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ORIGINAL PAPER

Effects of Individual, Peer, and Family Factors on Child Alcohol Abuse in Ukraine

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Abstract The present study aims to estimate the relationship between child alcohol problems, sociodemographic characteristics, externalizing behavior, parental and peer alcohol use, and family violence by using a cross-sectional community sample of 320 Ukrainian children (9–16 years of age, 50% boys) and their parents. Participants answered questions from the Drinking and Drug History and Current Use Patterns Questionnaire, the Revised Conflict Tactics Scales, the Alabama Parenting Questionnaire, and the Child Behavior Checklist. Fifty-two percent of children reported alcohol use within the past year and 32% experienced alcohol-related problems. The average number of reported alcohol problems was 11.19 (SD = 63.65). Five robust regression models examined correlates of early problem drinking in Ukraine. The final model indicated older child age ($\beta = 0.21$, $p < 0.001$), more symptoms of externalizing behavior ($\beta = 0.17$, $p < 0.01$), and higher peer alcohol use ($\beta = 0.23$, $p < 0.001$) were significantly and positively associated with child alcohol problems. Results of the final model explained 32% of the variance in child alcohol problems, $F(8, 311) = 10.76$, $p < 0.001$. In conclusion, the findings suggest that older age, exposure to high-risk alcohol permeated peer environments, impulsivity, and rule-breaking behaviors are linked with the trajectory of early alcohol abuse among Ukrainian children. Mechanisms that reduce the harmful influence of these risk factors on alcohol consumption need to be in place.

Keywords Child alcohol problems · Children and families · Alcohol abuse · Externalizing · Parenting · Peer drinking · Peer influences · IPV · Ukraine

Introduction

Alcohol use is a serious public health problem in Ukraine contributing to 40% of deaths among males and 22% of deaths among females (Levchuk 2009). In order to address this concern with culturally-specific interventions, it is crucial to establish the correlates of problem alcohol use within the Ukrainian setting. However, mental health research continues to be a low priority in low- and middle-income countries (LMIC's) such as Ukraine; in addition, the local research capacity is often substandard, and the few studies conducted in LMIC settings are less likely to be published in peer-reviewed literature (Thornicroft et al. 2012). Most research and development occurs in high-income countries while research concerning health needs and diseases of LMIC countries is largely missing (Røttingen et al. 2013). One collaboration program was recently funded by the National Institutes of Health to enhance capacity for substance abuse research in Ukraine (Zucker 2010); however, the Ukrainian government continues to lack reliable, locally generated evidence suitable for sound prevention and treatment programs and policies.

Culture and other socioeconomic factors can influence the severity of alcohol use. For example, White Americans are more likely to engage in high-risk alcohol use than Black Americans (Keyes et al. 2015). The cultural patterns of alcohol consumption among Ukrainians differ, for example, from those in France or Yemen (WHO 2011). Therefore, it is crucial to continue exploring the role of

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child, parent, and peer characteristics known to spur early development of alcohol abuse disorder using the evidence from different socioculural contexts. Furthermore, most studies of alcohol-using behaviors come from settings with significantly lower prevalence of alcohol use (WHO 2011). It is critical to expand research with high-risk samples to examine whether conditions in those settings differ significantly from the lower-risk settings.

Alcohol abuse is a developmental and recursive disorder often beginning in childhood and adolescence (Zucker et al. 1994). High-level alcohol consumption is known to cause health problems such as cancers and heart disease (Di Castelnuovo et al. 2006). Also, increased alcohol use is associated with a range of social and psychological problems including: co-occurring psychopathology (Merikangas et al. 1998, 2010), delinquency (Monahan et al. 2014), problems with academic and occupational attainment, and difficulties in relationships with other people (Sherand Gotham 1999). Additionally, prior research in the United States and other high-income countries has associated child alcohol problems with child conduct problems and hyperactivity, and has also linked them to parental and peer alcohol use, and family conflicts (Zucker et al. 2008). By age 16, most Ukrainian adolescents experiment with consuming alcohol (Balakireva et al. 2011), which is highly problematic because of increased risk of developing alcohol use disorder (AUD) in adulthood (Danielsson et al. 2012; Englund et al. 2008). Surprisingly, however, few studies tested these association in Ukraine, the sixth top drinking nation in the world (World Health Organization 2014).

