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To cite this article: Giulia Perasso, Nicola Carone, Health Behaviour in School Aged Children Lombardy Group 2014 & Lavinia Barone (2019): Alcohol consumption in adolescence: the role of adolescents' gender, parental control, and family dinners attendance in an Italian HBSC sample, Journal of Family Studies

To link to this article: <https://doi.org/10.1080/13229400.2019.1676818>



Published online: 10 Oct 2019.



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Alcohol consumption in adolescence: the role of adolescents' gender, parental control, and family dinners attendance in an Italian HBSC sample

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ABSTRACT

Parental control and family dinners attendance may constitute protective factors against alcohol consumption during adolescence, with different patterns for boys and girls, though evidence thus far have produced mixed findings. The present study analyzed Health Behaviour in School-aged Children (HBSC, 2014) data from 906 adolescents living in Northern Italy (49% boys, $M_{\text{years}} = 16.02$, $SD = 2.4$) to examine: (a) gender differences in alcohol consumption frequency; (b) whether greater parental control would mediate gender differences in alcohol consumption over the last 30 days; (c) whether regular attendance of family dinners would strengthen the effect of parental control in decreasing adolescents' alcohol consumption, functioning differently for boys and girls. Findings indicated that boys reported to attend family dinners more regularly, to consume alcohol more frequently, and to perceive greater paternal control, than girls. Conversely, girls perceived greater maternal control than boys. Both maternal and paternal control did mediate the relation between gender and alcohol consumption, decreasing adolescents' drinking. Unexpectedly, family dinners attendance did not significantly moderate the effect of parental control on the monthly frequency of adolescents' alcohol consumption. Results underline the protective role of parental control against adolescents' alcohol consumption in both girls and boys, regardless of their family dinners attendance.

ARTICLE HISTORY

Received 11 March 2019
Accepted 2 October 2019

KEYWORDS

Adolescence; parental control; gender differences; family dinners; alcohol consumption

Introduction

One hundred and fifty-five million adolescents aged 15–19 years drink alcohol, representing the 26.5% of all adolescents worldwide (World Health Organization, 2014). Prevalence

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rates vary across different countries, with the Europe reporting the highest rate of 15-19-year-old drinkers (43.8%), followed by the Region of the Americas (38.2%) and the Western Pacific Region (37.9%). Concerns about these figures mainly relate to the consequences of alcohol use on adolescents' health and psychological wellbeing, since alcohol consumption during adolescence can lead to verbal learning, memory, attention, and visual-spatial processing alterations (Spear, 2018). Such alterations are associated with later life problems in terms of behaviours, emotional regulation, social relations and academic performance (Brown et al., 2008; Windle et al., 2008). By the same token, as adolescence represents a period of ongoing neurological development, frequent alcohol consumption may also impact on the development of grey and white matter brain structures, leading to poorer cognitive and executive functioning (Squeglia, Jacobus, & Tapert, 2014).

Typically, gender differences have been found in alcohol consumption, across countries and age ranges, with girls consuming less alcohol than boys in terms of both quantity and frequency (World Health Organization, 2014). Along with these data, the Italian National Institute of Statistics (2017) has reported that among adolescents aged between 11–15 years, 11% of boys and 8% of girls had consumed alcohol over the last year, while 0.5% of boys and 0.1% of girls had consumed alcohol over the last month. Most prior studies have explained such gender differences focusing on socialization processes which are particularly salient during adolescence (e.g. peer group affiliation and gender identification) (Schulte, Ramo, & Brown, 2009). By this view, boys would be more likely to consider alcohol consumption as important for participating in, and being accepted by, peer groups than girls, as well as they would interpret alcohol consumption as a path to accede to an aspect of masculinity. Research on masculine norms and social conformity enacted by girls supports this evidence, showing that girls who endorse masculine norms are more prone to alcohol consumption than girls who do not (Iwamoto & Smiler, 2013).

