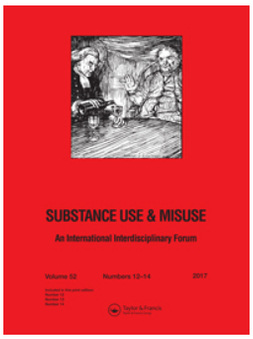

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ORIGINAL ARTICLE

Maternal Problem Drinking and Child Mental Health

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ABSTRACT

Background: Offspring of individuals with alcohol use disorders have been shown to have elevated risk for mental health problems. *Objectives*: To examine the association between maternal problem drinking and child mental health as assessed by three informants in three European countries. *Methods*: Data were drawn from the School Child Mental Health in Europe study. Maternal alcohol use was assessed using the alcohol use disorders identification test. Child mental health was assessed using the mother and teacher versions of the strengths and difficulties questionnaire, and the child self-reported Dominic interactive. Analyses were performed on 2,678 individuals, 6–11 year olds. *Results*: Adjusting for variables associated with maternal drinking, among children eight years old or younger, excessive drinking was not significantly associated with mental health problems, whether reported by the mother, teacher or by the child. However, among girls eight years old and above, problem drinking was associated with conduct problems as reported by the mother (OR = 4.19), teacher reported total difficulties (OR = 4.69), and peer relationship problems (OR = 8.86). It was also associated with the presence of any child-reported disorder (OR = 3.88), externalizing (OR = 5.55) and internalizing disorders (OR = 4.42). *Conclusions/Importance*: Adjusting for sociodemographic variables and for psychological distress, maternal problem drinking was not significantly associated with child mental health problems in boys or in girls ages six to eight. The association was only present among girls ages 8–11. Examining relationships between mothers and their daughters in the peripubertal period may be a critical window for the development of effective intervention strategies.

KEYWORDS

Children; maternal alcohol use; mental health; multiple informants; problem drinking

Background

Offspring of parents with alcohol use disorders have higher risks of psychological symptoms, poor self-esteem, poor academic performance, and poor social competence (Clark, Cornelius, Wood, & Vanyukov, 2004; Sher, Walitzer, Wood, & Brent, 1991). The relation between parental alcohol use disorders and offspring psychopathology has been shown to be greater when both parents are affected (Earls, Reich, Jung, & Cloninger, 1988). Children of alcohol-dependent parents have a greater likelihood of developing substance use, alcohol dependence, conduct disorder, and other externalizing disorders as compared to children of nonsubstance abusing parents (Hill, Tessner, & McDermott, 2011; King et al., 2009; Wilens, Yule, Martelon, Zulauf, & Faraone, 2014; Yule, Wilens, Martelon, Simon, & Biederman, 2013). Previous studies further have documented that children of substance-abusing mothers have greater risk of psychopathology than children of substance-abusing fathers (Luthar et al., 1998; Anda et al., 2002). While most studies in this area have focused on clinical samples including parents with alcohol use disorders, fewer studies have examined correlates of parental alcohol use problems in general population samples, as the latter rarely involve the joint assessment of children. Such population-based studies have shown that parental alcohol misuse identified using the CAGE are associated with hazardous drinking in adolescent offspring (Haugland, Holmen, Ravndal, & Bratberg, 2013).

A number of factors are correlated both with maternal alcohol-related problems and with child mental health. Common factors include general vulnerability heritability (Hicks, Krueger, Iacono, McGue, & Patrick, 2004; Kendler, Neale, Heath, Kessler, & Eaves, 1994), and family history of mental disorders (Merikangas, Dierker, & Szatmari, 1998). In addition, among adults, alcohol use disorders are highly comorbid with a number of psychiatric conditions including mood and anxiety disorders

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(Conway, Compton, Stinson, & Grant, 2006). Importantly, in studies that have controlled for socioeconomic status and for family history of mental disorders, the unique contribution of parental alcohol disorders has been found to be limited in relation to externalizing disorders among children (Schuckit, Smith, Radziminski, & Heyneman, 2000). Such findings underline the importance of considering potential confounding variables when examining the association between parental alcohol use problems and child mental health. Additional variables including parental attitudes and the nature of the rearing environment are also critical when investigating associations between parental alcohol use problems and offspring mental health (Tarter, Kirisci, & Clark, 1997). Such variables have been shown to moderate the role of genetic vulnerability to disorders (Repetti, Taylor, & Seeman, 2002).