Several factors may propel the early development of alcohol use problems. Parental alcohol use is one of the well-documented predictors of children's problem behavior and involvement with alcohol (Anderson and Henry 1994; Hawkins et al. 1992; Russell et al. 1990). According to McGue et al. (2001), 55% of boys and 11% of girls inherit alcohol-using behaviors from their parents. Developmentally, children tend to demonstrate conduct problems before developing alcohol-related problems (Hicks and Zucker 2014). Zucker et al. (1996) demonstrated significant positive associations between parent alcohol use disorder (AUD) and the number of behavioral problems among children ages 3 through 8. Next, children who had externalizing problems at age 9 were more likely to develop heavy drinking problems as adults (Englund et al. 2008).

Alcohol abusing children tend to be raised by substance abusing parents in homes with less predictable routines and lower parental monitoring (Alati et al. 2005; Anderson and Henry 1994; Hurt et al. 2013; Windle 1994). The ecological systems theoretical framework suggests children grow in environments that influence their growth and individual development (Bronfenbrenner 1981). Consistent with this theory, parenting characteristics such as emotional warmth, caring and support tend to delay the onset of drinking and lower the levels of adolescent alcohol use (Windle et al. 2008). Studies have also found higher adolescent involvement with alcohol to be related with lower parental support (Anderson and Henry 1994; Ledoux et al. 2002) and parental rejection (Anderson and Henry 1994; Barnow et al. 2002).

Children's substance use can be exacerbated by associations with deviant peers that may co-occur with negative affect and poor monitoring (Chassin et al. 1993). Parenting is a crucial family task (Anderson et al. 2013), and previous studies associated adolescent alcohol use with parental control and knowledge of persons with whom their child had daily interactions (Iakunchykova and Andreeva 2012; Kopak et al. 2012). Children who do not receive necessary support and guidance from their parents, may be negatively influenced by deviant peers (Barnow et al. 2002; Hawkins et al. 1992; Windle 2000) as well as exert influence on peers that will increase their alcohol involvement (Curran et al. 1997; Leung et al. 2014). Such influence on peers can lead to development of co-occurring behavior problems, which, once established, are not likely to desist (Monahan et al. 2014).

Imitating parental and peer alcohol-using behaviors can be thought of as such that belongs to normal socialization process (e.g., Brook et al. 1990; Jessor and Jessor 1977; Kandel 1980). It is quite possible children develop positive alcohol expectancies early in life because alcohol use is very common in Ukrainian families (World Health Organization 2014).

Childhood externalizing behavior that is often associated with lower use of positive parenting, poor child monitoring and corporal punishment (Burlaka 2016) is another known predictor of alcohol abuse. Alcohol-abusing adolescents were more often diagnosed with a conduct disorder and antisocial personality disorder than their non-alcohol-abusing peers (Barnow et al. 2002). Additionally, both animal and human studies have linked impulsivity with alcohol use (Dick et al. 2010; Iacono et al. 2006). The biogenetic-dispositional model posits that temperament characteristics of the child, such as higher activity level, may increase the risk for the child to associate with deviant peers and become involved in substance use (e.g., Blackson et al. 1994). Externalizing problems were found to impact adolescent involvement with alcohol and also predicted later-life AUD (Englund et al. 2008). Additionally, characteristics such as older age of the child (Hicks and Zucker 2014) and male gender (Danielsson et al. 2012) were associated with development of substance use problems.

Consistent with social learning theory (Bandura 1986), Kelley et al. (2010) noted, when children live with parents who experience intimate partner violence (IPV) and use alcohol, not only might they replicate the violent behaviors

but also learn to use alcohol as a maladaptive coping strategy for IPV. Kelley et al. argued that multiple studies have examined either the effects of parent alcohol use or the impact of IPV on child development alone, and that new studies should test the cumulative impact of alcohol use and IPV on the development of children's mental health problems. Furthermore, these new studies should expand the knowledge using interactive models that also consider such factors as parenting, age and gender, and peer influences. Presently, there is a void in the peer-reviewed literature regarding correlates of child alcohol problems in samples of Ukrainian children under 15 years.

