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Early detection and prevention of adolescent alcohol use

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Chapter 2

Do child's psychosocial functioning, and parent and family characteristics predict early alcohol use? The TRAILS Study

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ABSTRACT

Background: Given the negative consequences of early alcohol use for health and social functioning, it is essential to detect children at risk of early drinking. The aim of this study is to determine predictors of early alcohol use that can easily be detected in Preventive Child Healthcare (PCH).

Methods: We obtained data from the first two waves on 1261 Dutch adolescents who participated in TRAILS (TRacking Adolescents' Individual Lives Survey) at ages 10-14 years and from the PCH records regarding ages 4-10 years. Early adolescence alcohol use (age 10-14 years) was defined as alcohol use at least once at ages 10-12 years (wave 1) and at least once in the previous 4 weeks at ages 12-14 years (wave 2). Predictors of early alcohol use concerned parent and teacher reports at wave 1 and PCH registrations, regarding the child's psychosocial functioning, and parental and socio-demographic characteristics.

Results: A total of 17.2% of the adolescents reported early alcohol use. Predictors of early alcohol use were teacher-reported aggressive behaviour [odds ratios (OR); 95% confidence interval (CI): 1.86; 1.11-3.11], being a boy (OR 1.80, 95%-CI 1.31-2.56), being a non-immigrant (OR 2.31, 95%CI 1.05-5.09), and low and middle educational level of the father (OR 1.71, 95%CI 1.12-2.62 and OR 1.77, 95%CI 1.16-2.70, respectively), mutually adjusted.

Conclusion: A limited set of factors was predictive for early alcohol use. Use of this set may improve the detection of early adolescence alcohol use in PCH.

INTRODUCTION

Early drinkers (defined as having drunk on three or more occasions in the past year or having drunk in the past month) have an increased risk of using other substances, having academic problems and showing delinquent behaviour during late adolescence as compared with non-drinkers, and also have an increased risk of employment problems, abusing other substances and exhibiting criminal and violent behaviour in early adulthood.[1] Furthermore, alcohol use during early adolescence is associated with higher levels of alcohol use in later adolescence and early adulthood.[2] Detection of children at risk of early alcohol use is thus warranted.

A number of predictors of alcohol use before age 14 or 15 years have been identified. Mental problems such as depression,[3] oppositional-defiant disorder,[4] conduct disorder,[4] hyperactivity, and aggressive behaviour[5] are related to alcohol use. Moreover, parental (in interaction with possible genetic vulnerability factors[6]) and socio-demographic factors have been associated with adolescent alcohol use, such as parental alcohol use and smoking,[7] parental alcoholism,[8] low socioeconomic status,[7] living in a non-intact family,[7-9] and immigrant status.[10]

Until now, the literature has mainly focused on predictors of any alcohol use before age 14 or 15 years.[3,7,9] However, over a quarter of the adolescents reported alcohol use before age 12 years,[11] urging the inclusion of younger ages in predictive studies. Only a few studies have done so.[12-14] However, most studies did not measure whether or not those children continued using alcohol over time, whereas recurrent alcohol use over time might be an important predictor of alcohol dependence in early adulthood.[15]

Community paediatric services are in a unique position to detect children at risk of early recurrent alcohol use. In the Netherlands, Preventive Child Healthcare (PCH) monitor all children from birth to age 19 years for the purpose of identifying health and psychosocial problems. During short visits (~10–15 min) at specific intervals, PCH professionals (community physicians and nurses) use standardized procedures to evaluate the physical, emotional, and behavioural development of the child.[16] More than 90% of children participate in PCH evaluations.

The aim of this study was to determine the predictors of early recurrent alcohol use (age 10–14 years) that can be used by PCH professionals to detect children at risk of early recurrent alcohol use during routine visits. This concerned factors that have been shown in the literature as likely predictors of early alcohol use (within the psychosocial, parental or socio-demographic domain) and that can easily be assessed by PCH professionals as part of standardized procedures.