The level of alcohol consumption is higher in Europe than anywhere else in the world (Rehm et al., 2003; World Health Organization, 2004). However, very little is known about the association between maternal alcohol problems and child mental health in eastern and northern European countries such as Bulgaria and Lithuania despite the well-documented pervasive alcohol problems in former Soviet-Union countries (Popova, Rehm, Patra, & Zatonski, 2007). Examining child mental health in relation to maternal alcohol problems in countries at varying population prevalence of alcohol problems may prove helpful in characterizing the associations between maternal alcohol problems and child mental health. Furthermore, in the assessment of child mental health, it is well established that multiple informants including child, parent, and teacher reports are needed (Achenbach, McConaughy, & Howell, 1987), despite the added difficulties associated with collecting such data. The present study is based on a European Union-funded initiative designed to determine the cross-national prevalence of mental health problems in children aged 6–11 across several European countries. The specific objectives are: (1) to examine the distribution of maternal alcohol problems in diverse cross-cultural settings and (2) to examine the association between maternal alcohol problems and offspring psychopathology across three informants: mothers, teachers, and children themselves.

Methods

Participants and sampling

The School Children Mental Health in Europe (SCMHE) study is a 2010 cross-sectional survey of European school children aged 6–11. The SCHME study includes a total of seven countries: Bulgaria, Germany, Italy, Lithuania, the Netherlands, Romania, and Turkey. The present study included Bulgaria, Lithuania, and the Netherlands, as these three countries had appreciable (>1%) prevalence of problematic alcohol use among mothers and were thus powered for analysis. Germany did not assess alcohol use, and Italy did not use the same instrument to assess alcohol use. Two countries were not included due to low reported levels of problematic alcohol use: Romania with 0.3% (2.7% missing data) and Turkey with 0.8% (6.4% missing data). In each country, approximately 45–50 schools were approached (a greater number of schools were approached in the Netherlands). Forty eight children were then randomly selected in each school, except in the Netherlands, where a lesser number of schools participated and therefore entire classes were included, with approximately 120 children per school. Parents received an informational letter and a consent form to be returned to the school. Passive consent was used: children were included if the parent had not returned the refusal to consent to participation form. Children absent on the day of the survey were excluded. Country-specific sampling procedures have been described in detail previously (Kovess et al., 2015). Parents were specifically informed that the responses that they provided would remain confidential and would not be shared with school personnel in any way. Parents were also informed that school personnel would not have access to individual responses provided by their child. Each country received approval of relevant ethical committees: in Bulgaria: The Deputy Minister of Education, Youth and Science of the Republic of Bulgaria; in Lithuania: the Ministry of Education and Science of the Republic of Lithuania; and in the Netherlands: the Commission of Faculty Ethical Behavior Research at Radboud University.

Parents completed a sociodemographic questionnaire, the alcohol use disorders identification test (AUDIT), as well as the strengths and difficulties questionnaire (SDQ). Teachers also completed the SDQ. Children completed the Dominic interactive (DI). Overall, the present study focused on maternal respondents and excluded data provided by fathers or other adult respondents. The sample was further restricted to those for whom parent-SDQ data were completed for a final sample of $n = 2{,}678$ respondents with mother, teacher, and child data.

Materials

Sociodemographic variables

Sociodemographic variables included the following: the child's age and gender, the number of children in the household, the mother's age, level of education (low, medium, high), employment (employed vs. unemployed),

and marital status (living with romantic partner vs. not living with partner).

Parent- and Teacher-reported child mental health status

Child psychopathology was assessed using the parent and teacher versions of the SDQ (Goodman, 1997; 2001). The SDQ holds 25 items scored as "not true," "somewhat true," or "certainly true." The questionnaire is divided into five subscales of five items each assessing hyperactivity/inattention, emotional problems, conduct problems, peer problems, and prosocial behaviors. A total difficulties score is computed representing the sum of the first four subscales listed above (emotional, conduct, hyperactivity-inattention, and peer relationship problems). Cut-points provided by the author were used for each scale and for total difficulties. In addition, the predictive algorithm grouping parent- and teacher-SDQ and impairment ratings was used in order to define "unlikely," "possible," or "probable" cases of any disorder, emotional problems, hyperactivity/inattention, and conduct problems (Goodman, Renfrew, & Mullick, 2000). Each of these variables was recoded to represent the absence (unlikely or possible) or presence (probable) of disorders. In a validation study associated with the present study, the SDQ proved to be a satisfactory screening instrument for the detection of any mental disorder and for externalizing disorders in particular against the well-established development and well-being assessment (Goodman, Ford, Richards, Gatward, & Meltzer, 2000) in each of the countries considered in the investigation (Husky et al., Submitted). Due to the known discrepancies in multiple informant assessment of child mental health (Achenbach et al., 1987), we present the results of the parent-reported and the teacher-reported SDQ both separately and combined. As a consequence, the results can inform single informant as well as multiple informant research.

