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ORIGINAL ARTICLE

Parental monitoring: a way to decrease substance use among Swiss adolescents?

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Abstract The objective of this research was to determine whether the level of parental monitoring is associated with substance use among adolescents in Switzerland, and to assess whether this effect remains when these adolescents have consuming peers. For this purpose, we used a nationally representative sample from the Swiss participation in the 2007 European School Project on Alcohol and Other Drugs survey, which included 7,611 adolescents in public schools (8th–10th grades). Four levels of parental control were created and four substances (tobacco, alcohol, cannabis, and ecstasy) were analyzed. All significant variables at the bivariate level were included in the multivariate analysis. Most adolescents had a high level of parental monitoring and that was associated with younger age, females, high socioeconomic status, intact family structure, and satisfactory relationships with mother, father, and peers. Overall, substance use decreased as parental monitoring increased and high parental monitoring decreased as having consuming peers increased. Results remained essentially the same when the variable “having consuming peers” was added to the analysis. Conclusion: parental monitoring is associated to positive effects on adolescent substance use with a reduction of consumption and a lower probability of having

consuming peers, which seems to protect adolescents against potentially negative peer influence. Encouraging parents to monitor their adolescents’ activities and friendships by establishing rules about what is allowed or not is a way to limit the negative influence of consuming peers on adolescent substance use.

Keywords Adolescence · Substance use · Parents · Peers

Introduction

Substance use is associated with a number of health and social problems. Tobacco, cannabis, and alcohol misuse are linked to physical and psychosocial ill health, unsafe sexual practices, and crime [8, 16, 18, 23, 25]. Furthermore, the care and excess morbidity associated with substance use are linked to increased costs for healthcare and legal systems [21, 24].

Most experimentation with substances begins during adolescence [5, 31, 33]. Data from the Health Behavior in School-aged Children (HBSC) international report show gender differences concerning current substance use among 15-year-olds, with higher consumption among boys. In Switzerland, 15 % of 15-year-olds (boys and girls) are weekly smokers, 29 % of boys and 18 % of girls have been drunk at least twice during their lifetime, and 13 % of boys and 11 % of girls have used cannabis in the last 30 days; compared to the HBSC average rates, 15-year-olds living in Switzerland show lower rates of smoking and alcohol misuse but higher rates of cannabis consumption [10]. Moreover, there has been a significant increase in ecstasy use among adolescents in Switzerland between 1993 and 2002 [20].

Several factors are associated with increased substance use in adolescence, among which is the relationship that adolescents have with their parents and peers. Previous

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research has shown that spending time with friends who use substances greatly increases the risk of consumption [12, 13, 26, 30]. Research has also shown that authoritative [6] parenting and high parent involvement, support, or monitoring [28] are linked with lower levels of substance use by adolescents and have a protective effect both on the consumption initiation and continuation [3, 7, 9, 22].

Earlier studies concerning adolescent substance use have examined parental monitoring controlling for peers' use, but have found divergent results. For example, in their longitudinal study on adolescent substance use, Steinberg et al. [29] showed that the influence of peer groups on substance use transitions does not vary as a function of parental monitoring. Alternatively, Kiesner et al. [17] showed that the relationship between substance co-use with friends and individual substance use is stronger when the level of parental monitoring is low. Dishion et al. [11] suggested that family management and peer contexts both combine to account for individual differences in late adolescent adjustment and that the deterioration of the parent–peer socialization environment is bidirectional. As a result, they also suggested that deviant peer involvement may have a disruptive effect on family management. However, Galambos et al. [14] established that having deviant peers was a risk factor for engaging in externalizing behaviors such as substance use, but that parents may play a critical role in diminishing that risk. Different studies [1, 2, 15] showed furthermore that several family variables such as parental monitoring or attachment to parents have significant and direct influences on adolescent drug use independently from any peer influence, but that this effect is relatively small.

Other authors looked at the combined influences of parents and peers on adolescent substance use. Their work suggests that both peers and parents are important in influencing substance use during adolescence. Wood et al. [32] and Barnes et al. [3] support that parental influence provides a buffering effect against peers' influence on alcohol involvement. The same result was found by Marshall and Chassin [19] in their longitudinal study concerning peer influence on adolescent alcohol use, but only for girls. They showed that for girls, parenting behavior could serve as a protective factor to resist peer group pressure, but that, for boys higher levels of parental support exacerbated the association between consuming peers and alcohol use. However, these studies have been carried out in North America and most of them are based on relatively small non-representative samples. To the best of our knowledge, few studies have been undertaken in Europe and based on nationally representative samples.

The goal of our research is to examine whether the level of parental monitoring is associated with substance use among Swiss adolescents and to assess whether this effect remains when these adolescents have consuming peers. We

hypothesize that parental monitoring will decrease adolescents' substance use, even in the presence of consuming peers.

