The influence of gender on moderating prevention outcomes

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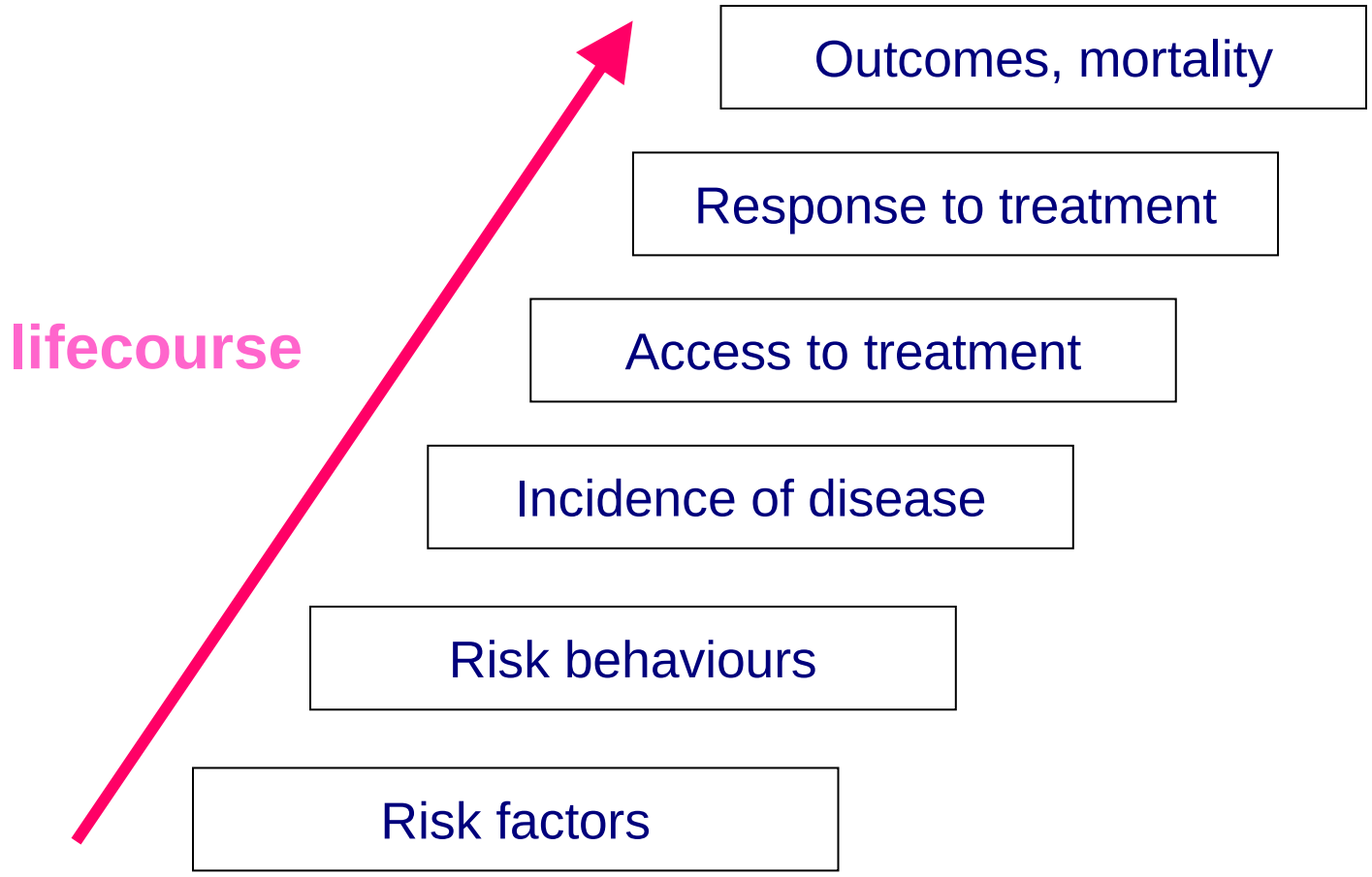
Gender differences in health

There are well known gender differences in health



Such differences are only partly explained by biological differences

Substance abuse and addiction

- Gender differences strongly affect tobacco, alcohol and substance use, abuse and addiction, from **risk factors** to **patterns of consumption**, **access to Health Services**, **treatments**, and even **outcomes**
- There is evidence that differences do exist between the sexes in the **etiology** of drug abuse
- It is important that practitioners understand these differences and consider the **implications they have for prevention**

- For most substances, there is greater prevalence of use among **males** than among females
- Adults: men use more frequently **alcohol**, **marijuana** and **illicit drugs**, women sedatives/benzodiazepines
- Adolescents: boys use more frequently alcohol, marijuana and illicit drugs, girls **sedatives/benzodiazepines** and **tobacco**