Child self-reported mental health status

Child self-reported mental health status was assessed using the DI (Valla, Bergeron, & Smolla, 2000; Valla et al., 2002). The DI is a computerized instrument which portrays a cartoon-like character named Dominic through a total of 91 real-life scenarios. The situations depicted in the DI were designed to represent facets of seven common DSM-IV childhood disorders: attention deficit/hyperactivity disorder, conduct disorder, oppositional defiant disorder, phobias, separation anxiety disorder, generalized anxiety disorder and major depressive disorder. The child is asked to indicate whether he/she relates with Dominic in each scenario. Probable cases of each disorder are determined based on established cut-points. Test-retest reliability and internal consistency analyses indicated that the DI is reliable with Cronbach alphas ranging from .60 to .90 and test-retests ranging from .44 to .75 for each disorder (Bidaut-Russell, Valla, Thomas, Bergeron, & Lawson, 1998; Kuijpers, Otten, Krol, Vermulst, & Engels, 2013; Shojaei & Valla, 2009).

Maternal psychological distress

Psychological distress in the previous four weeks was assessed using the 5-item Mental Health (MH-5) of the SF-36 Short Form (Ware & Sherbourne, 1992). This instrument has been validated in numerous languages and has been widely used (Ware & Gandek, 1998). The SF-36 has good construct validity, high internal consistency, and high test-retest reliability (Ware, Kosinski, & Keller, 1994).

Maternal alcohol problems

Maternal alcohol use was determined using the AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT assesses the frequency and quantity of alcohol consumption, the frequency of binge drinking, difficulties to stop drinking, failure to do what is normally expected, drinking first thing in the morning, guilt or remorse after drinking, blackouts, injury due to drinking, and friends' concerns about one's drinking. The AUDIT score ranges from 0 to 40 and is categorized following established cut points: 0–7: no excessive alcohol consumption; 8–15: hazardous drinking; 16–19: harmful drinking; and 20–40: alcohol dependence. In the present study, the latter three categories were merged into one "problem drinking" category. In addition, as 9.5% of mothers failed to complete the AUDIT, the frequency of missing data were examined by sociodemographic characteristic.

Data analysis

First, we examined the distribution of alcohol use defined as any problem drinking, hazardous drinking, harmful drinking, alcohol dependence vs. no problem drinking and the frequency of missing alcohol use information by country, and by sociodemographic characteristic. Chi-square tests were performed to identify significant between-group differences by sociodemographic characteristic in the distribution of problem drinking and missing data. Second, we examined the adjusted odds ratios of presenting with mental health problems as reported by mothers, teachers, and both mothers and teachers, among girls and boys in groups stratified by age in a series of logistic regressions adjusting for the number of children

Table 1. Alcohol consumption as reported by mothers by country.

	Bulgaria $n = 962$ %	Lithuania $n = 1,015$ %	The Netherlands $n = 628$ %	Total $n = 2,678$ %
No problem drinking	95.8	76.8	95.9	86.4
Problem drinking	1.5	8.3	1.8	4.1
Hazardous	1.4	7.0	1.8	3.5
Harmful	0.1	0.7	0.0	0.3
Alcohol dependence	0.0	0.6	0.0	0.2
Missing	2.7	14.9	2.4	9.5

Note: The sample is restricted to mothers who completed the SDQ.

in the household, the mother's marital status, psychological distress, education level, employment, and country of residence. Finally, similar analyses were conducted to determine the odds of child-reported mental health problems. Additional logistic regressions were used to include the gender by problem drinking interaction term. All analyses were conducted using SPSS v.20.

