for drug knowledge, decision making skills, self-esteem, self-efficacy, and marijuana use.

• However, interactive techniques were more effective in reducing hard drug use in the study by Sussman (RR=0.43; CI95%: 0.19-0.99).
Results
The role of peers

• When administered by peers as opposed to teachers, programs were significantly more effective with regard to marijuana use, knowledge and attitudes towards this drug at post test.

• Marijuana attitudes at 1 year follow-up become lower in the teacher-led group.

• When compared with external educators, the effect of peers was evident for drug knowledge (WMD=-3.42; CI95%: -6.81, -0.03), but not significant for the other outcomes.
Conclusions: (I)

• **Skills focused programs** have a positive effect on both mediating variables and final outcomes, compared to usual curricula.

• The meta-analysis on drug and marijuana use showed a **20% lower use** in the intervention groups at the post test, and a **55% lower use** of hard drugs.

• This results persist even years after the intervention, with most of the RCTs included having a satisfactory methodological quality (mainly quality score=B).
Conclusions: (II)

- **knowledge focused programs** improve mediating variables (especially drug knowledge) compared with usual curricula, but are not more effective than skills based programs.

- When final outcomes are considered (drug use), their effects are comparable to the usual curricula and the other two types of programs.

- **affective-focused programs** improve decision making skills and drug knowledge compared to usual curricula and knowledge-focused interventions, but no evidence of effectiveness is shown for use of drugs.
Conclusions: (III)

- The number needed to treat (NNT=1/ARR) is 33 for marijuana use.

- Since the prevalence of marijuana use in the post-test of the control arm of the RCTs included in this comparison was 16.5%, 5 out of 33 students (16.5% of 33) will use this drug. Of this, 1 would be prevented by the intervention, which corresponds to the 20% of the new initiators.
Limitations

• none of the RCTs satisfied all the quality criteria of the review

• most results were outcomes at post test and few data were from long-term follow-ups

• many studies did not present effect measures but only statistical indicators (f, p...) so it was impossible to combine them in the meta-analysis

• measure of effects were very heterogeneous

• the control for heterogeneity was not always satisfactory

• only six studies were designed to take account of the cluster effect

• all but one of the 29 RCTs included were conducted in the USA
Studio EU-Dap

European Drug Addiction Prevention trial
Characteristics

- Cluster randomized controlled trial
- Funded by the European Community
- Involved 7 European Countries
- Main aims:
  - To build a school-based European prevention program ("Unplugged")
  - To evaluate the efficacy of the program in reducing the use of drugs
“Unplugged”

• the program is based on a comprehensive social influence approach

• It includes the following components
  – Social skills
  – Personal skills
  – Knowledge
  – Normative education
  – (No resistance education)

• It is administered by teachers, who participated to a 3 days specific workshop

• It is made by 12 units, 1 hour each
• **Unit 1**: Opening “Un-plugged”
• **Unit 2**: Choices: risk and protection
• **Unit 3**: Drugs – get informed
• **Unit 4**: Smoking the cigarette – get informed
• **Unit 5**: Your beliefs, norms and information: are they correct?
• **Unit 6**: To be or not to be in a group
• **Unit 7**: Express your self
• **Unit 8**: Party tiger (contacts and non-verbal and verbal ways to present oneself)
• **Unit 9**: Get up stand up (respect for the rights and opinions of the other people)
• **Unit 10**: Coping competence
• **Unit 11**: Problem solving/ decision making
• **Unit 12**: Goal setting and closure
QUESTIONARIO
su abitudini, usi
e altre informazioni
sulle sostanze non alimentari
7079 students participated in the **baseline survey** (November 2004)

The program ("Unplugged") was administered between November 2004 and February 2005 in the intervention arms

6604 students participated in the **follow-up survey** (May 2005), at least 3 months after the end of the program

The percentage of successful linkage between the baseline and first follow-up questionnaire was 91.5%
## Population