The present study uses multiple unabridged and psychometrically sound measures in a sample of children aged 9 to 16 with equal proportions of females and males in each year of age. This design is utilized to better understand the combination of factors associated with child early problem involvement with alcohol. Given the literature on individual and environmental factors related to development of problem drinking among children, it was hypothesized that a higher score on child alcohol problems would be significantly associated with a lower score on the positive parenting and higher score on the negative parenting as well as higher parental alcohol use and greater exposure to alcohol-using peers. With regards to child-level risk factors, it was hypothesized that higher externalizing behavior, male gender and older age of the child would be significantly and positively associated with more problems related to alcohol consumption.

Method

Participants

The sample included 294 biological mothers, 2 adoptive mothers, 18 fathers, and 6 grandmothers. Most participants identified themselves as Ukrainian (92%); others reported Russian, Roma, Polish, and Armenian ethnicity. On average, parents were 37.79 years of age (SD = 6.52). The average monthly family income (US$406, SD = 255) was somewhat lower than the official national average of monthly family monetary income ($498; UkrStat 2013) and 70% were employed. The sample included one-fifth of parents who completed 11 grades or less of secondary school, half of participants with a vocational school diploma, and 6% who had a few years of college and 26% who had university degrees.

Procedure

The data in this study were collected from a community sample of children and parents living in three southeastern and central regions of Ukraine. The study was approved by the Ukrainian Methodological Psycho-medico-pedagogical Center of the Department of Education. Children between 9 and 16 years of age and their parents (a total of 320 parent-child dyads) were invited via fliers to participate in a study of parent–child relationships in families. School psychologists also reached out to parents in schools with the information about the study. Parents and children participated in one-on-one interviews (parents were interviewed separately from the children) that were conducted on safe school premises (about 90%) and at participants' homes. Each family was offered US$12.5 for participating in the study. Participants were given a copy of the questionnaire and could follow the questions that were read to them by the interviewers. Interviewers then recorded participants' answers. Trained psychologists and social workers obtained parental informed consents and child assents, interviewed participants, and transferred the data set without participants' personal identifiers to the author for analyses. The University of Michigan Institutional Review Board then issued a status of the study's non-regulation.

Measures

All measures for this study were translated into the Ukrainian language by a bilingual translator and then translated by another bilingual translator from Ukrainian into English (Brislin 1970). Next, an expert group consisting of Ukrainian school teachers, parents, psychologists, and social workers reviewed the translation and its appropriateness for school-age children. Additionally, a feedback from a small group of children was utilized to improve the quality of the measures.

Demographic characteristics

Participating parents answered questions about their age, caregiver status (e.g., biological mother, biological father etc.), education, employment, household income, and ethnicity. Children identified their age and gender.

Child alcohol-related problems

The Alcohol Use Section of the Drinking and Drug History and Current Use Patterns children's questionnaire (Zucker et al. 1990) was used in this study to assess adverse consequences related to children's alcohol use. Children answered 27 questions designed to estimate whether they had ever experienced problems associated with alcohol use in areas such as relationships (e.g., had problems with girlfriend/boyfriend, lost friends, problems with parents), social adjustment (e.g., missed school, troubles with the police), and intrapersonal/health issues (e.g., had blackouts,

gone on a binge of constant drinking, felt guilty about my drinking). The answers to these questions ranged from 0 (*never happened*) to 10 (*more than 500 times*) and the Cronbach's alpha reliability was 0.95.

Peer alcohol use

One item from the Alcohol Use Section of the Drinking and Drug History and Current Use Patterns children's questionnaire (Zucker et al. 1990) was used in this study. Specifically, children answered a question, "About how many of the kids you hang around with drink alcohol at least sometimes?" The answers were coded as 0 ("none"), 1 ("1–2"), 2 ("several"), 3 ("less than a half"), 4 ("more than a half"), and 5 ("all of them").