Parental control and alcohol consumption by adolescents

The quality of parent–adolescent relationship may have a crucial role in counteracting adolescents' alcohol use (Kuntsche & Kuntsche, 2016; Ryan, Jorm, & Lubman, 2010). Parental control – defined as the extent to which parents are aware of their children's behaviour in multiple domains and activities (e.g. when children are with their friends, when they are far from home or school, which places they attend during spare time) (Dishion & McMahon, 1998) – has been one of the main aspect of the parent–adolescent relationship to be investigated in relation to adolescents' alcohol consumption (Carroll et al., 2016; van der Vorst, Engels, Meeus, & Deković, 2006; Wilson, Langille, Ogilvie, & Asbridge, 2018; Yap, Cheong, Zaravinos-Tsakos, Lubman, & Jorm, 2017). This has occurred especially because parental control combines awareness, guidance, and communication between parents and adolescents, and thus may foster adolescents' disclosure and trust towards their parents (Kerr, Stattin, & Burk, 2010; Stattin & Kerr, 2000).

Specifically, prior research has indicated that parental control may both decrease the frequency of alcohol consumption in terms of drinks per week (Carroll et al., 2016) and longitudinally function as a protective factor against adolescents' initiation of alcohol use (Yap et al., 2017). Alongside, lower levels of parental control have been found to be associated with heavier alcohol use (Strunin et al., 2015). Of note, the literature has further suggested that adolescents' gender may have a different influence on the association between parental

control and alcohol consumption, with girls perceiving higher parental control than boys (Strunin et al., 2015), and being more likely to consume alcohol in families where the mother is often busy at work, since mothers tend to supervise daughters more, while fathers tend to supervise sons more (Okulicz-Kozaryn, 2010).

Adolescents' family dinners attendance and the frequency of their risk behaviours

Another aspect which has been examined as a protective factor from consuming alcohol in adolescents relates to their participation in family activities (e.g. attending family meals), though the true effectiveness of this variable is still debated. Research has highlighted that the association between the frequency of shared moments in the family routine (e.g. family meals) and adolescents' healthy behaviours could decrease alcohol consumption over the following fourteen years (Abar, Clark, & Koban, 2017). However, the examination of the participation in family activities and meals (Goldfarb et al., 2017; Goldfarb, Tarver, Locher, Preskitt, & Sen, 2015; Goldfarb, Tarver, & Sen, 2014) has produced inconclusive findings. On one hand, this family habit plays a significant role in adolescents' alcohol use reduction (Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger, 2004); on the other hand, the possible confounding role of other family variables (e.g. family connectedness) may have influenced its effect (Goldfarb et al., 2017). Family dinners also seem unable to counteract alcohol consumption after initiation of full-blown substance use (Hoffman & Warnick, 2013), as the amount of time that has passed since the initiation of the alcohol use could influence their preventative effect.

That said though, it is worth noting that several studies have supported the hypothesis of a specific role of family dinners in reducing risky behaviours regardless of the confounding effect of other variables, such as parental monitoring, parental communication, family structure, and socio-demographic factors (Levin, Kirby, & Currie, 2012; Utter et al., 2013). Focusing on health-related outcomes, Villares and Segovia (2006) showed that regular family meals enhance literacy and language skills, school performance, and good eating habits, in turn decreasing risk-taking behaviours. Further research also showed that attending family dinners in adolescence decreases substance consumption, risky sexual activity, depression/suicide, antisocial behaviours, violence, school problems, binge eating, extreme weight loss (Fulkerson et al., 2006), and the frequency of cyber-victimization (Elgar et al., 2014). These data have been also corroborated by a systematic review (Skeer & Ballard, 2013) on studies comparing groups of adolescents who ate with their own families on a regular basis with groups of adolescents who did not frequently eat with their families. Family meal attendance resulted to have a different effect in boys and girls. In their five-year longitudinal study, Eisenberg, Neumark-Sztainer, Fulkerson, and Story (2008) found that the frequency of family meals reduced cigarette, alcohol and marijuana consumption over time in girls, but not in boys. A similar pattern was longitudinally found by White and Halliwell (2011), with girls benefitting the most than boys from family meal attendance.

