Parental monitoring: an easy way to decrease adolescent substance use?

Lionel Tornay
Pierre-André Michaud
Michael L Wilson
André Berchtold
Joan-Carles Surís
Gerhard Gmel

Groupe de recherche sur la santé des adolescents (GRSA)
Institut universitaire de médecine sociale et préventive (IUMSP)
Lausanne, Suisse

ABSTRACT

Objective: 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.

Methods: Nationally representative sample from the Swiss participation in the 2007 European School Project on Alcohol and Other Drugs (ESPAD) survey, which included 7611 adolescents issued from public schools (8^{th}-10^{th} 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.

Results: Most adolescents had a high level of parental monitoring and that was associated with younger age, being female, high socioeconomic status, intact family structure and a satisfactory relationship with mother, father and peers. Globally, substance use decreased as parental monitoring increased and high parental monitoring decreased having consuming peers. Results remained essentially the same when consuming peers were added in the analysis.

Conclusions: Parental monitoring has positive effects on adolescent substance use with a reduction of consumption and a lower association with consuming peers, which seems to protect adolescents against their potential negative influence. Encouraging parents to monitor their adolescents' activities and friendships by establishing rules about what is allowed or not are simple ways to limit the negative influence of consuming peers on adolescent substance use.

INTRODUCTION

Substance use is associated with a number of health and social problems. Tobacco, cannabis and alcohol misuse are linked with physical and psychosocial ill-health, unsafe sexual practices and crime [1-5]. Furthermore, the care and excess morbidity associated with substance use are linked with increased costs for healthcare and legal systems [6, 7].

Most experimentation with substances begins during adolescence [8-10]. 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, globally 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 life, and 13% and 11% of them, respectively, have used cannabis in the last thirty days. Compared to the HBSC average rates, Swiss 15 year-olds show lower rates of smoking and alcohol misuse but higher rates of cannabis consumption. [11]

Several factors are associated with increased substance use in adolescence, and among these are the relationship that adolescents have with their parents and peers. Previous research has shown that spending time with friends that use substances greatly increases the risk of consumption [12-15]. Research has also shown that authoritative [16] parenting and high parent involvement, support or monitoring [17] are linked with lower levels of substance use by adolescents and have a protective effect both on the initiation and the continuation of consumption [18-21].

Earlier studies concerning adolescent substance use have examined parental monitoring controlling for peers' use, but with divergent results. For example, Steinberg et al. [22] showed in their longitudinal study on adolescent substance use that the influence of peer groups on substance use transitions does not vary as a function of parental monitoring. Alternatively, Kiesner et al. [23] 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. [24] 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. [25] established that having deviant peers was a risk factor for engaging in externalizing behavior such as substance use, but that parents may play a critical role in diminishing that risk. Different studies [26-28] 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. Furthermore, Wood et al. [29] and Barnes et al. [30] support that parental influence provides a buffering effect against peers' influence on alcohol involvement. The same result was found by Marshall & Chassin [31] 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.

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.

METHOD

Data were drawn from the Swiss participation in the 2007 European School Project on Alcohol and Other Drugs (ESPAD) survey, a nationally representative sample which included 7611 adolescents (3717 boys). The sample was drawn from 418 independent classes issued from public schools (8^{th}, 9^{th} and 10^{th} 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 test.

To measure parental monitoring we created a scale based on four statements: a) “My parent(s) set definite rules about what I can do at home” b) “My parent(s) set definite rules about what I can do outside the home” c) “My parent(s) know whom I am with in the evenings” and d) “My parent(s) know where I am in the evenings”. Each one had five possible answers dichotomized into “almost always/often” (coded 1) and “sometimes/seldom/almost never” (coded 0). We added the four propositions to construct a 0 to 4 scale representing increasing levels of parental monitoring (Cronbach’s alpha = 0.69).

We analyzed four consumptions 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 self-reported number of peers that consumed (smoking, alcohol misuse, cannabis or ecstasy use) a dichotomous variable was created for each substance: “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 (low, average, high), 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)).