Methods

Data were drawn from the Swiss participation in the 2007 European School Project on Alcohol and Other Drugs (ESPAD) survey. ESPAD is a European study carried out every 4 years and aiming at investigating the use of alcohol, tobacco, and other drug use and attitudes towards these substances among students aged 15 and 16 years (see www.espad.org for more information). The Swiss part of the survey consisted of a nationally representative sample which included 7,611 adolescents (48.8 % boys). The sample was randomly drawn from 418 independent classes issued from 348 public schools (8th, 9th, and 10th grades) around the country. The target population was limited to students who were present in class on the day of data collection. The participation was voluntary and the survey anonymous. Data collection took place through a self-administrated questionnaire during one classroom period under the same circumstances as a written exam. All analyses take into account the design of the study with adolescents being nested in classrooms.

To measure parental monitoring, we created a scale based on four statements: (1) "My parent(s) set definite rules about what I am allowed to do at home," (2) "My parent(s) set definite rules about what I can do outside the home," (3) "My parent(s) know whom I am with in the evenings," and (4) "My parent(s) know where I am in the evenings." Each one had five possible answers dichotomized into "almost always/often" (coded 1 and defined as high monitoring) and "sometimes/seldom/almost never" (coded 0 and defined as low monitoring). We added the four propositions to construct a 0 to 4 scale representing increasing levels of parental monitoring (Cronbach's $\alpha=0.62$), with each increase in the scale representing one more rule being applied.

We analyzed the use of four substances in the previous 30 days: smoking, alcohol misuse (drunkenness), cannabis use, and ecstasy use. All of them were dichotomized into *never* and *at least once*. To measure the number of consuming peers (tobacco smoking, alcohol misuse, cannabis, or ecstasy use) each substance use variable was dichotomized into: "none/a few/some" (coded 0) and "most/all" (coded 1). We also included in the analysis several variables that could play a role in the effect of parental monitoring on adolescent substance use such as: age, gender, self-reported family socioeconomic status, family structure (parents together /other) and satisfaction with the relationship with mother, father, and friends ("very satisfied/satisfied" (coded 1), "indifferent/not so satisfied/not at all satisfied/there is no

such person” (coded 0)). To assess family socioeconomic status, we used the following question: “In comparison to other Swiss families, you find your financial situation to be...” with seven possible answers ranging from “very much better off” to “very much less well off” which were then trichotomised into “above average”, “average,” and “below average.”

All analyses were conducted with Stata10 [27]. In the bivariate analysis, we compared each reported level of parental monitoring with the consumption of each substance and the characteristics of the sample. We used Chi square tests for categorical variables and ANOVA for continuous variables. Logistic regressions with results expressed as odds ratio with their corresponding 95 % confidence intervals were performed to highlight a possible influence of parental monitoring on substance use. A second set of regressions also included the influence of peers on consumption as an independent factor. Finally, we also tested for an interaction between parental monitoring and the influence of peers.

Results

The mean age of the sample was 14.64 years, with 48.8 % being male. The majority of adolescents reported an average socioeconomic status, an intact family structure, and a satisfactory relationship with their mother, father, and peers. Concerning parental monitoring, the more frequently cited statements were knowledge of with whom (77 %) and where (77.2 %) the adolescent was in the evening. However, only 52.7 % of parent(s) had definite rules about what the adolescent could do outside the home. The two most strongly associated statements were knowledge of with whom they were and knowledge of where they were (Spearman’s rank correlation=0.6), followed by rules at home and rules outside the home (0.47). The remaining four correlations were all comprised between 0.16 and 0.21. Concerning substance use, 24.3 % had smoked at least one cigarette, 14.5 % had been drunk, 12.7 % had used cannabis, and 1 % had tried ecstasy at least once during the last 30 days (Table 1). The most significant statement inversely associated with any of the studied substances was knowledge of where they were, with Spearman’s correlations ranging from −0.21 (tobacco) to −0.10 (ecstasy).

Table 2 shows the bivariate analysis according to the level of parental monitoring. The majority of adolescents had high level of parental monitoring with more than half of the sample being in levels 3 (22.3 %) and 4 (34.2 %), while only 7.6 % received low parental monitoring (level 0). High parental monitoring was associated with younger age, females, high socioeconomic status, intact family structure, and satisfactory relationships with mother, father, and peers.

