

ARE "STATE OF ART" SMOKING PREVENTION PROGRAMS FOR ADOLESCENTS GENDER SENSITIVE? SUGGESTIONS FROM THE EU-DAP TRIAL

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Background

Evaluation studies of prevention programs against youths' substance use have seldom reported on behavioral effects of interventions according to gender. When reported, separate gender analyses showed mixed results [1-6]. Furthermore, previous results were not informative as to determinants of differential effects of prevention by gender. Possible interpretations include differential stages of smoking acquisition or nicotine dependence at the time of exposure to the program (general host sensitivity) or gender sensitivity of the underlying pedagogic models.

Results

Overall, significant program effects in the desired direction were observed four months after curriculum completion. In particular, the prevalence odds of past 30-days smoking were lower in the intervention group compared to control group, although statistical significance was only attained for daily smoking (smoking 20 cigarettes or more, POR=0.70; 95% CI=0.52-0.94). However, a separate analysis by gender revealed that virtually all observed program effect was confined to boys. This pattern was seen across all centres but one, and also for other indicators of past 30-days substance use.

Methods

The EU-DAP study (European Drug Abuse Prevention trial) was designed to evaluate with an experimental design the effectiveness of an innovative school curriculum aiming to prevent the use of tobacco, alcohol, and other substances of abuse among early adolescents (12-14 years old) [7]. The curriculum was based on a comprehensive social influence approach [8] and encompassed 12 teacher-led educational units. The trial was conducted during the year 2004-2005 in nine regional centres from seven European Countries. All in all, 170 schools were randomized to 3 intervention arms (differing only in some intervention components added to the basic curriculum) and one control arm. Of the randomized schools 143 continued collaboration throughout the intervention phase. More than 7000 students participated in the pre-test survey (September-October 2004), while 6604 students did so in the post-test survey (May-June 2005). Among the students participating at both pre- and post-test 3324 were males and 3035 females (analysis sample in this study). Multilevel regression modelling was used in the analysis in order to take into account the hierarchical structure of the data (students nested in classes and schools). We also conducted preliminary analyses of the program effects by gender in subgroups defined by smoking stage and by indicators of self-esteem at baseline. In fact, low self-esteem [9] and personal dissatisfaction [10] have been found to be predictors of smoking, especially among girls.

Table 1. Prevalence Odds Ratios of cigarette smoking in the past 30 days (pooled intervention groups vs. controls), by gender

	Boys			Girls		
	Control n/N*	Intervention n/N*	POR (95%CI)	Control n/N*	Intervention n/N*	POR (95%CI)
Any smoking ¹	304/1509	220/1563	0.88 (0.66-1.18)	300/1453	276/1412	0.86 (0.65-1.15)
Frequent smoking ²	211/1509	126/1563	0.68 (0.50-0.93)	175/1453	171/1412	1.07 (0.74-1.55)
Daily smoking ³	159/1509	80/1563	0.49 (0.34-0.71)	117/1453	113/1412	0.99 (0.64-1.52)

*. Number of users out of the total number of students answering the question at follow-up (multilevel adjusted model).
¹ at least 1 cigarette, ² at least 6 cigarettes, ³ at least 20 cigarettes, POR= Prevalence Odds Ratios (pooled interventions vs controls) estimated using multilevel model (RIGLS bin 1st order MQL with 3 levels adjusting for centre prevalence of daily smoking and baseline status of the outcome)

Did stages of smoking behaviour differ between genders?

At baseline, more girls (16%) than boys (13%) reported smoking in the past 30-days (all arms together, p<0.05). The intervention was more effective in delaying the progression from non- or occasional smokers to more advanced stages of use than it was in helping daily smokers to quit or decrease their use.

The net benefit was lower among girls than among boys for any stage of smoking behaviour at baseline except for occasional smokers reverting to non smoking. Girl daily smokers had the lowest benefit from intervention than any other group.

Table 2. Progressions and regressions in past 30-days smoking behaviour between pre- and post-test, by gender

Stage/movement	Boys		Girls	
	% Control (N)	% Intervention (N)	% Control (N)	% Intervention (N)
Persistent non smokers	90.2 (1149)	91.7 (1293)	90.1 (1115)	91.0 (1076)
Occasional ¹ smokers progressing to daily ² smokers	28.5 (39)	16.0 § (15)	24.8 (33)	15.2 § (23)
Occasional ¹ smokers regressing to non-smokers	35.0 (48)	46.8 (44)	24.8 (33)	37.1 § (56)
Daily ² smokers regressing to non- or occasional smoking	18.4 (18)	17.0 (10)	18.0 (15)	12.8 (10)

¹ 1-19 cigarettes in the past 30 days, ² ≥20 cigarettes in the past 30 days, § Chi-square statistic int-control p<0.05