All analyses were conducted with Stata10 [32]. 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 put into evidence 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

Globally, the mean age of the sample was 14.64 years, with 48.64% 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, knowledge of with whom (76.97%) and where (77.24%) the adolescent was in the evening were the more frequent statements. By comparison, only 52.66% of parent(s) had definite rules about what the adolescent could do outside the home. Concerning substance use, 24.32% had smoked at least one cigarette, 12.69% had used cannabis, 1.04% had tried ecstasy and 14.53% had been drunk at least once during the last thirty days. (Table 1)

Table 2 shows the bivariate analysis according to the level of parental monitoring. The majority of adolescents had a high level of parental monitoring with more than half of the sample being in levels 3 (22.28%) and 4 (34.22%), while only 7.58% received no parental monitoring at all. High parental monitoring was associated with younger age, being female, high socioeconomic status, intact family structure and a satisfactory relationship with mother, father and peers. Globally, 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 thirty days was more than three times higher if the adolescent had no monitoring than if he/she had high parental monitoring (28.42% vs. 9.07% for alcohol, 25.30% vs. 7.65% 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 without parental monitoring (17.77% vs. 35.36% for tobacco, 14.04% vs. 25.65% for alcohol).

Table 3 shows the multivariate analysis of the level of parental monitoring on the consumption of each substance with no 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 having high parental monitoring decreased the prevalence of all the studied 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 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 a co-variate. Overall, the results remained essentially the same. Finally, models including an interaction between parental monitoring and consuming peers proved to be useless, since the interaction was never significant, and we chose not to report their results.

DISCUSSION

Our results show that parental monitoring is associated with a decreased risk of substance use among adolescents. This finding is consistent with other studies [18-21]. Our results also show that only one single level of parental monitoring already has a protective effect on alcohol misuse and ecstasy use, while two are needed for smoking and cannabis use. This effect becomes more significant as the level of parental monitoring increases. Consequently, monitoring seems to be an easy 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 [8-10]. Through the mechanism of peer pressure, having consuming peers during adolescence greatly increases rates of substance use [12-15]. As found partially by Wood et al. [29], Barnes et al. [30] and Marshall & Chassin [31] 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. This effect seems to buffer adolescents against the potential negative influence of consuming peers, probably also because they have fewer consuming peers. Indeed, as there are relatively few differences between both multivariate analyses (Table 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 simple 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 should beef it up. Second, data were self-reported. However the fact that the questionnaire was anonymous should minimize response bias.

In conclusion, it seems necessary to remind parents that they have an important role to play in the prevention of adolescent substance use. Parental monitoring has positive effects on substance use with a reduction of consumption 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 improve their knowledge about their adolescents' activities and friendships and to establish simple and clear rules about what is allowed and what is not. Such an approach has a protective effect on adolescent substance use.

Table 1: Characteristics of the sample (N = 7611)

Mean age (years)	14.64
Gender (male)	48.84%
Socioeconomic status:	
- low	8.29%
- medium	57.78%
- high	33.92%
Family structure (parents together)	75.80%
Satisfactory relationship with mother	85.05%
Satisfactory relationship with father	77.51%
Satisfactory relationship with peers	91.97%
Smoking in last 30 days	24.32%
Alcohol misuse in last 30 days	14.53%
Cannabis use in last 30 days	12.69%
Ecstasy use in last 30 days	1.04%
Most peers using tobacco	22.56%
Most peers using alcohol	17.76%
Most peers using cannabis	6.08%
Most peers using ecstasy	0.72%
Parental monitoring statements:	
- defined rules at home	63.83%
- defined rules outside the home	52.66%
- knowledge whom with	76.97%
- knowledge where	77.24%

Table 2: Bivariate analysis according to level of parental monitoring (N=7611)

	Level of parental monitoring					
	0	1	2	3	4	P
N	577 (7.58%)	704 (9.25%)	1848 (24.28%)	1725 (22.66%)	2757 (36.22%)	
Mean age (years)	14.80	14.72	14.72	14.65	14.54	< 0.001
Gender (male)	59.97	55.26	50.27	47.36	44.83	< 0.001
SES (low)	11.96	10.09	8.28	8.46	6.96	0.001
SES (medium)	59.27	56.68	57.14	58.67	57.64	
SES (high)	28.77	33.24	34.58	32.87	35.40	
FS (parents together)	53.03	69.32	74.73	79.19	80.81	< 0.001
SR with mother	60.49	75.57	84.90	87.71	91.04	< 0.001
SR with father	51.82	65.91	77.06	80.64	84.19	< 0.001
SR with friends	74.00	91.62	93.18	93.10	94.31	< 0.001
Smoking	43.50	38.3	25.43	21.62	17.66	< 0.001
Alcohol misuse	28.42	20.17	17.26	13.39	9.07	< 0.001
Cannabis use	25.30	21.31	14.61	10.96	7.65	< 0.001
Ecstasy use	4.68	1.14	1.14	0.58	0.47	< 0.001
Peers using tobacco	35.36	32.81	25.65	18.43	17.77	< 0.001
Peers using alcohol	25.65	27.84	18.51	16.17	14.04	< 0.001
Peers using cannabis	12.65	8.95	7.09	4.52	4.28	< 0.001
Peers using ecstasy	2.95	0.85	0.76	0.41	0.40	< 0.001