At intake to addiction treatment

- **Sexual abuse** and **violence episodes** in the childhood or in the adulthood are more frequently reported by females addicts as well as **early problems in the family**

- First use is related among males to **group experience and socialization**, among females to **cope with stress and reduce anxiety**
- At treatment intake, women more frequently have children and live with them, more frequently they are married, divorced or widow
- They have a lower income and are frequently unemployed or have an unstable job
- More frequently than women, men commit crimes

- **Psycho-pathologic problems**, such as anxious-depressive syndrome and personality disorders are more frequent and severe among females, as well as suicide attempts and self-damaging behaviours

Treatment outcomes

- Women ask for treatment **earlier** than men
- Within the treatment programs, they better interact with doctors, they progress from pharmacological to psychotherapy treatments

- With regard to treatment outcomes, the results are inconsistent (Greenfield et al. 2007)
  - according to some studies, women abandon substance abuse treatment more frequently than men
  - however, others did not find differences
  - others are in favour of women

- **Adding child and family components favours retention and completion of programs**

Prevention interventions

- Despite the large amount of literature on gender differences in drug addiction published since the early ’80s…

- **Nobody took care of these differences in building prevention interventions**. To my knowledge even no study on universal school-based interventions described the inclusion of **female-sensitive contents** as an explicit choice during program development (apart from some interventions targeting only girls)

- **few studies** investigated gender differences in the **effectiveness of interventions**: they generally found **gender** to be a **moderator** of intervention effects

- the general evidence seems to be in favour of a higher effectiveness of prevention interventions among girls (Blake 2001)
- However, when limiting the evidence to school-based interventions, the findings appear rather mixed

School based interventions

- **project SMART** [Graham 1990]
- **ALERT Plus** [Longshore 2007]

→ effective on females

- **North Karelia Youth Programme** [Vartiainen 1998]

→ slightly more effective on males

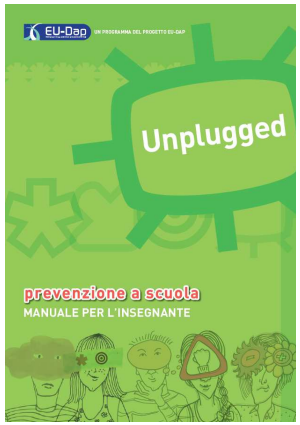
- keepin'it REAL program [Kulis 2007]
- **Oslo Youth Study** [Klepp 1993]
- **Project Towards No Drug Abuse** [Sussman 2003]
- DARE and DARE Plus Programmes [Perry 2003]

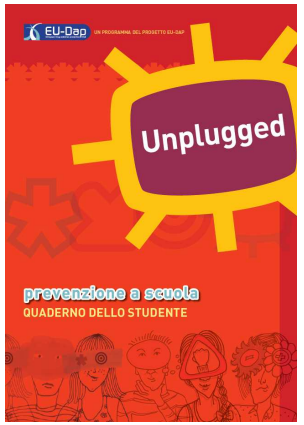
→ effective on males

Green: Based on Social Influence approach

Unplugged

- Universal school-based program for preventing tobacco, substance use and alcohol abuse among adolescents
- Based on ***social influence*** approach

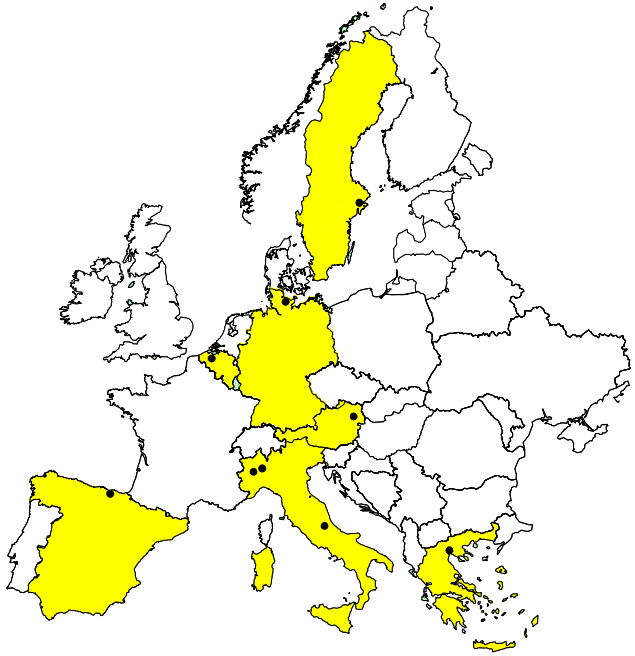




- It includes the following components
  - Social skills
  - Personal skills
  - Knowledge
  - Normative education
- It is administered by **teachers** trained in a 3-days course
- It is made by **12 units**, 1 hour each
- It is designed for **12-14 years old** students
- It was tested through a **randomized controlled trial** in 7 European countries in 2004-2007 school years