Results

Frequency of maternal alcohol problems and missing data on alcohol use by country

Table 1 presents the frequency of maternal alcohol problems and missing data on alcohol use by country. Overall, 4.1% of mothers reported problem drinking, ranging from 1.5% in Bulgaria to 8.3% in Lithuania, and 9.5% did not complete the AUDIT despite completing all other questionnaires in the study. Problem drinking mostly reflected hazardous drinking as measured by the AUDIT, which only marginal cases of harmful drinking of alcohol dependence.

Frequency of maternal alcohol problems and missing data on alcohol use by sociodemographic characteristic

Table 2 presents the frequency of maternal problem drinking and missing data on alcohol use by sociodemographic characteristic first for overall sample then for each country separately. Overall, the frequency problem drinking varied by sociodemographic characteristic though it was not associated with the child's gender or age. Problem drinking was more frequent in households with three or more children, among unemployed mothers, with psychological distress, living without a romantic partner, and with a low educational level. Maternal age was not associated with problem drinking. In Bulgaria and Lithuania, similar patterns were found, although in the Netherlands certain observed differences did not reach significance. The sociodemographic factors associated with problem

Table 2. Frequency of maternal problem drinking and missing data on alcohol use by sociodemographic characteristic.

	Total $n = 2,605$				Lithuania $n = 1,015$				Bulgaria $n = 962$				The Netherlands $n = 628$			
	% problem drinking	p	% missing	p	% problem drinking	p	% missing	p	% problem drinking	p	% missing	p	% problem drinking	p	% missing	p
Child's gender																
Girl	4.1	ns	7.5	ns	10.2	ns	15.8	ns	0,2	***	2.3	ns	1.7	ns	2.3	ns
Boy	4.9		7.2		9.3		14.0		2.8		3.1		1.9		2.5	
Child's age																
≤ 8 (= 0)	4.9	ns	6.5	ns	10.6	ns	13.8	ns	1.9	ns	2.4	ns	2.2	ns	2.2	ns
>8 (= 1)	4.2		7.9		9.1		15.6		1.1		3.0		1.5		2.6	
Number of children in household																
1 child	2.1	****	7.8	****	4.6	****	21.6	*	1.2	****	2.6	ns	2.3	ns	4.4	ns
2–3 children	2,9		5.9		6.3		12.6		0.8		2.5		2.0		2.4	
4 or more children	13.7		12.9		18.3		16.8		10.3		4.9		0.0		2.7	
Marital status																
Living with partner	3.2	****	5.0	****	7.4	***	12.8	*	1.2	ns	1.3	ns	1.2	****	0.4	ns
Not living with partner	10.1		11.4		15.0		19.1		2.9		0.7		8.9		0.0	
Employment status																
Employed	2,8	****	4.6	****	5.7	****	12.3	*	0.9	***	0.9	ns	2.2	ns	0.0	**
Unemployed	9.6		10.2		15.9		16.9		4.0		2.0		0.9		1.7	
Psychological distress																
No distress	3.0	****	5.4	*	7.0	****	14.0	ns	0.7	****	0.8	ns	1.6	ns	0.5	ns
Distress	12.0		8.0		17.5		13.4		6.5		1.4		4.2		0.0	
Mother's age																
≤ 35	5.3	ns	7.7	ns	9.3	ns	13.0	ns	2.4	*	3.2	ns	2.4	ns	4.5	ns
36–40	3.3		7.0		8.4		17.2		0.4		1.5		1.4		0.9	
≥ 41	4.5		6.8		12.1		15.9		0.0		1.7		1.9		2.8	
Education level																
High ed	3.4	****	5.2	****	6.9	****	11.9	*	0.5	***	1.0	ns	2.1	**	0.2	ns
Middle ed	3.8		5.6		11,9		15,7		0.7		1.2		0.6		0.6	
Low ed	12.5		12.5		19.3		21.0		5.1		2.5		16.7		0.0	

Note: ns: Chi square p value >.05, *p < .05, **p < .01, ***p < .001, ****p < .0001.

drinking were similar to those associated with missing data in the overall sample, although most associations lost significance when examined within each country.