Violence to parent

Parents answered eight questions concerning psychological aggression and 12 questions pertaining to physical assault from the revised version of the Conflict Tactics Scales (CTS2; Straus et al. 1996; Straus 1979). The physical assault items (e.g., "My partner twisted my arm") and psychological aggression items (e.g., "My partner insulted or swore at me") measured the incidence of violence during last 12 months using a 7-point Likert scale ranging from "never" to "more than 20 times." The internal consistency was 0.91 for the Physical assault scale and 0.87 for the Psychological aggression. The Cronbach's alpha for the combined physical assault and psychological aggression scale was 0.93.

Parent alcohol use

The parents' alcohol use was estimated with Alcohol Use Section of the Drinking and Drug History and Current Use Patterns questionnaire (Zucker et al. 1990). Parents reported frequency of consumption of liquor, beer, and wine (or a punch containing wine) using a 11-point scale ranging from 0 ("never") to 11 ("3 or more times a day"). To compute the total drinking frequency score, the use of individual beverages was converted to the number of drinking occasions during past 12 months. If a parent answered "once a month," this answer was recoded to 12. Similarly, if a parent indicated "3 or more times a day," this answer was recoded as four times per day, or a total of 1460 times per year. Thus, the potential range for the Global Annual Alcohol Use Frequency scale that added up answers for three types of beverages was between 0 and 4380. The Cronbach's alpha for the Parent Alcohol Use frequency was 0.73.

Parenting practices

Parenting behavior was measured with the Alabama Parenting Questionnaire (APQ; Frick et al. 1999; Frick 1991). Parents reported frequency with which they utilized positive parenting (e.g., "you praise your child when she does something well"), were positively involved with children (e.g., "you drive your child to special activities"), used poor monitoring and supervision (e.g., "your child goes out without a set time to be home"); exercised inconsistent disciplining (e.g., "the punishment you give your child depends on your mood") and used corporal punishment (e.g., "you hit your child with the belt"). The APQ measures parenting with 42 items using a 5-point scale ranging from 0 ("never") to 4 ("always"). The APQ Positive Parenting Scale was created of the means of Involvement and Positive Parenting scales (Cronbach's alpha = .95) while the APQ Negative Parenting Scale was created of the means of Poor Monitoring/supervision, Corporal Punishment and Inconsistent Discipline scales (Cronbach's alpha = 0.84). The APQ demonstrated good psychometric properties in research on the relationship between parenting and child behavior outcomes (Clerkin et al. 2007; Essau et al. 2006).

Child externalizing behaviors

The Externalizing Behavior Scale of the Child Behavior Checklist (CBCL; Achenbach and Rescorla 2001) was used in the present study. CBCL consists of 113 items measuring parents' perceptions of children's adjustment using a three-point Likert scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*).The Externalizing Scale was computed by summing up the means of 17 items measuring the rule-breaking behaviors (e.g., "Breaks rules at home, school, or elsewhere;" $M = 4.40$, SD = 5.12, Cronbach's alpha = .92) and 18 items estimating aggressive behaviors (e.g., "Cruelty, bullying, or meanness to others;" $M = 10.12$, SD = 7.99, Cronbach's alpha = 0.89). In previous studies, the internal consistency alpha for the Externalizing scale was 0.93 (Achenbach 1991). In the present study, Cronbach alpha for the Externalizing scale was 0.95.

Data Analyses

The robust regression technique, which is less sensitive to violations of normality of the distribution of dependent variable (Acock 2012; Li 1985; Verardi and Croux 2008), was utilized in this study to predict child alcohol problems because preliminary inspection suggested that the data were positively skewed (skewness = 4.87, $p < 0.001$). There was a small amount of missing cases (6%), and a multiple imputation procedure with predictive mean matching (Molenberghs and Kenward 2007; Rubin 1986) was utilized

to impute missing cases with Stata13 (StataCorp 2015). This procedure generates linear predictions and uses them to select a set of nearest neighbors with complete values (donors) to randomly draw from and impute missing data. Morris et al. (2014) recommend using a pool of ten donors. Regression analyses were performed in five steps to separately estimate relationships between groups of variables of interest. The standardized coefficients were estimated to assess the strength of the relationship between the outcome variable and predictor variables that used different measurement scales (Acock 2012). The variables were added in the following order: sociodemographic variables, gender, and age of the child were entered into the first model. The parent alcohol use and IPV were added in the next step. The positive and negative parenting was included in the next model. Child externalizing problems were added in the fourth model. The final model tested whether the addition of child aggression and delinquency as well as the negative influences from the drinking peers would change the strength of association between child alcohol problems and the variables that were entered into previous models.