The present study

In light of the literature discussed above which indicated that parental control (in terms of both mother's and father's awareness about the adolescent's habits and behaviours outside

home) likely buffers adolescents' alcohol consumption, as well as the frequency of family dinners attendance can constitute a protective factor against alcohol consumption (though its effectiveness is still debated due to the possible confounding effect of other family factors, such as family coherence), the present study examined the associations between adolescents' alcohol consumption over the last month, maternal and paternal control, and family dinners attendance taking into account whether adolescents' gender might further determine different patterns of interaction. Data were gathered from the Health Behaviour in School-aged Children (HBSC) Italian 2014 survey, conducted with a large sample of adolescents living in the northern Italian region of Lombardy, since epidemiological studies have noted that alcohol consumption in northern areas is more frequent compared to central and southern areas (Asciutto et al., 2016).

Specifically, basing on prior studies, the following three hypotheses were tested:

- 1) Boys will consume alcohol more frequently and will perceive higher paternal control relative to girls. Alongside, girls will consume alcohol less frequently and will perceive higher maternal control relative to boys.
- 2) Paternal control will mediate the relationship between adolescents' gender and alcohol consumption, decreasing boys' drinking frequency more than girls. Alongside, maternal control will mediate the relationship between adolescents' gender and alcohol consumption, decreasing girls' drinking frequency more than boys.
- 3) Regular attendance of family dinners will strengthen the effect of parental control in decreasing adolescents' alcohol consumption. Whether girls and boys might differently benefit from this protective factor will be further explored.

Materials and methods

Participants

A total of 906 10th grade adolescents from 79 classes (49% boys, $M_{\text{years}} = 16.02$, $SD = 2.4$) participated in the survey. The expected sample size was 1200 participants, with a drop-out rate of 24.5%, due to adolescents' absence from school during the administration day, lacking family consent, refusing to take part to the procedure, time constraints, or excessive delays in the recruitment procedure. A total of 86% of participants reported a medium or high level of family economic affluence on the Family Affluence Scale; most of the adolescents' families were Italian (84%), while 26% reported other nationalities (e.g. Romanian, Albanian, Moroccan, Ukrainian, and other non-specified nationalities).

Procedure

HBSC is an international study promoted by the World Health Organization. Since 1982, the HBSC study has been periodically conducted in different European countries, North American countries, and Israel. In Italy, the 2014 HBSC survey was implemented through a collaboration between the University of Turin and the National Research Coordination Centre and a collaboration between the Local Prevention Network, Regional School Office, Territorial School Offices, and local medical and prevention institutions

within each region. Cluster sampling was implemented to randomly select schools from the alphabetically ordered list of those based on the territory. Afterwards, stratified sampling was implemented within schools to randomly select classes representative of the 10th graders who would have participated in the HBSC protocol. The survey was administered in May 2014 during school days, as it took nearly 60 min for completion. Health service operators carried out the administration in the classroom. Ethical approval was sought from the involved institutions under the lead of Prof. Franco Cavallo (Principal Investigator for HBSC in Italy). Regarding schools, approval from the school boards was required. Afterwards, schools informed families about the procedure and its aims. Parents also formally allowed the participation of minors in the study through completion of consent documentation. Additionally, every participant was informed about the study and was guaranteed confidentiality about his/her data.

Measures

Parental control was measured through five questions derived from Stattin and Kerr (2000), investigating adolescents' perceptions of their mothers' and fathers' awareness of their activities in multiple domains (i.e. friends, money, places visited in the evening, places visited after school, leisure time activities). Questions were measured on a 4-point Likert scale, where 1 = high awareness, 2 = low awareness, 3 = absence of awareness, and 4 = absence of mother/father in the family. Three levels of parental control were computed: low (1 through 1.75), medium (1.76 through 2.25), and high (2.26 through 3). This measure has been validated on 15-year-old Italian adolescents (Miranda, Bacchini, & Affuso, 2012). In the present study, computed parental control measures showed good internal consistency (for maternal control, Cronbach's α was .80; for paternal control, Cronbach's α was .89).