SES = socioeconomic status

FS = family structure

SR = satisfactory relationship

Table 3: Multivariate analyzes of the level of parental monitoring (reference category: no monitoring) on the consumption of each substance.

	Substances			
Level of parental monitoring :	Tobacco	Alcohol	Cannabis	Ecstasy
Level 1	0.91 [0.7–1.15]	0.68 [0.52–0.89]	0.87 [0.66–1.14]	0.29 [0.13–0.67]
Level 2	0.53 [0.4–0.66]	0.62 [0.49-0.78]	0.60 [0.47–0.77]	0.37 [0.20–0.70]
Level 3	0.46 [0.37–0.57]	0.49 [0.38–0.62]	0.46 [0.36–0.60]	0.22 [0.10–0.47]
Level 4	0.38 [0.31–0.47]	0.33 [0.26–0.42]	0.33 [0.26–0.43]	0.19 [0.09–0.40]

Table 4: Multivariate analyzes of the level of parental monitoring (reference category: no monitoring) on the consumption of each substance including consuming peers as co-variate.

	Substances			
Level of parental monitoring :	Tobacco	Alcohol	Cannabis	Ecstasy
Level 1	0.90 [0.70–1.16]	0.61 [0.46–0.81]	0.93 [0.69–1.25]	0.36 [0.14–0.92]
Level 2	0.55 [0.44–0.69]	0.64 [0.50-0.82]	0.65 [0.50–0.84]	0.47 [0.23–0.98]
Level 3	0.54 [0.43–0.69]	0.51 [0.40–0.66]	0.53 [0.40–0.70]	0.32 [0.13–0.74]
Level 4	0.43 [0.35–0.54]	0.35 [0.27–0.45]	0.37 [0.28–0.49]	0.26 [0.12–0.60]
Consuming peers	5.93 [5.24–6.71]	4.60 [3.98–5.32]	9.98 [8.08–12.32]	95.88 [49.01-187.28]

References

[1] Room R, Babor T, Rehm J. Alcohol and public health. Lancet. 2005 Feb 5-11;365(9458):519-30.

[2] Ragin A. The relationship between mental health and substance abuse among adolescents. Rockville, MD: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies 1999.

[3] Kingree JB, Braithwaite R, Woodring T. Unprotected sex as a function of alcohol and marijuana use among adolescent detainees. J Adolesc Health. 2000 Sep;27(3):179-85.

[4] Brook JS, Balka EB, Whiteman M. The risks for late adolescence of early adolescent marijuana use. Am J Public Health. 1999 Oct;89(10):1549-54.

[5] Jessor R. New perspectives on adolescent risk behavior. New York: Cambridge University Press 1998.

[6] Rice DP. Economic costs of substance abuse, 1995. Proc Assoc Am Physicians. 1999 Mar-Apr;111(2):119-25.

[7] Miller TR, Levy DT, Cohen MA, Cox KL. Costs of alcohol and drug-involved crime. Prev Sci. 2006 Dec;7(4):333-42.

[8] Bauman A, Phongsavan P. Epidemiology of substance use in adolescence: prevalence, trends and policy implications. Drug Alcohol Depend. 1999 Jul 1;55(3):187-207.

[9] Young SE, Corley RP, Stallings MC, Rhee SH, Crowley TJ, Hewitt JK. Substance use, abuse and dependence in adolescence: prevalence, symptom profiles and correlates. Drug Alcohol Depend. 2002 Dec 1;68(3):309-22.

[10] Winters KC, Lee CS. Likelihood of developing an alcohol and cannabis use disorder during youth: association with recent use and age. Drug Alcohol Depend. 2008 Jan 1;92(1-3):239-47.