Results

Half of children (48%) reported not ever using alcohol during last year, and 68% have never had any problem related to alcohol consumption. Nineteen percent of children reported issues in relationship with the family members, 17% experienced difficulties with friends, and 15% reported troubles with teachers or principal over alcohol use. Table 1 provides additional information about alcohol-related problems in this sample. The average number of alcohol problems reported by children in this sample was 11.19 (SD = 63.65). Every third child reported having no drinking peers, 46% indicated that a few or less than half of their peers used alcohol, 14% thought that more than a half of their peers drank alcohol, and 8% reported that all of their peers used alcohol. Table 2 shows correlations between child alcohol problems and other variables in the study as well as means, standard deviations and the ranges of study variables.

The robust regression results for child alcohol problems are presented in Table 3. In Model 1, child's male gender ($\beta = .13$, $p < 0.05$) and older age ($\beta = .38$, $p < 0.001$) had significant relationships with child alcohol problems. Results from Model 2 suggested that parent alcohol use was associated with child alcohol problems ($\beta = .16$, $p < 0.05$). Both male gender and older age of the child were related with child's problem involvement with alcohol in Model 2. With parenting predictors added to Model 3, both lower positive ($\beta = -0.19$, $p < 0.05$) and higher negative ($\beta = 0.17$, $p < 0.01$) parenting approaches were significantly related to child alcohol problems. Child age and gender remained significant in Model 3. In Model 4, both negative and positive parenting practices showed trend significance while child age and externalizing behaviors were statistically significant. In Model 5, the introduction of the peer-drinking variable has attenuated the predictive power of parenting from trend to non-significance. In this final model, older child age ($\beta = 0.21$, $p < 0.001$), more symptoms of externalizing behavior ($\beta = 0.17$, $p < 0.01$) and higher peer alcohol use ($\beta = 0.23$, $p < 0.001$) were significantly associated with more child alcohol problems. Results of the final model explained 32% of the variance in child alcohol problems, $F(8, 311) = 10.76$, $p < 0.001$. The

Table 1 Numbers, percentages, and ranges of alcohol-related problems among Ukrainian children 9–16 years of age ($N = 320$)

Alcohol-related problems	*N*	%	Range
Issues with parents	60	19	0–500
Difficulties with friends	54	17	0–35
Troubles with teachers or principal	48	15	0–15
Missed school	37	12	0–35
Felt guilty	32	10	0–15
Kept on drinking after promising not to	28	9	0–35
Lost friends because of drinking	22	7	0–15
Been criticized for drinking by my girlfriend/ boyfriend	22	7	0–15
Thought that was drinking too much	21	7	0–375
Had memory lapses (could not remember what I did when I drank)	21	7	0–15
Drank much more than expected	19	6	0–35
Gotten in trouble with the police	14	4	0–15
Noticed I can drink much more to get drunk	12	4	0–15
To control or limit alcohol use, I restricted drinking to certain times of day or week	11	3	0–4
Continued drinking for more days than planned to	9	3	0–15
Once started drinking, kept on going till drunk	9	3	0–8
Gone on a binge of constant drinking	8	2	0–35
Had a strong need for a drink at a certain time of the day	8	2	0–15
Needed to drink a lot more in order to get an effect	7	2	0–35
Drove after I had rather much to drink	7	2	0–8
Gulped drinks	6	2	0–8
Got a ticket or was arrested for public intoxication	4	1	0–8
Had the shakes "the morning after"	4	1	0–35
After I stopped drinking, I heard, saw or felt something that really did not exist (hallucinations)	4	1	0–15
Had a car accident when I drove after I had used alcohol	3	1	0–4
Got a ticket for drunk driving	3	1	0–4
Drank in the morning	3	1	0–2

Table 2 Pearson correlations, means, and standard deviations ($N = 320$)