Family dinners frequency was assessed by the item, "How often do you have dinner with your mother or with your father?". Participants rated their answers from 1 to 6 by frequency, where 1 = never, 2 = less than once a week, 3 = 1-2 times per week, 4 = 3-4 times per week, 5 = 5-6 times per week, 6 = daily.

Alcohol use was measured in terms of alcohol consumption frequency over the last month. Participants answered the item, "How often did you drink alcohol in the last 30 days?", rating their answers from 1 to 7, where 1 = never, 2 = 1-2 days, 3 = 3-5 days, 4 = 6-9 days, 5 = 10-19 days, 6 = 20-29 days, 7 = 30 days. Regarding the time range of alcohol consumption, the World Health Organization and the European Alcohol Policy guidelines (2016) have stated that there are three main time ranges for measuring alcohol and drug use, which are also included in the HBSC survey: "at least once in your life", "in the last year", and "in the last month". However, given our interest in recent behaviour and considering that self-report measures covering a year or more may be influenced by monthly variation in the frequency of alcohol consumption due to seasonal confounding effects (Knudsen & Skogen, 2015), the options "at least once in your life" and "in the last year" were not included. In contrast, monthly alcohol consumption is a commonly used time range measure in survey self-report studies (Beard et al., 2015), as it captures different frequencies of behaviour (e.g. from never to daily) focusing on the most recent individual experiences.

Data analysis

The IBM Statistical Package for Social Science (SPSS) 25th version was used to perform statistical analyses. Missing data, which were very low (i.e. adolescents' gender = 0%; family dinners attendance = 0.44%; alcohol consumption = 1.21%; maternal control = 1.99%; paternal control = 4.97%), were handled using full information maximum likelihood. Before testing our hypotheses, descriptive analyses were run to examine scores frequency and distribution across measures. Pearson product-moment correlation (Pearson's r) was used to detect significant correlations among the variables of interest. Comparisons in family dinner attendance, the presence of parental control, and alcohol consumption, as a function of adolescents' gender were performed through independent t-tests with a 95% confidence interval (CI) for the mean difference. To detect whether parental control mediated the association between gender and alcohol consumption, as well as whether family dinner attendance moderated this relationship, we conducted two moderated mediation analyses, exploring the influence of parental control of each parent on alcohol consumption using PROCESS Macro for SPSS (Hayes, 2012).

Results

Associations between family dinner frequency, alcohol consumption over the last 30 days, paternal control, and maternal control are displayed in Table 1.

Gender differences in family dinner frequency, alcohol consumption over the last 30 days, paternal control, and maternal control are displayed in Table 2.

The interplay of gender, parental control, and family dinners attendance in predicting adolescents' alcohol consumption

To determine whether the relationship between adolescents' gender and alcohol consumption was mediated by parental control (Hypothesis 2), conditioned by the frequency of

Table 1. Associations among family dinners attendance, alcohol consumption over the last 30 days, paternal control, and maternal control ($n = 906$).

Variables	1	2	3	4
1. Family dinners attendance	1			
2. Last 30 days alcohol consumption	-.06	1		
3. Paternal control	.18**	.19**	1	
4. Maternal control	.11**	-.31**	.54**	1

Note: ** $p < .01$.

Table 2. Gender differences in family dinners attendance, adolescents' alcohol consumption over the last 30 days, paternal control, and maternal control.

	Boys ($n = 462$)		Girls ($n = 444$)		95% CI		t(df)	d
	M	SD	M	SD	Lower	Upper		
Family dinners attendance	5.62	0.71	5.45	1.08	.055	.295	2.86(763)*	.19
Alcohol consumption	2.13	1.23	1.86	1.05	.120	.419	3.54(892)*	.24
Father's control	2.40	0.50	2.32	0.55	.017	.155	2.45(904)*	.15
Mother's control	2.59	0.38	2.69	0.36	-.151	-.054	-4.14(904)*	.27

Note: CI = Confidence Interval.