Table 1 Characteristics of the sample ($N=7,611$)

Mean age (years \pm standard error)	14.64 \pm 0.01 [Range: 12–18] (%)
Gender (male)	48.8
Socioeconomic status	
Below average	8.3
Average	57.8
Above average	33.9
Family structure (parents together)	75.8
Satisfactory relationship with mother	85.1
Satisfactory relationship with father	77.5
Satisfactory relationship with peers	92.0
Smoking in last 30 days	24.3
Alcohol misuse in last 30 days	14.5
Cannabis use in last 30 days	12.7
Ecstasy use in last 30 days	1.0
Most peers using tobacco	22.6
Most peers using alcohol	17.8
Most peers using cannabis	6.1
Most peers using ecstasy	0.7
Parental monitoring statements	
Defined rules at home	63.8
Defined rules outside the home	52.7
Knowledge with whom they are	77.0
Knowledge where they are	77.2

Overall, smoking, alcohol misuse, and cannabis or ecstasy use decreased as parental monitoring increased. For example, the prevalence of having been drunk or having used cannabis during the last 30 days was more than 3 times higher if the adolescent had low monitoring than if he/she had high parental monitoring (28.4 vs. 9.1 % for alcohol, 25.3 vs. 7.7 % for cannabis). Moreover, high parental monitoring decreased the prevalence of having consuming peers: an adolescent receiving high parental monitoring reduced approximately in half the prevalence of having tobacco or alcohol consuming peers compared to one with low parental monitoring (17.8 vs. 35.4 % for tobacco, 14 vs. 25.7 % for alcohol).

Table 3 shows the multivariate analysis of the level of parental monitoring on the consumption of each substance with low monitoring as the reference category and controlling for gender, age, self-reported socioeconomic status, family structure, and satisfactory relationship with mother/father/friends. Results revealed that even when controlling for these variables, high parental monitoring decreased the prevalence of all the investigated substances. For alcohol misuse and ecstasy use, the positive effect of parental monitoring was already demonstrated after introducing one single level of monitoring. For smoking and cannabis use, results were slightly different and positive

Table 2 Bivariate analysis comparing all studied variables according to the level of parental monitoring ($N=7,611$)^a

	Level of parental monitoring ^b					<i>p</i> value
	0 577 (7.6 %)	1 704 (9.3 %)	2 1,848 (24.3 %)	3 1,725 (22.7 %)	4 2,757 (36.2 %)	
Mean age (years ± standard error)	14.8±0.05	14.7±0.04	14.7±0.02	14.6±0.02	14.5±0.02	<0.001
Gender (male)	60.0 %	55.3 %	50.3 %	47.4 %	44.8 %	<0.001
SES (below average)	12.0 %	10.1 %	8.3 %	8.5 %	7.0 %	0.001
SES (average)	59.3 %	56.7 %	57.1 %	58.7 %	57.6 %	
SES (above average)	28.8 %	33.2 %	34.6 %	32.9 %	35.4 %	
FS (parents together)	53.0 %	69.3 %	74.7 %	79.2 %	80.8 %	<0.001
SR with mother	60.5 %	75.6 %	84.9 %	87.7 %	91.0 %	<0.001
SR with father	51.8 %	65.9 %	77.1 %	80.6 %	84.2 %	<0.001
SR with friends	74.0 %	91.6 %	93.2 %	93.1 %	94.3 %	<0.001
Smoking	43.5 %	38.3 %	25.4 %	21.6 %	17.7 %	<0.001
Alcohol misuse	28.4 %	20.2 %	17.3 %	13.4 %	9.1 %	<0.001
Cannabis use	25.30 %	21.3 %	14.6 %	11.0 %	7.7 %	<0.001
Ecstasy use	4.68 %	1.1 %	1.1 %	0.6 %	0.5 %	<0.001
Peers using tobacco	35.36 %	32.8 %	25.7 %	18.4 %	17.8 %	<0.001
Peers using alcohol	25.65 %	27.8 %	18.5 %	16.2 %	14.0 %	<0.001
Peers using cannabis	12.65 %	9.0 %	7.1 %	4.5 %	4.3 %	<0.001
Peers using ecstasy	2.95 %	0.9 %	0.8 %	0.4 %	0.4 %	<0.001

^a Chi-square test was used for categorical variables and ANOVA for continuous variables

^b Scale based on the sum of the four statements related to parental rules

SES socioeconomic status, FS family structure, SR satisfactory relationship

effects appeared only when two levels of parental monitoring were reached.

Table 4 shows the same multivariate analysis when peers consuming tobacco, alcohol, cannabis, and ecstasy were added as covariates. Overall, the results remained essentially the same. Finally, we also estimated a model including an interaction term between parental monitoring and consuming peers, but this interaction was nonsignificant and its introduction did not impact significantly the rest of the model (data not shown).