[11] Currie C. Inequalities in young people's health: HBSC international report from the 2005/2006 survey. 2008 [cited; Available from: http://public.eblib.com/EBLPublic/PublicView.do?ptiID=420994

[12] Simons-Morton B, Haynie DL, Crump AD, Eitel P, Saylor KE. Peer and parent influences on smoking and drinking among early adolescents. Health Education & Behavior. 2001 Feb;28(1):95-107.

[13] Urberg KA, Degirmencioglu SM, Pilgrim C. Close friend and group influence on adolescent cigarette smoking and alcohol use. Dev Psychol. 1997 Sep;33(5):834-44.

[14] Dishion TJ, Owen LD. A longitudinal analysis of friendships and substance use: bidirectional influence from adolescence to adulthood. Dev Psychol. 2002 Jul;38(4):480-91.

[15] Duncan SC, Duncan TE, Biglan A, Ary D. Contributions of the social context to the development of adolescent substance use: a multivariate latent growth modeling approach. Drug Alcohol Depend. 1998 Mar 1;50(1):57-71.

[16] Baumrind D. Current patterns of parental authority. Dev Psychol. 1971 1971;4(1):1-103.

[17] Stattin H, Kerr M. Parental monitoring: a reinterpretation. Child Dev. 2000 Jul-Aug;71(4):1072-85.

[18] Chilcoat HD, Anthony JC. Impact of parent monitoring on initiation of drug use through late childhood. J Am Acad Child Adolesc Psychiatry. 1996 Jan;35(1):91-100.

[19] Barnes GM, Reifman AS, Farrell MP, Dintcheff BA. The effects of parenting on the

development of adolescent alcohol misuse: a six-wave latent growth model. J Marriage Fam. 2000 Feb;62(1):175-86.

[20] Bogenschneider K, Wu MY, Raffaelli M, Tsay JC. Parent influences on adolescent peer orientation and substance use: the interface of parenting practices and values. Child Dev. 1998 Dec;69(6):1672-88.

[21] Mott JA, Crowe PA, Richardson J, Flay B. After-school supervision and adolescent cigarette smoking: contributions of the setting and intensity of after-school self-care. J Behav Med. 1999 Feb;22(1):35-58.

[22] Steinberg L, Fletcher A, Darling N. Parental monitoring and peer influences on adolescent substance use. Pediatrics. 1994 Jun;93(6):1060-4.

[23] Kiesner J, Poulin F, Dishion TJ. Adolescent substance use with friends: moderating and mediating effects of parental monitoring and peer activity contexts. Merrill-Palmer Quarterly-Journal of Developmental Psychology. 2010 Oct;56(4):529-56.

[24] Dishion TJ, Nelson SE, Bullock BM. Premature adolescent autonomy: parent disengagement and deviant peer process in the amplification of problem behaviour. J Adolesc. 2004 Oct;27(5):515-30.

[25] Galambos NL, Barker ET, Almeida DM. Parents do matter: trajectories of change in externalizing and internalizing problems in early adolescence. Child Dev. 2003 Mar-Apr;74(2):578-94.

[26] Bahr SJ, Hoffmann JP, Yang X. Parental and peer influences on the risk of adolescent drug use. J Prim Prev. 2005 Nov;26(6):529-51.

[27] Aseltine RH. A reconsideration of parental and peer influences on adolescent deviance. J Health Soc Behav. 1995 Jun;36(2):103-21.

[28] Hoffmann JP, Su SS. Parental substance use disorder, mediating variables and adolescent drug use: a non-recursive model. Addiction. 1998 Sep;93(9):1351-64.

[29] Wood MD, Read JP, Mitchell RE, Brand NH. Do parents still matter? Parent and peer influences on alcohol involvement among recent high school graduates. Psychology of Addictive Behaviors. 2004 Mar;18(1):19-30.

[30] Barnes GM, Hoffman JH, Welte JW, Farrell MP, Dintcheff BA. Effects of parental monitoring and peer deviance on substance use and delinquency. J Marriage Fam. 2006 Nov;68(4):1084-104.

[31] Marshal MP, Chassin L. Peer influence on adolescent alcohol use: the moderating role of parental support and discipline. Appl Dev Sci. 2000 2000/03/01;4(2):80-8.

[32] StataCorp. Stata statistical software: release 10. College Station, TX: StataCorp LP 2007.