	1	2	3	4	5	6	7	8
1. Alcohol problems	—	—	—	—	—	—	—	—
2. CBCL externalizing	.35***	–	—	—	—	—	—	—
3. Positive parenting	−.39***	−.48***	—	—	—	—	—	—
4. Negative parenting	.34***	.53***	−.54***	—	—	—	—	—
5. Violence to parent	.21***	.41***	−.46***	.47***	—	—	—	—
6. Parent alcohol use	.21***	.31***	−.50***	.35***	.35***	—	—	—
7. Drinking peers	.44***	.28***	−.36***	.29***	.22***	.23***	—	—
8. Male gender	.13*	.18***	−.10	.07	.04	.08	.03	—
9. Child age	.38***	.06	−.29***	.19***	.15	.02	.48***	.00
Mean	11.19	14.32	2.49	1.57	55.83	172.73	1.90	—
Standard deviation	63.65	12.49	.84	.58	75.93	261.85	1.62	—
Range	0–820	0–53	0–4	0–3	0–400	0–2125	1–5	—

*$p < .05$, ***$p < .001$

Wald test used to test the equality of regression coefficients suggested peer alcohol use and child age had significantly larger effect sizes than child externalizing behaviors. However, the hypothesis that the effect of child age was equal to the effect of peer alcohol use was not rejected.

Discussion

This study tested a comprehensive, multi-variable model that contributed to the knowledge of developmental and contextual factors associated with problem alcohol use among Ukrainian children (Hicks and Zucker 2014; Kelley et al. 2010). Consistent with prior research in the developed countries (Beauchaine and Hinshaw 2008; Monahan et al. 2014; Sherand Gotham 1999), results of this study indicated that Ukrainian children experienced alcohol-related problems in such areas as academic attainment, relationships with others and delinquency. In the first model, child male gender and older age were significantly associated with increased number of alcohol problems (Danielsson et al. 2012). Furthermore, the child gender variable was one of four significant predictor variables in the model, which also accounted for parent drinking, IPV, and parenting practices. However, male gender became non-significant in models that accounted for child externalizing behaviors and peer drinking. This finding suggests that, for Ukrainian children, externalizing psychopathology may represent a higher risk for development of early symptoms of AUD than male gender. These results warrant further investigation of mechanisms that would explain why childhood externalizing behaviors have a stronger association with alcohol abuse among Ukrainian children than the male gender. Likewise, child exposure to alcohol-using peers carried potentially higher risks for development of alcohol problems than male gender. Consistent with developmental thinking about alcohol use disorder, older children in this study had more alcohol problems.

In spite of significant correlation between parent IPV and child alcohol problems, IPV was not significantly related with children's alcohol use in the regression models. One explanation of this result is that parental experiences of IPV may have more distal effects on child alcohol use since domestic violence can reinforce negative parenting behaviors and increase child externalizing problems. Future research should examine whether child externalizing problems and parenting behaviors mediate the relationship between IPV and child alcohol problems.

A finding that parental alcohol use showed significance in explaining children's alcohol problems in Model 2 was expected because children develop alcohol abuse though genetic mechanisms (McGue et al. 2000) and through familial interactions (e.g., Chassin et al. 1993). The hypothesis that parental alcohol use will be related with offspring's alcohol problems (Hawkins et al. 1992; Russell et al. 1990) was supported by these data. However, when parenting practices, child externalizing behaviors and peer drinking variables were added, parental alcohol use became insignificant.

The finding from Model 3, in which positive parenting was related with fewer alcohol problems in children while negative parenting was linked with more alcohol problems, was consistent with prior research (Kopak et al. 2012; Windle et al. 2008) and was expected. Still, the effect size of parenting behaviors was decreased in models that also accounted for child externalizing psychopathology and peer drinking. These findings support the idea that late childhood and early adolescence is the time when peer influences become particularly powerful (Beauchaine and Hinshaw 2008).