### Study Arm

<table>
<thead>
<tr>
<th>Centres</th>
<th>Controls (N=3297)</th>
<th></th>
<th>All interventions (N=3307)</th>
<th></th>
<th>Total population (N=6604)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Italy - Turin</td>
<td>859</td>
<td>27.1</td>
<td>634</td>
<td>19.8</td>
<td>1493</td>
<td>23.4</td>
</tr>
<tr>
<td>Spain - Bilbao</td>
<td>212</td>
<td>6.7</td>
<td>159</td>
<td>5.0</td>
<td>371</td>
<td>5.8</td>
</tr>
<tr>
<td>Germany - Kiel</td>
<td>203</td>
<td>6.4</td>
<td>358</td>
<td>11.2</td>
<td>561</td>
<td>8.8</td>
</tr>
<tr>
<td>Belgium - Gent</td>
<td>288</td>
<td>9.1</td>
<td>347</td>
<td>10.9</td>
<td>635</td>
<td>10.0</td>
</tr>
<tr>
<td>Sweden - Stockholm</td>
<td>426</td>
<td>13.4</td>
<td>501</td>
<td>15.7</td>
<td>927</td>
<td>14.5</td>
</tr>
<tr>
<td>Greece - Thessaloniki</td>
<td>322</td>
<td>10.1</td>
<td>368</td>
<td>11.5</td>
<td>690</td>
<td>10.8</td>
</tr>
<tr>
<td>Austria - Wien</td>
<td>433</td>
<td>13.6</td>
<td>283</td>
<td>8.8</td>
<td>716</td>
<td>11.2</td>
</tr>
<tr>
<td>Italy - Novara</td>
<td>209</td>
<td>6.6</td>
<td>270</td>
<td>8.4</td>
<td>479</td>
<td>7.5</td>
</tr>
<tr>
<td>Italy - Aquila</td>
<td>222</td>
<td>7.0</td>
<td>276</td>
<td>8.6</td>
<td>498</td>
<td>7.8</td>
</tr>
</tbody>
</table>
Smoking cigarettes

I smoked at least one cigarette in the last 30 days

Torino/Italia
Ragazzi n= 841, Ragazze n= 807
27.3%
28.9%

Bilbao/Spagna
Ragazzi n= 205, Ragazze n= 195
22.7%
25.6%

Novara/Italia
Ragazzi n= 275, Ragazze n= 238
24.4%
34.0%
I've been drunk at least ONCE in the last 30 days

- Torino/Italia: Ragazzi 11.9%, Ragazze 7.6%
- Bilbao/Spagna: Ragazzi 17.3%, Ragazze 18.4%
- Novara/Italia: Ragazzi 10.5%, Ragazze 10.9%

Ragazzi n= 841, Ragazze n= 807
Ragazzi n= 205, Ragazze n= 195
Ragazzi n= 275, Ragazze n= 238
I smoked cannabis at least ONCE in the last 30 days

- Torino/Italia:
  - Ragazzi n= 841, Ragazze n= 807
  - 10.3% (Ragazzi) vs. 5.2% (Ragazze)

- Bilbao/Spagna:
  - Ragazzi n= 205, Ragazze n= 195
  - 17.7% (Ragazzi) vs. 10.6% (Ragazze)

- Novara/Italia:
  - Ragazzi n= 275, Ragazze n= 238
  - 5.1% (Ragazzi) vs. 4.6% (Ragazze)
Measures of effect

- **ALO smoking**: At least once in the last 30 days
- **Regular Smoking**: At least 6 times in the last 30 days
- **Daily smoking**: At least 20 times in the last 30 days
- **ALO drunkenness**: At least once in the last 30 days
- **Regular drunkenness**: At least 3 times in the last 30 days
- **ALO cannabis**: At least once in the last 30 days
- **Regular cannabis**: At least 3 times in the last 30 days
- **ALO drugs**: At least once in the last 30 days (all drugs except cigarettes and alcohol)
Regular drunkenness
A Multi-Level model was used to:

- Adjust for the *cluster effect*
- Take into account the *differences in the prevalence of use among centers*
- Take into account the *differences in the prevalence of use among arms* (the controls show higher prevalences of use at the baseline)
## Results of the model

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Variazioni %</th>
<th>IC 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALO smoking</td>
<td>-12%</td>
<td>-29%;+8%</td>
</tr>
<tr>
<td>Regular smoking</td>
<td>-14%</td>
<td>-33%;+10%</td>
</tr>
<tr>
<td>Daily smoking</td>
<td>-30%</td>
<td>-48%;-6%</td>
</tr>
<tr>
<td>ALO drunkenness</td>
<td>-28%</td>
<td>-42%;-10%</td>
</tr>
<tr>
<td>Regular drunkenness</td>
<td>-31%</td>
<td>-52%;-1%</td>
</tr>
<tr>
<td>ALO cannabis</td>
<td>-23%</td>
<td>-40%;0%</td>
</tr>
<tr>
<td>Regular cannabis</td>
<td>-24%</td>
<td>-47%;+9%</td>
</tr>
<tr>
<td>ALO drugs</td>
<td>-11%</td>
<td>-31%;+15%</td>
</tr>
</tbody>
</table>

Model 3: model 2 + adjustment for the baseline status of the outcome
Conclusions

• The statistical analysis shows that **Unplugged** is effective in reducing use of drugs, alcohol and cigarettes at the first follow-up

• It is the **first european program** evaluated through a multicentric, randomized controlled trial design