* $p < .05$.

family dinners attendance (Hypothesis 3), two moderated mediation models were tested using maternal control (Model 1) and paternal control (Model 2) as mediators (see Tables 3 and 4).

Regarding Model 1, gender and maternal control accounted for significant variance in adolescents' alcohol consumption over the last 30 days, conditioned by the frequency of family dinners attendance, $F(4,901) = 25.93$, $p < .001$, $R^2 = .10$. Findings showed that boys consumed more alcohol than girls; that girls perceived greater maternal control; and that greater maternal control reduced adolescents' alcohol consumption. However, family dinners attendance neither was directly associated with alcohol consumption nor moderated the effect of maternal control on adolescents' alcohol consumption. Overall, results from Model 1 indicated that girls who perceived greater maternal control were less prone to consume alcohol, regardless of their frequency of family dinners attendance.

Alongside, when paternal control was used as mediator, gender and paternal control accounted for significant variance in adolescents' alcohol consumption over the last 30 days, conditioned by the frequency of family dinners attendance, $F(4,901) = 13.85$, $p < .001$, $R^2 = .06$. Findings showed that boys reported to consume more alcohol, and to perceive greater paternal control than girls; as well as, greater paternal control reduced

Table 3. The interplay of gender, maternal control, and family dinners attendance in predicting adolescents' alcohol consumption over the last 30 days: moderated mediation model.

Variable	Outcome	<i>B</i>	<i>SE</i>	<i>t</i>	95% CI	
					Lower	Upper
Gender	Maternal control	.28***	.06	4.39	.16	.41
Gender	Alcohol consumption over the last 30 days	-.17**	.06	-2.65	-.29	-.04
Maternal control	Alcohol consumption over the last 30 days	-.28***	.03	-8.71	-.35	-.22
Family dinners attendance	Alcohol consumption over the last 30 days	-.04	.03	-1.14	-.10	.03
Maternal control X Family dinners attendance	Alcohol consumption over the last 30 days	.04	.03	1.45	-.01	.10

Note: Gender was coded as boy = -1, girl = 1. CI = Confidence Interval.

** $p < .01$; *** $p < .001$.

Table 4. The Interplay of Gender, Paternal Control, and Family Dinners Attendance in Predicting Adolescents' Alcohol Consumption: Moderated Mediation Model.

Variable	Outcome	<i>B</i>	<i>SE</i>	<i>t</i>	95% CI	
					Lower	Upper
Gender	Paternal control	-.15*	.06	-2.34	-.28	-.02
Gender	Alcohol consumption over the last 30 days	-.28***	.06	-4.36	-.41	-.16
Paternal control	Alcohol consumption over the last 30 days	-.19***	.03	-5.80	-.26	-.13
Family dinners attendance	Alcohol consumption over the last 30 days	-.04	.03	-1.33	-.11	.02
Paternal control X Family dinners attendance	Alcohol consumption over the last 30 days	.01	.03	.31	-.05	.07

Note: Gender was coded as boy = -1, girl = 1. CI = Confidence Interval.

* $p < .05$; *** $p < .001$.

adolescents' alcohol consumption. Again, family dinners attendance neither was directly associated with alcohol consumption nor moderated the effect of paternal control on adolescents' alcohol consumption. Overall, results from Model 2 indicated that boys who perceived greater paternal control were less prone to consume alcohol, regardless of their frequency of family dinners attendance. For the sake of parsimony, statistical values of Model 1 and Model 2 are only reported in Table 3 and Table 4, respectively. See Figures 1 and 2 for graphical representations of Model 1 and Model 2.