Mother and/or teacher reports of child mental health problems by problem drinking status

Table 3 presents the adjusted odds of mental health problems as reported by the mother, by the teacher, and by both mother and teacher by problem drinking status across all countries. Adjusting for the number of children in the household, the mother's marital status, maternal psychological distress, education level, employment, and country of residence, among boys and among girls eight years old or younger, problem drinking was not significantly associated with mental health problems, whether reported by the mother, or by the teacher. However, among girls eight years old and above, problem drinking was associated with conduct problems as reported by the mother (OR = 4.19, 95%CI = 1.25–14.05), teacher reported total difficulties (OR = 4.69, 95%CI = 1.02–21.52), and peer relationship problems (OR = 8.86, 95%CI = 2.52–31.18). Gender by problem drinking status interactions were not significant with the exception of teacher-reported peer problems among children eight years old and older ($p = .010$) suggesting that the association between problem drinking and teacher-reported peer problems is greater among girls than among boys.

Child self-reported mental health problem by excessive alcohol use status

Table 4 presents the adjusted odds of child self-reported mental health problems by problem drinking status across all countries. Among boys, problem drinking was not associated with child-reported mental disorders when adjusting for the number of children in the household, the mother's living with her partner or not, maternal psychological distress, education level and employment, and country of residence. Among girls under the age of eight, the effect of problem drinking was not significant. However, among girls eight years old and above, the presence of any disorder (OR = 3.88, 95%CI = 1.40–10.79) was associated with maternal problem drinking, including externalizing disorders (OR = 5.55, 95% CI = 1.28–24.11) and internalizing disorders (OR = 4.42, 95%CI = 1.57–12.47). Among internalizing disorders, the only disorder that was not significantly associated with problem drinking was specific phobia (OR = .79, 95%CI = .09–6.74). Gender by problem drinking status

Table 3. Mother, teacher and mother and teacher reports of child mental health problem by problem drinking status across countries.

	Girls					
	Age ≤ 8			Age > 8		
	Mother	Teacher	Mother, teacher combined	Mother	Teacher	Mother, teacher combined
	AOR* (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Total difficulties	.65 (.12–3.61)	1.05 (.21–5.18)		1.40 (.39–4.99)	4.69 (1.02–21.52)	
Hyperactivity/inattention	1.48 (.39–5.59)	.70 (.12–4.13)		.49 (.06–3.95)	1.00 (.11–8.78)	
Conduct problems	1.00 (.22–4.58)	1.10 (.10–11.52)		4.19 (1.25–14.05)	3.20 (.57–18.06)	
Emotional problems	.56 (.11–2.86)	.41 (.04–4.19)		1.16 (.40–3.35)	—	
Peer problems	.24 (.03–2.15)	1.07 (.19–6.10)		1.05 (.30–3.62)	8.86 (2.52–31.18)	
Probable disorders						
Any disorder			.71 (.12–4.14)			1.62 (.30–8.78)
ADHD			—			—
Conduct disorder			1.02 (.10–10.81)			4.25 (.65–27.85)
Internalizing disorder			—			—
	Boys					
	Age ≤ 8			Age > 8		
	Mother	Teacher	Mother, teacher combined	Mother	Teacher	Mother, teacher combined
	AOR* (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Total difficulties	1.47 (.49–4.37)	.72 (.22–2.40)		1.51 (.57–3.98)	.98 (.37–2.61)	
Hyperactivity/inattention	.97 (.34–2.77)	.55 (.17–1.74)		1.69 (.66–4.32)	.77 (.29–2.10)	
Conduct problems	1.62 (.57–4.55)	1.01 (.33–3.08)		1.41 (.53–3.71)	.84 (.32–2.21)	
Emotional problems	.79 (.23–2.76)	–		.97 (.35–2.69)	.44 (.05–3.57)	
Peer problems	1.45 (.52–4.05)	1.10 (.28–4.31)		1.52 (.59–3.93)	.43 (.09–1.98)	
Probable disorders**						
Any disorder			1.39 (.45–4.26)			.71 (.24–2.08)
ADHD			—			1.37 (.27–6.97)
Conduct disorder			1.10 (.68–6.50)			1.05 (.35–3.14)
Internalizing disorder			—			—

Note: *The reference is no problem drinking. Adjusted for number of children in the household, marital status, maternal psychological distress, education level, employment, and country of residence. **Probable disorders are computed among those with data for both parent and teacher ($n = 2,437$).

Table 4. Child self-reported mental health problems by problem drinking status across all countries.