METHODS

Sample and procedure

This study makes use of the first two waves of TRAILS (TRacking Adolescents' Individual Lives Survey), a prospective cohort study of Dutch adolescents started in 2001. Their mean ages at T1 and T2 were 11.09 [standard deviation (SD) =0.55] and 13.56 (SD=0.53), respectively. Furthermore, we used data registered by PCH when participants were aged 4–10 years. The participants were selected from five municipalities in the northern provinces of the Netherlands and were eligible if their school was willing to collaborate and the adolescent had no mental or physical incapability, or language problems. Of all children approached, 76% (n=2230) were enrolled in the study (i.e. both child and parent agreed to participate) and 50.8% were girls. Of these participants, 96.4% (n=2149) participated at T2. A detailed description of the sampling procedure and methods is provided elsewhere.[17-18]

Of the participants at baseline, for 96% their parents (n=2139) gave written informed consent to retrieve their data from the PCH. One of the five PCH services did not invite *all* children but only those children who might possibly have a physical, emotional, or behavioural problem. The 745 children that came from this PCH service have been excluded. Of the files of the remaining 1394 children, 90.5% were traceable, resulting in a sample of 1261 children. Excluded cases did not show significant differences regarding levels of alcohol use at T1 (χ^2=1.51, P =0.22) and T2 (χ^2=17.1, P=0.19), gender (χ^2=0.90, P=0.34), father's educational level (χ^2=5.90, P=0.052), parental alcohol use (χ^2=2.45, P=0.79 and χ^2=9.11, P=0.11 for father and mother, respectively), were more likely to be an immigrant (χ^2= 33.92, P <0.001), to have a mother with a higher educational level (χ^2= 19.39, P <0.001) and to have a higher age (t=12.98, P<0.001) when compared with included cases.

Measures

Early recurrent alcohol use was measured using a self-report questionnaire at T1 and T2. At T1 the child was asked: 'How often have you drunk alcohol (e.g. a bottle of beer or a glass of wine)?' Children could rate this item as no, never; 1 time; 2–3 times; 4–6 times; or 7 times or more. At T2 the child was asked: 'On how many occasions did you drink alcohol in the last 4 weeks?' Answer categories ranged from 0 to 13: 0–10 corresponded to the equivalent number of times, and the categories 11 to 13 corresponded to 11–19 times, 20–39 times, and 40 times or more, respectively. Using these two variables we created a variable 'early recurrent alcohol user', being 'yes' when he/she used alcohol at least once at T1 and at least once in the previous 4 weeks at T2, and 'no' otherwise.

PCH-registered psychosocial functioning entailed behavioural features between the ages of 4 and 10 years as reported by the parents, mostly only the mother, and registered by a PCH professional during at average 1.4 visits with a maximum of 4

visits. Most children visit the PCH professional once (54.1%) or twice (35.1%). Mean ages at first and second visits were 5.9 and 7.6 years, respectively. A standardized open question in the PCH files was asked, namely, 'How is the child's psychosocial behaviour?' Parents could provide one or more descriptions such as 'aggressive', 'anxious', 'insecure', 'impulsive', 'easy', or 'social'. These descriptions were classified as 'behavioural problems', 'emotional problems', 'attention problems/hyperactivity', or 'positive behaviour',[19] and then dichotomized to a 'yes' if any of these was reported during at least one visit, and 'no' otherwise.

Teacher-reported psychosocial functioning was assessed at T1 at school using the Teacher Checklist of Psychopathology (TCP), developed by the TRAILS team and based on the Teacher Report Form (TRF).[20] This measure contains descriptions (vignettes) of various problem behaviours. For each description the child was assigned to one of the categories: 0 = not applicable to a little or sometimes applicable, and 1 = clearly to very clearly applicable.

Healthcare utilization was measured at T1 by asking the parent, mostly the mother, whether they had visited any mental healthcare service because of worries about the behaviour or the feelings of their child, or because of problems with respect to psychosocial functioning. The answers were categorized as 'visited no / one / more than one healthcare service(s) between ages 4–10'.

Parental addiction was measured at T1 using a vignette describing the main DSM-IV characteristics of addiction (all types of addictions except nicotine addiction), followed by a question to assess lifetime occurrence of the addiction. Data were obtained on both parents via one informant, typically the biological mother. In case of no-biological relationship or separation of the parents, care-takers reported only if they had knowledge about the biological parents. Each parent was assigned to one of the categories: 0 = (probably) never had an episode of addiction; 1 = (probably) had an episode.