Discussion

This study explored 16-year-old adolescents' patterns of alcohol consumption, investigating gender differences and the role of family-related variables (i.e. parental control and frequency of family dinners) in preventing it. The findings support previous evidence that daughters perceive themselves as more controlled by mothers, whereas sons perceive themselves as more controlled by fathers (Okulicz-Kozaryn, 2010). Overall, parental control mediated the relationship between gender and alcohol consumption, reducing alcohol consumption over the last month (Carroll et al., 2016; van der Vorst et al., 2006; Wilson et al., 2018; Yap et al., 2017). However, contrary to our expectations, family dinners did not strengthen the relationship between parental control and alcohol consumption for either boys or girls.

To the best of our knowledge, this is the first study examining the joint effect of both maternal and paternal control, and family dinner frequency on adolescents' alcohol consumption. Moderated mediation analysis allowed us to observe different interactions

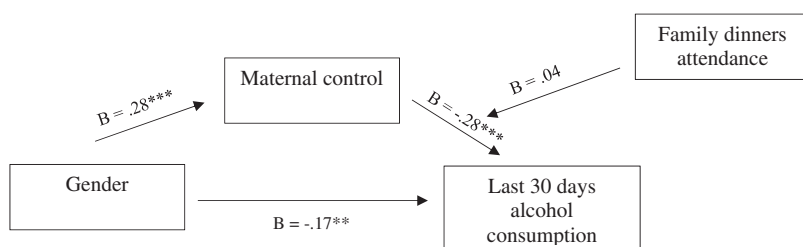


Figure 1. Moderated Mediation Model with Maternal Control as a Mediator.

Note: Gender was coded as boy = -1, girl = 1. ** $p < .01$; *** $p < .001$.

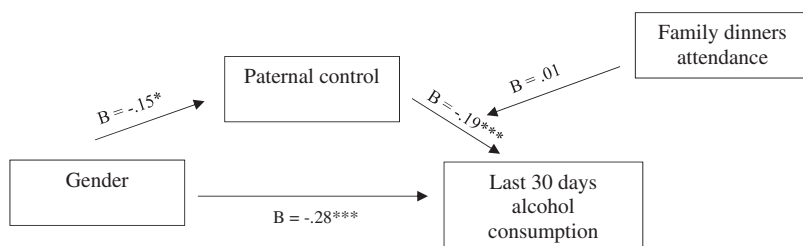


Figure 2. Moderated Mediation Model with Paternal Control as a Mediator.

Note: Gender was coded as boy = -1, girl = 1. * $p < .05$; *** $p < .001$.

among these factors, leading us to principally note that for both boys and girls a variable defining the quality of the adolescent–parent relationship (i.e. parental control) may be effective in counteracting alcohol consumption regardless of a variable quantitatively defining the same relationship (i.e. frequency of family dinners). This evidence could represent an important contribution for research and clinical applications, as parental control was measured in terms of awareness. In particular, parental control indicated how much a mother or a father was informed about her/his daughter's or son's everyday life (Dishion & McMahon, 1998; Kerr et al., 2010; Stattin & Kerr, 2000). According to this definition, parental control does not constitute a form of direct supervision of the adolescent but derives from support and communication fostering a trustful relation. Thus, the present study is also informative to different family configurations, such as divorced parents and full-time working parents. In these families, in fact, parents can also protect their children's health from alcohol use by improving the quality of their relationship (e.g. communication, support, trust), regardless of the amount of time they spend together and the frequency of family activities. In line with this, evidence-based intervention programmes have demonstrated to improve the relational exchange quality between parents and adolescents to combat risky behaviours and alcohol consumption by adolescents (Giannotta, Ortega, & Stattin, 2013).