Discussion

Our results show that parental monitoring is associated with a decreased risk of substance use among adolescents in Switzerland. This finding is consistent with other studies [4, 7, 9, 22]. Our results also show that only one single level of parental monitoring has a protective effect on alcohol misuse and ecstasy use, while two are needed for smoking and cannabis use. This effect becomes stronger as the level of parental monitoring increases. Consequently, monitoring

Table 3 Multivariate analyses of the level of parental monitoring (presented as odds ratio with 95 % confidence interval; reference category: no monitoring) on the consumption of each substance

Level of parental monitoring ^b	Substances			
	Tobacco	Alcohol	Cannabis	Ecstasy
Level 1	0.91 [0.71–1.15]	0.68 [0.51–0.89] ^a	0.87 [0.66–1.14]	0.29 [0.12–0.70] ^a
Level 2	0.53 [0.43–0.66] ^a	0.62 [0.49–0.78] ^a	0.60 [0.47–0.77] ^a	0.37 [0.20–0.71] ^a
Level 3	0.46 [0.37–0.57] ^a	0.49 [0.38–0.62] ^a	0.46 [0.36–0.60] ^a	0.22 [0.10–0.47] ^a
Level 4	0.38 [0.31–0.47] ^a	0.33 [0.26–0.43] ^a	0.33 [0.26–0.43] ^a	0.19 [0.10–0.40] ^a

^a Statistically significant results

^b Controlled for age, gender, socioeconomic status, family structure, satisfactory relationship with mother, satisfactory relationship with father, and satisfactory relationship with friends

Table 4 Multivariate analyses of the level of parental monitoring (presented as odds ratio with 95 % confidence interval; reference category: no monitoring) on the consumption of each substance including consuming peers as covariate

Level of parental monitoring ^b	Substances			
	Tobacco	Alcohol	Cannabis	Ecstasy
Level 1	0.90 [0.69–1.17]	0.61 [0.45–0.81] ^a	0.93 [0.68–1.26]	0.36 [0.15–0.89] ^a
Level 2	0.55 [0.44–0.69] ^a	0.64 [0.50–0.82] ^a	0.65 [0.49–0.85] ^a	0.47 [0.22–1.01]
Level 3	0.54 [0.43–0.69] ^a	0.51 [0.40–0.67] ^a	0.53 [0.40–0.71] ^a	0.32 [0.13–0.75] ^a
Level 4	0.43 [0.35–0.55] ^a	0.35 [0.27–0.46] ^a	0.37 [0.28–0.49] ^a	0.26 [0.12–0.59] ^a
Consuming peers	5.93 [5.24–6.71] ^a	4.60 [3.98–5.32] ^a	9.98 [8.05–12.38] ^a	95.89 [49.90–184.24] ^a

^a Statistically significant results

^b Controlled for age, gender, socioeconomic status, family structure, satisfactory relationship with mother, satisfactory relationship with father, satisfactory relationship with friends, and having substance consuming peers

seems to be a way for parents to significantly reduce the prevalence of substance use during adolescence.

Adolescence is a critical period for substance use with high levels of experimentation and initiation [5, 31, 33]. Through the mechanism of peer pressure and modeling, having consuming peers during adolescence greatly increases rates of substance use [12, 13, 26, 30]. As found partially by Wood et al. [32], Barnes et al. [3], and Marshall and Chassin [19] in their studies analyzing the influence of parents and peers on adolescent alcohol use, our results support that having or not having consuming peers has almost no influence on the protective effect of parental monitoring on substance use during adolescence. Actually, parental monitoring is important above and beyond the effects of peers, probably also because they have fewer consuming peers. Indeed, as there are relatively few differences between both multivariate analyses (Tables 3 and 4), our study indicates that the prevalence of adolescent substance use decreases even when adolescents have consuming peers and that the protective effect of parental monitoring seems to be strong enough to counterbalance the negative effect of peer pressure on adolescent substance use. Encouraging parents to improve their knowledge about with whom or where adolescents are in the evenings and to establish rules about what is allowed outside or inside the house are thus ways to limit the negative influence of consuming peers on adolescent substance use.

The main strength of our study is that it is based on a large nationally representative sample of Swiss adolescents. However, several limitations need to be stressed. First, the cross-sectional design of the analysis does not allow establishing causality, but the dose-dependent effect of our results seems to support the possibility of causality. Second, data were self-reported. However, the fact that the questionnaire was anonymous should minimize response bias. Finally, our scale had a relatively low alpha value (0.62).

In conclusion, it seems necessary to remind parents that they can have an important role to play in the prevention of adolescent substance use. Parental monitoring is associated with decreased substance use and a lower association with consuming peers. As the prevention of substance use during adolescence is an essential way to improve their future, general practitioners and pediatricians need to encourage parents to set simple and clear rules for their children about what is allowed and what is not from an early age on and to know about their whereabouts and friends. Such an approach could have a protective effect on adolescent substance use.

Conflict of interest The authors declare that they have no conflict of interest.

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