Table 3 Robust regression coefficients in the model predicting to children's alcohol-related problems

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5	
	B (SE)	*β*	*B* (SE)	*β*	*B* (SE)	*β*	*B* (SE)	*β*	*B* (SE)	*β*
Child gender	2.56* (1.01)	0.13	2.23* (0.98)	0.11	1.89* (0.92)	0.10	1.37 (0.93)	0.07	1.49 (0.92)	0.08
Child age	1.60*** (0.27)	0.38	1.52*** (0.29)	0.36	1.24*** (0.24)	0.29	1.33*** (0.24)	0.31	0.90*** (0.19)	0.21
Violence to parent	—	—	0.02 (0.02)	0.10	0.00 (0.02)	−0.02	−0.01 (0.02)	−0.05	−0.01 (0.02)	−0.04
Parent drinking	—	—	0.01*(0.003)	0.16	0.00 (0.002)	0.05	0.002 (0.002)	0.04	0.00 (0.002)	0.02
Positive parenting	—	—	—	—	−2.18* (0.91)	−0.19	−1.59† (0.89)	−0.14	−1.38 (0.86)	−0.12
Negative parenting	—	—	—	—	2.83** (0.95)	0.17	1.64† (0.95)	0.10	1.49 (0.93)	0.09
Child externalizing	—	—	—	—	—	—	0.12*** (0.03)	0.21	0.10** (0.03)	0.17
Drinking peers	—	—	—	—	—	—	—	—	1.37*** (0.38)	0.23
R-squared	0.16	0.20	0.26	0.28	0.32	—	—	—	—	—
F	17.12***	14.36***	10.22***	11.45***	10.76***	—	—	—	—	—

$N = 320$

SE standard error

†$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The next hypothesis that children's externalizing behaviors would be associated with higher numbers of alcohol problems was also supported. This finding corresponded with prior research (e.g., Blackson et al. 1994; Dick et al. 2010; Englund et al. 2008). Likewise, in accordance with the next hypothesis, children who were exposed to a greater number of alcohol using peers were significantly more likely to develop alcohol problems. This finding is fully consistent with prior research regarding peer influences on development of AUD among children in countries with developed economies (Barnow et al. 2002; Curran et al. 1997; Leung et al. 2014).

The analyses of beta weights from the final model suggested that, when family, peer and child predictors are accounted for in the same model, peer alcohol use has the largest effect size followed by child externalizing behaviors. Child age also had a stronger association with alcohol problems than child externalizing problems. However, there was no significant difference between the effects of child age and peer drinking.

Other predictors bore no significant relationship with child alcohol problems in the final model. Nonetheless, previous research indicated that Ukrainian children whose parents reported higher use of corporal punishment, poor monitoring, and lower use of positive parenting, had more symptoms of externalizing behavior problems (Burlaka 2016). Externalizing behaviors and problems are likely to develop earlier than substance abuse (Dick et al. 2010; Dubow et al. 2008; Englund et al. 2008); therefore, future research should examine the role of parenting across pre-adolescent and adolescent age groups.

In summary, the findings support the conclusion that Ukrainian child alcohol problems are primarily driven by factors intrinsic to the child and peer environments. This study makes an important contribution to the literature because it confirms that although the rates of alcohol use are much higher in Ukraine than in other countries, the co-occurring mechanisms are very similar. Because these results were obtained in the local Ukrainian communities, they can be potentially more trustworthy than results of studies performed in entirely different cultural and socio-economic contexts. In addition, these findings can have potential clinical and programmatic implications. These results underscore the importance of primary prevention work that needs to be done at earlier ages. Additionally, these findings highlight a strong relationship between child externalizing behaviors and problem alcohol use. Hence, the substance use prevention programs in Ukraine should be designed to effectively target the co-occurring child aggression and rule breaking behaviors. Finally, Ukrainian parents and practitioners need to be mindful of the influences of negative social environments that can increase the

risk for development of alcohol use disorder among Ukrainian children.

Several limitations should be kept in mind when interpreting these findings. First, the cross-sectional design of this research limited the ability to draw conclusions regarding cause-effect relationships between study variables. Next, 5.6% of parent figures were fathers; therefore, the parenting reported in this study predominantly relates to mother parenting behaviors. Prospective studies with mixed-method approach should examine the temporal precedence of variables explored in this study and test probable causes and effects (Creswell 2013). Next, this study explored alcohol problems among children of relatively young age many of whom had not developed AUD. Therefore, these findings are only limited to initiation of alcohol abuse and early alcohol-related problems. Because the study utilized a convenience sample of parents living in the southeastern and central regions of Ukraine, the generalizability of these findings for other populations is unknown.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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