However, the current study presents some limitations that should be discussed. First, the HBSC survey (2014) is a self-report protocol and consequently presents a risk for social bias in participants' completion. Such limitations could be overcome by the integrative use of qualitative and multi-informant procedures. Furthermore, the generalizability of the findings is restricted by a number of factors, including respondents' geographical provenience (i.e. Italian region of Lombardy), as there is evidence that adolescents from North Italy present higher rates of alcohol consumption than their counterparts coming from central and southern regions (Asciutto et al., 2016). Alongside, cultural variations in family dinners may further limit the findings generalizability, with Italian family dinner practices and routines being likely different from other cultural contexts. However, there is growing evidence that, even considering cultural variability, family dinners constitute universal occasions for members not only to engage in the activities of feeding and eating but also to forge family contact and communication, as well parental involvement (Ochs & Shohet, 2006), which in turn may promote adolescent health and buffer the impact of stressful situations on adolescent functioning (Elgar et al., 2014; Fulkerson et al., 2006; Skeer & Ballard, 2013). A further limitation refers to the statistical power of moderated mediation models as they presented low R-squared values, possibly due to other intervening factors explaining variance, but which were not investigated in this study (Fairchild & MacKinnon, 2009). Finally, due to the characteristics of the HBSC protocol design, parental control was investigated only among 10th graders. Future longitudinal studies are thus required to clarify the impact of age on the interplay among gender, parental control, family dinners, and alcohol consumption over time. Extending the study from a focus on the Lombardy region to national and international comparisons could also represent another possible approach to deepen such investigation.

Notwithstanding these limitations, the study findings may assist in tailoring family-based prevention programme of alcohol consumption between adolescents on the basis on several defining characteristics, such as gender and levels of parental monitoring and frequency of family dinners. The findings, in fact, indicated that boys are more likely to

drink relative to girls in a one-month time range. Moreover, the association between gender and alcohol consumption was mediated by the parental control from each parent, but mothers tended to supervise daughters more than sons, whereas fathers tended to exercise more control over sons. Overall, parental control mediated the relationship between gender and alcohol consumption, decreasing adolescents' monthly frequency of alcohol consumption. All in all, these data can assist a wide range of professionals interacting with adolescents and their families (e.g. educators, psychologists, social workers), indicating that empowering the quality of parent–adolescent interaction in terms of awareness and disclosure is of primary importance, regardless of their participation in shared family dinners.

Acknowledgements

In Italy, the study was carried out with the coordination of the National HBSC Group and the Ministry of Health under the lead of Prof. Franco Cavallo (Principal Investigator for Italy). The study is part of the Project “Sistema di indagini sui rischi comportamentali in età 6–17 anni” promoted and financed by the Ministry of Health (capitolo 4393/2005-CCM). The Lombardy study was implemented thanks to the coordinated action of the HBSC Lombardy Group, which included the Regional Coordination HBSC study Lombardy: Corrado Celata e Liliana Coppola (Regione Lombardia DG Welfare); the MIUR (Ministry of Education, Universities and Research, Italy) – School Office Region Lombardy: Bruna Baggio; the Regional Research Group: Veronica Velasco, Marika Lavatelli, Giusi Gelmi, and Corrado Celata; the Health Protection Agency Referents: Bergamo Luca Biffi, Brescia Margherita Marella, Brianza Carlo Pellegrini, Ornella Perego, Insubria Walter De Agostini, Manuel Benedusi, Milano Città Metropolitana Corrado Celata, Paola Duregon, Alessandra Meconi, Celeste Zaghenò, Montagna Valentina Salinetti, Marina Salada, Pavia Elisabetta Mauri, Val Padana Valter Drusetta, and Leone Armando Lisè; the Territory School Office Referents: UST Bergamo: Antonella Giannellini, UST Brescia: Federica Di Cosimo, UST Como: Laura Peruzzo, UST Cremona: Tullia Guerrini Rocco, UST Lecco: Jessica Sala, UST Lodi: Claudia Zoppi, UST Mantova: Barbara Artioli, UST Milano: Laura Stampini, UST Monza-Brianza: Maristella Colombo, UST Pavia: Emanuela Farina, UST Sondrio: Daniela Marchesi, and UST Varese: Linda Casalini.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This study did not receive any funding.

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