The EU-Dap study

- 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



www.eudap.net

EU-Dap
EUropean Drug addiction prevention trial

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)

Gender stratified analysis

BAS vs FUP1	Males		Females	
	Adjusted POR (95%CI)	Change	Adjusted POR (95%CI)	Change
ALO smoking	0.88 (0.66-1.18)	-12%	0.86 (0.65-1.15)	-14%
Regular smoking	**0.68 (0.50-0.93)**	**-32%**	1.07 (0.74-1.55)	+7%
Daily smoking	**0.49 (0.34-0.71)**	**-51%**	0.99 (0.64-1.52)	-1%
ALO drunkenness	**0.64 (0.49-0.85)**	**-36%**	0.86 (0.63-1.18)	-14%
Regular drunkenness	0.68 (0.45-1.04)	-32%	0.66 (0.37-1.18)	-34%
ALO cannabis	**0.62 (0.45-0.85)**	**-38%**	1.05 (0.70-1.58)	+5%
Regular cannabis	**0.60 (0.40-0.91)**	**-40%**	1.17 (0.59-2.33)	+17%

among females:

- results are not statistically significant
- no effect is detectable for tobacco and cannabis

Age

Indicator of use	Girls	
	11-12 years N=781	13-18 years N=2254
	POR (95%CI)	POR (95%CI)
Any smoking	0,78 (0,45-1,34)	0,84 (0,63-1,13)
Frequent smoking	0,52 (0,23-1,21)	1,21 (0,83-1,77)
Daily smoking	0,45 (0,18-1,13)	1,19 (0,77-1,85)
Any drunkenness	0,44 (0,19-1,04)	0,94 (0,68-1,29)
Frequent drunkenness	0,70 (0,16-3,01)	0,65 (0,37-1,16)
Any cannabis	§	1,15 (0,77-1,71)
Frequent cannabis	§	1,19 (0,62-2,27)
Any illicit drug	1,03 (0,47-2,28)	1,42 (0,98-2,06)

When stratifying the results by pupils' age, there is some indication that **the program can work on younger females**, on tobacco and alcohol

Age: possible explanations

- girls may have been reached at **more advanced stages** of substance use
  - however, females were slightly more advanced than males only in cigarette smoking when recruited for this study

- the **developmental stage** of the two genders in terms of general life skills and coping mechanisms may differ, given attained age: at the same age the acquisition of skills and competences may still be susceptible to modifications among boys, less so among girls

- previous studies support the conclusion that most programs based on skill enhancement **achieve better results among girls when administered at younger ages**

Self-esteem

Indicator of use	Boys		Girls	
	High self-esteem N=2741	Low self-esteem N=385	High self-esteem N=2422	Low self-esteem N=488
	Adj POR (95%CI)	Adj POR (95%CI)	Adj POR (95%CI)	Adj POR (95%CI)
Any smoking	0.76 (0.55-1.04)	1.23 (0.61-2.50)	0.85 (0.62-1.16)	0.70 (0.39-1.26)
Frequent smoking	0.62 (0.45-0.87)	0.70 (0.27-1.80)	1.04 (0.69-1.57)	0.92 (0.43-1.97)
Daily smoking	0.46 (0.30-0.68)	0.56 (0.20-1.58)	0.86 (0.53-1.40)	1.35 (0.63-2.87)
Any drunkenness	0.69 (0.50-0.94)	0.58 (0.29-1.17)	0.83 (0.58-1.19)	1.23 (0.66-2.29)
Frequent drunkenness	0.71 (0.43-1.14)	0.75 (0.25-2.19)	0.59 (0.31-1.12)	1.71 (0.49-5.92)
Any cannabis	0.63 (0.43-0.91)	0.43 (0.20-0.92)	0.89 (0.58-1.37)	1.83 (0.66-5.06)
Frequent cannabis	0.62 (0.39-1.00)	0.42 (0.16-1.09)	0.74 (0.38-1.43)	2.14 (0.58-7.95)
Any illicit drug	0.68 (0.48-0.97)	0.35 (0.18-0.71)	1.27 (0.88-1.85)	1.59 (0.78-3.22)

When stratifying the results by an indicator of self-esteem, there is some evidence that **the program does not work on girls with low self-esteem, for any substances**

Self-esteem: possible explanation

- there is some evidence that **lack of self-esteem** can be a stronger risk factor for drug use among girls than among boys