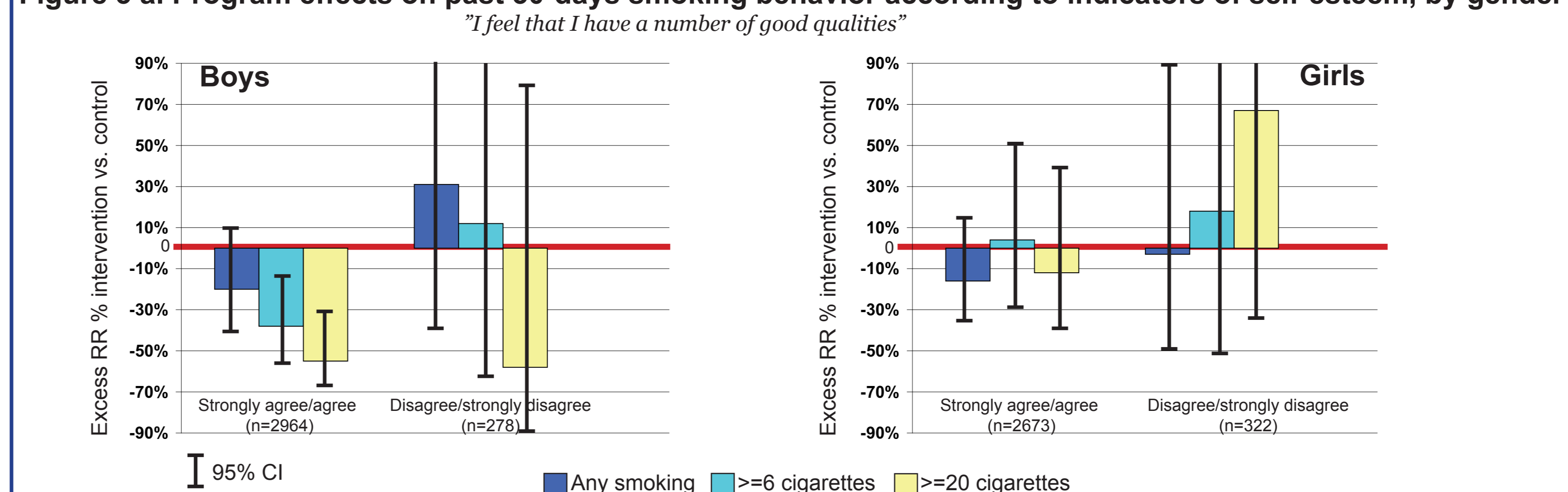
Conclusions

- ✓ In this large experimental study the effectiveness of a school preventive program was greatly modified by gender.
- ✓ Timing of smoking progression is a possible explanation of this difference

Implications

- ✓ Systematic analyses of gender differences in the effectiveness of smoking prevention may help understanding how preventive programs work
- ✓ Gender-specific adaptation of existing "best practice" school curricula may be needed

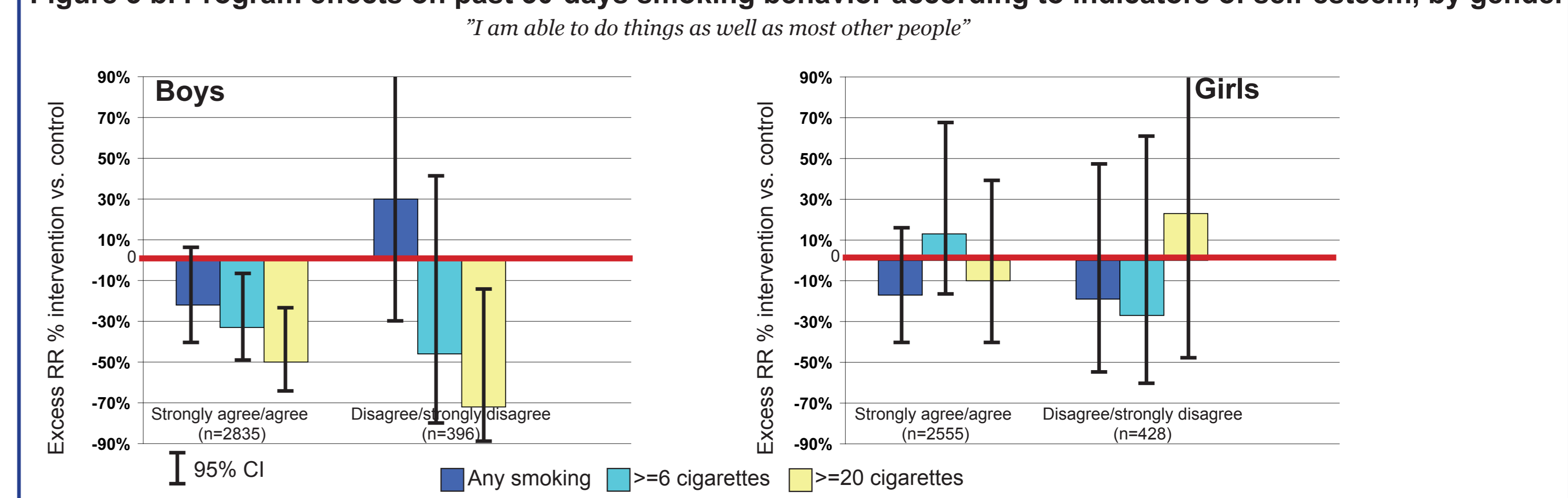
Figure 3 a. Program effects on past 30-days smoking behavior according to indicators of self-esteem, by gender



Were program effects modified by self-esteem?

Eleven % of girls and 9% of boys disagreed with the statement "I feel that I have a number of good qualities", while 14% of girls and 12% of boys did so with the statement "I am able to do things as well as most other people" (p<0.05). Preliminary analyses indicated weaker program effects on experimental smoking among boys scoring low on indicators of self-esteem. Among girls, there were no significant program effects in either subgroup.

Figure 3 b. Program effects on past 30-days smoking behavior according to indicators of self-esteem, by gender



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