Parental alcohol use and smoking were measured at T1 by asking the parent, mostly the mother: 'Did you or your partner use alcohol or smoke cigarettes, rolling tobacco, or cigars last year? If so, how many glasses per week or cigarettes a day did you or your partner drink/smoke on average? (one cigar counts as three cigarettes)', regarding the father and mother separately. The answers were categorized as no use, medium and high use separately for alcohol use and for smoking.

Education and occupation of both parents were measured at T1. Education was defined in terms of the highest level of education attained by each parent. Three groups were distinguished: low (lower tracks of secondary education or less education), middle (higher tracks of secondary education) and high (senior vocational education or university). Occupation was assessed in nine rank-ordered categories using the International Standard Classification of Occupations (ISCO) [21] and was categorized as: low (1–3), medium (4–6) or high (7–9).

Parental divorce was measured at T1 and related to whether or not the biological parents were divorced or separated.

Ethnicity was also measured at T1 and concerned whether or not the child had at least one parent born in a non-Western country, as the latter group has generally been shown to have different patterns of alcohol use.[10]

Missing data

An average of 7.7% (ranging from 0% to 25.3%) of the values of the potential predictors and outcome measures were missing. Multiple imputation was used to reduce the risk of bias and the loss of statistical power.[22] To account for the uncertainty in imputed data, 20 data sets were created based on different estimated underlying distributions. They were analysed in an identical way, and the values of the parameter estimates and standard errors across the data sets were pooled in order to obtain single estimates and standard errors. SPSS Windows version 20 (www.ibm.com) was used to impute missing data and to perform the statistical analyses.

Statistical analysis

We divided the predictive factors into five sets of variables (i.e. the child's psychosocial functioning as registered by PCH, as reported by teachers, and as reported by parents; parental factors; and socio-demographic factors). First, descriptive statistics for all variables were computed, for boys, girls and the total group. Subsequently, univariate logistic regression analyses (enter method) were run. Third, we ran multivariate analyses for the five sets of variables. Predictors with a $P<0.10$ in the univariate analyses were included in these multivariate analyses.

Finally, we performed a multivariate analysis with stepwise forward selection out of all predictors with a $P<0.10$ in the multivariate analyses, added consecutively per set of predictors. Five models were constructed. In the first model, we entered the socio-demographic factors. In the second model, we added the selected parental factors. The third model included the parent-reported child factor. The fourth model included the selected PCH-registered child factors. In the final model, the relevant teacher-reported child factors were added.

RESULTS

A description of the sample and its characteristics is given in table 1. Of the boys, 21.7% reported early alcohol use, compared with 12.7% of the girls.

Table 1. Background characteristics and early recurrent alcohol use of the sample

Variables		Boys (n=632)		Girls (n=629)		Total (n=1261)	
		n[a]	%[b]	n[a]	%[b]	n[a]	%[b]
Socio-demographic factors							
Educational level father[c]	Middle	200	31.6	207	32.9	407	32.3
	Low	239	37.8	223	35.5	461	36.6
Educational level mother[c]	Middle	237	37.5	251	39.9	487	38.6
	Low	250	39.6	227	36.1	477	37.8
Occupational level father[c]	Middle	188	29.7	200	31.8	388	30.8
	Low	211	33.4	214	34.0	424	33.6
Occupational level mother[c]	Middle	344	54.4	343	54.5	687	54.5
	Low	168	26.6	176	28.0	344	27.3
Ethnicity[d]	Immigrant	47	7.4	45	7.2	92	7.3
Parental factors							
Addiction father (lifetime)[e]	Yes	44	7.0	43	6.8	87	6.9
Addiction mother (lifetime)[e]	Yes	26	4.1	16	2.5	41	3.3
Smoking father[e]	Medium	122	19.3	137	21.8	260	20.6
	High	149	23.6	126	20.0	275	21.8
Smoking mother[e]	Medium	130	20.6	109	17.3	238	18.9
	High	136	21.5	122	19.4	258	20.5
Alcohol use father[e]	Medium	238	37.7	252	40.1	489	38.8
	High	324	51.3	307	48.8	630	50.0
Alcohol use mother[e]	Medium	312	49.4	323	51.4	635	50.4
	High	205	32.4	206	32.8	411	32.6
Parental divorce[e]	Yes	115	18.2	123	19.6	238	18.9
Child's psychosocial functioning							
Registered by PCH (age 4-10)							
Attention problems/ hyperactivity[e]	Yes	77	12.2	29	4.6	106	8.4
Emotional problems[e]	Yes	178	28.2	172	27.3	349	27.7
Behavioural problems[e]	Yes	71	11.2	39	6.2	110	8.7
Positive behaviour[e]	Yes	294	46.5	271	43.1	565	44.8
Child's psychosocial functioning							
Reported by teacher (age 10-12)							
Attention problems[e]	Yes	137	21.7	70	11.1	206	16.3
Activity/impulsivity[e]	Yes	102	16.1	46	7.3	148	11.7
Anxious/depressive[e]	Yes	57	9.0	50	7.9	107	8.5