- theoretical models suggest that girls are more influenced by **family protective factors**, such as negative parental attitudes towards drugs, family connectedness, etc, while boys are more influenced by school or community environment (Sale 2003)
- among girls, **self-esteem is strongly dependent on a positive relationship with parents** (Kumpfer 2008)

- in the past investigators have suggested that messages focused on building **self-confidence** and **self-esteem** might be more effective with girls than with boys (Worden 1996), as well as the interventions focused on **self-efficacy** (Graham 1990)

Anxiety

Indicator	BOYS		GIRLS	
	I often feel nervous N=1722 (51.8%)	I worry a lot about silly things N=1825 (54.9%)	I often feel nervous N=1763 (58.1%)	I worry a lot about silly things N=1933 (63.7%)
	POR (95%CI)	POR (95%CI)	POR (95%CI)	POR (95%CI)
Any smoking	0.78 (0.55-1.11)	**0.67 (0.47-0.95)**	0.80 (0.58-1.11)	0.83 (0.61-1.18)
Regular smoking	**0.64 (0.43-0.93)**	**0.52 (0.34-0.81)**	0.85 (0.54-1.34)	1.14 (0.75-1.74)
Daily smoking	**0.40 (0.25-0.64)**	**0.34 (0.19-0.63)**	0.80 (0.49-1.29)	1.12 (0.70-1.79)
Any drunkenness	**0.52 (0.36-0.75)**	**0.58 (0.40-0.83)**	0.74 (0.51-1.06)	0.75 (0.52-1.08)
Regular drunkenness	**0.50 (0.28-0.89)**	0.68 (0.37-1.25)	0.75 (0.40-1.44)	0.66 (0.36-1.20)
Any cannabis	**0.48 (0.32-0.74)**	**0.44 (0.28-0.68)**	1.13 (0.75-1.70)	1.04 (0.76-1.43)
Regular cannabis	**0.55 (0.33-0.94)**	**0.39 (0.21-0.74)**	0.78 (0.43-1.42)	1.26 (0.60-2.66)
Any illicit drugs use	**0.52 (0.36-0.75)**	**0.48 (0.33-0.70)**	1.35 (0.93-1.97)	1.30 (0.84-2.00)

When stratifying the results by an indicator of anxiety, there is some evidence that **the program does not work on tobacco and cannabis among girls with anxiety**

Anxiety: possible explanation

- Gender analysis performed in the evaluation of a recent Life Skills Training project that systematically favored females (MacKillop 2006) revealed that female participants exhibited greater improvement in drug knowledge and in **anxiety reduction skills** than male participants (a possible mechanism?)

- From our data, there is some evidence of a certain “resilience” of **high risk girls** in changing attitudes and behaviours: particular attention should be paid to these girls when implementing the intervention

Conclusions

- The statistical analysis shows that ***Unplugged*** is effective in reducing use of drugs, alcohol and cigarettes at the post-test **among males**
- **No effect** of the program is detected for tobacco and cannabis use **among females**
- Possible explanations of the lack of effect include:
  - differential stages of use at the time of prevention
  - self-esteem and anxiety as moderators of the effect

Implications

- The literature shows differential effects of school-based prevention programs on **males** and **females**
- The studies are not consistent about the direction of the difference but are consistent on **finding a difference**
- The existence of such a difference should be always **taken into account** when designing and applying a program
- A **gender stratified analysis** should always be performed and presented in the results of the effectiveness evaluation

- In designing prevention programs:
  - gender specificities should be taken into account (male and female)
  - units focused on self-esteem and anxiety reduction skills could increase the effect among girls
  - appropriate target age has to be chosen

Girls needs from the literature

- **self image/body image**
- **self-confidence, self-esteeem and self-efficacy**
- **social approval**
- skills and intrapersonal competencies useful to solve problems and conflicts and facilitate **relationships**
- **family functioning**

During adolescence, girls are more vulnerable than boys for **behavioural and emotional problems**; there is a decline in girls' **self-esteem** and an increase in **depression**; girls' rate of **internalizing problems and failure** increase and exceed those of boys (Amaro 2001)

So, girls can be more responsive to programs modifying their ability to cope with depression (Longshore 2007)

Girls are more responsive to **parental disapproval** of use, such as to **any family conflict indicator** so in turn **activities involving parents** in the prevention process can increase the effect of the interventions

We must remember that we do not know if adding gender specific contents would improve effectiveness of programs: **new programs need to be tested!**

Is universal prevention against youths' substance misuse really universal? Gender-specific effects in the EU-Dap school-based prevention trial

F Vigna-Taglianti, S Vadrucci, F Faggiano, G Burkhart, R Siliquini, M R Galanti and the EU-Dap Study Group

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- www.eudap.net

Thanks for your attention!