	Girls		Boys		Gender interaction *p*-value	
	Age ≤ 8	Age > 8	Age ≤ 8	Age > 8	Age ≤ 8	Age > 8
	AOR (95% CI)	AOR (95% CI)	AOR* (95% CI)	AOR (95% CI)		
Any disorder	.62 (.17–2.23)	3.88 (1.40–10.79)	1.41 (.50–3.97)	.70 (.22–2.21)	.312	.033
Any externalizing disorder	—	5.55 (1.28–24.11)	1.95 (.56–6.83)	1.15 (.31–4.32)	.998	.263
ADHD	—	12.59 (2.37–67.03)	—	.79 (.09–6.88)	.450	.092
Oppositional	—	—	1.21 (.13–11.01)	.62 (.07–5.03)	.999	.999
Conduct	—	—	2.53 (.61–10.45)	.77 (.08–7.40)	.998	.998
Any internalizing disorder	.66 (.19–2.37)	4.42 (1.57–12.47)	.48 (.10–2.25)	.49 (.11–2.26)	.775	.018
Specific phobia	—	.79 (.09–6.74)	—	1.75 (.17–17.56)	—	.512
GAD	4.10 (.76–21.99)	7.12 (2.02–25.08)	.96 (.09–9.99)	1.30 (.24–7.13)	.387	.213
Separation anxiety	.96 (.23–3.94)	5.73 (1.82–18.08)	.73 (.16–3.38)	.51 (.06–4.27)	.834	.036
Depression	—	24.10 (6.16–94.33)	1.05 (.11–9.84)	—	.998	.998

Note: *The reference is no problem drinking. Adjusted for number of children in the household, marital status, maternal psychological distress, education level, employment, and country of residence.

interaction terms were significant among children eight years old and above regarding any disorder ($p = .033$), any internalizing disorder ($p = .018$) and separation anxiety ($p = .036$). Interaction terms were not significant for any other disorder, or among children under eight years old.

Discussion

The present study sought to examine the distribution of maternal problem drinking in several countries across Europe, and to examine the association between maternal problem drinking and offspring psychopathology across three informants: mothers, teachers, and children. Several noteworthy findings were obtained. First, reports of maternal problem drinking were quite frequent in Lithuania but not in Bulgaria or the Netherlands. Second, when adjusting for a number of sociodemographic characteristics and for maternal psychological distress, there was no strong association between problem drinking and the mental health of boys. However, the association between maternal problem drinking and child mental health was noticeable among girls eight years old and older. The latter findings were consistent across the three informants.

Results on alcohol problems prevalence are somewhat coherent with existing data regarding the estimated alcohol consumption in liters of pure alcohol that have been reported to be high in Lithuania (12.3.l) and in the Netherlands (10.4.l) and noticeably lower in Bulgaria (6.4.l) (Popova et al., 2007; Rehm, Room, van den Brink, & Jacobi, 2005). Problem drinking in the present study combined hazardous drinking, harmful drinking, and alcohol dependence as defined by the AUDIT. The great majority of cases of problem drinking reflected only hazardous drinking with rare cases of harmful drinking and close to no cases of alcohol dependence. Problem drinking among mothers of primary school children was somewhat lower than what has been reported among women regardless of whether they are mothers of school-aged children in these countries. For instance, it is estimated that 4.8% of Bulgarian women and 8.0% of Lithuanian women are heavy drinkers defined as consuming over 40 g of alcohol per day (Popova et al., 2007). Furthermore, the estimated lifetime prevalence of alcohol abuse in women in the Netherlands is 6.6% and 0.9% for dependence and is as low as 1.9% for abuse and 0.5% for dependence in the previous 12 months (de Graaf, Ten Have, van Gool, & van Dorsselaer, 2012). Importantly, the context of the study should be considered when considering the low levels of problem drinking reported by mothers in this school-based study. Parents who have substance-related problems are often reluctant to disclose their difficulties as they fear the involvement of child protective services should their substance abuse become known (Taylor, Toner, Templeton, & Velleman, 2008). While parents were specifically informed that their responses to study questionnaires would remain confidential and would not be shared with school personnel, the context of the study may have nonetheless influenced the report of alcohol use. It is thus likely that the prevalence of alcohol-related problems in the present study is underestimated.

A number of studies have shown an association between maternal alcohol use disorders and externalizing psychopathology in offspring (King et al., 2009; Wilens et al., 2014; Yule et al., 2013). In the present study, after adjusting for a number of sociodemographic characteristics and for maternal psychological distress, there was no strong association between maternal alcohol problems and offspring psychopathology among boys or among girls under the age of eight. The absence of a relationship between alcohol problems and psychopathology among boys and young girls may be due to the fact that some prior studies have provided evidence for this association among older children and adolescents (King et al., 2009; Wilens et al., 2014; Yule et al., 2013) while our sample's age range was 6–11. In addition, the objective of the present

study was to examine problem drinking rather than adults who meet criteria for an alcohol use disorder. Problem drinking essentially reflected hazardous drinking and not harmful drinking or alcohol dependence. It remains possible that children of mothers with more severe drinking behaviors exhibit significant mental health difficulties. Finally, and to the best of our knowledge, such studies have not been conducted in eastern and northern European countries such as Bulgaria and Lithuania. Further research is needed in these regions to investigate child mental health and contributing environmental factors.

The associations found among girls mostly reflected child-reported symptoms of any disorder, parent-reported conduct problems, and teacher-reported total difficulties or peer relationship problems. Importantly, parent-child discrepancies in reporting child mental health problems have been documented in particular with regard to internalizing disorders rather than with externalizing disorders as children often report more internalizing symptoms than their parents (Rothen et al., 2009) while parents are more likely to identify externalizing symptoms (Van der Meer, Dixon, & Rose, 2008). Moreover, studies that have examined differential effects of parental substance use by child gender have suggested a possible same-sex association. For instance, in a study of fathers with an alcohol use disorder and their male or female adolescents, no main effect of parental alcohol use was found on adolescents' problems. However, there was an effect on boys' age of first use of alcohol, and peer relationships disturbances while no effect was observed among girls (Tarter et al., 1997). It would be important to have information on both parents to further examine the same-sex child perspective.

The issue of missing data on the AUDIT was of particular interest due to the sensitive nature of the information, especially among mothers who are enrolled for participation in the study through their child's school. While mothers involved in the study completed lengthy sociodemographic questionnaires as well as the SDQ, 9.5% did not complete the AUDIT, an average rate due to a high rate of nonresponse in Lithuania (14.9%). In order to test the hypothesis that missing reports of alcohol use may in fact reflect nonreported problems with alcohol, we examined whether the factors associated with problem drinking were the same as those associated with missing data. The results in the overall sample showed that, indeed, the correlates of missing data were consistent with the correlates of problem drinking. It therefore remains a possibility that among the nonrespondents, a portion of women in fact are experiencing alcohol-related problems. We also tested whether the associations between maternal alcohol problems and offspring mental health were found with missing data. None of these analyses identified an effect of nonresponse on child mental health, with the exception of mother and teacher reported total difficulties. Thus, it is safe to say that we cannot equate the missing information on the AUDIT to unreported problem drinking. Nonetheless, questioning mothers about that their alcohol use in the context of their child's school was not conducive to eliciting responses, a point discussed as a limitation of the present study.

Several limitations should be acknowledged when interpreting the findings. Mothers participated in the survey in the context of their child's elementary school and may have been reluctant to respond truthfully to highly sensitive questions relative to substance use. It is therefore unknown whether true maternal problem drinking was captured in the present study. Second, the study was cross-sectional in nature which precluded the examination of the dynamic relationship between maternal alcohol problems and offspring mental health, it also did not allow us to determine whether the associations are transient or long-lasting although time-varying effects of parental alcoholism have been reported (Hussong, Huang, Serrano, Curran, & Chassin, 2012). Longitudinal studies with thorough assessments of maternal alcohol consumption are needed to identify associations with the development of maladaptive behavior in offspring (Johnson & Leff, 1999). Finally, as the great majority of parent respondents in the SCMHE study were mothers, we limited the present analyses to mothers and focused on mother-reported alcohol use. It remains a possibility that problem drinking may in some cases be shared by both parents and the consideration of the coparent is known to impact the effect of parental substance use on child mental health (Merikangas et al., 1998). Finally, alcohol consumption as reported by mothers revealed only a small portion of women with harmful drinking or alcohol dependence. It remains possible that the severity of the drinking problem did not elicit the observation of a relationship between alcohol use and offspring psychopathology.

Despite these limitations, the results suggest that encouraging health service utilization for alcohol problems among mothers may have benefits for the mental health status of girls aged 8–11 years as the treatment of maternal psychopathology has well-documented benefits for child psychopathology (Weissman et al., 2006). The findings further underline the need to study child mental health in understudied regions such as Bulgaria and Lithuania.

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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