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Table 1. Continued

Variables		Boys (n=632)		Girls (n=629)		Total (n=1261)	
		n[a]	%[b]	n[a]	%[b]	n[a]	%[b]
Aggressive behaviour[e]	Yes	77	12.2	39	6.2	116	9.1
Delinquent behaviour[e]	Yes	44	7.0	23	3.7	67	5.3
Child's psychosocial functioning							
Reported by parents (age 4-10)							
Healthcare[e]	One	80	12.7	36	5.7	116	9.1
	More than one	52	8.2	34	5.4	87	6.9
Outcome (age 10-14)							
Early recurrent alcohol use[e]	Yes	137	21.7	80	12.7	217	17.2

[a] Numbers of boys/girls may not add up due to rounding of the pooled estimates across imputed data sets.
[b] 100% minus the percentages as indicated represents the share of the remaining category.
[c] Remaining group is categorised as 'high'.
[d] Remaining group is categorised as 'non-immigrant'.
[e] Remaining group is categorised as 'no'.

The results of the univariate and multivariate analyses for each set of predictors are shown in table 2. Of the 'socio-demographic factors', educational level of the father, ethnicity and gender were associated with early recurrent alcohol use univariately as well as multivariately ($P<0.05$); furthermore, a low educational level of the mother was also associated with early recurrent alcohol use ($P<0.10$) but only univariately. Of the 'parental factors', high levels of maternal smoking were associated with early recurrent alcohol use univariately as well as multivariately ($P<0.10$). Of the 'PCH-registered psychosocial functioning factors', attention problems/hyperactivity and positive behaviour were associated with early recurrent alcohol use ($P<0.10$). Of the 'teacher-reported psychosocial functioning factors', only aggressive behaviour was associated ($P<0.05$) with early recurrent alcohol use. 'Parent-reported healthcare utilization' was not associated with early recurrent alcohol use.

Table 2. Associations of child's psychosocial functioning, parental factors and socio-demographic factors with early recurrent alcohol use (age 10-14 years): OR (95% CI)

Predictor		Crude[a] OR (95% CI)	Adjusted[b] OR (95% CI)
Socio-demographic factors			
Educational level father	Middle (vs. high)	1.77 (1.18-2.68)*	1.80 (1.15-2.82)*
	Low (vs. high)	1.81 (1.20-2.73)*	1.77 (1.08-2.89)*
Educational level mother	Middle (vs. high)	1.19 (0.79-1.80)	0.93 (0.59-1.46)

Table 2. Continued

Predictor		Crudeª OR (95% CI)	Adjustedᵇ OR (95% CI)
	Low (vs. high)	1.47 (0.98-2.19)†	1.06 (0.66-1.72)
Occupational level father	Middle (vs. high)	0.88 (0.58-1.32)	
	Low (vs. high)	0.75 (0.47-1.20)	
Occupational level mother	Middle (vs. high)	1.04 (0.70-1.55)	
	Low (vs. high)	0.91 (0.62-1.33)	
Ethnicity	Non-immigrant (vs. immigrant)	2.19 (1.01-4.75)*	2.31 (1.06-5.06)*
Parental divorce	Yes (vs. no)	1.15 (0.79-1.69)	
Gender	Boy (vs. girl)	1.90 (1.39-2.57)*	1.89 (1.39-2.58)*
Parental factors			
Addiction father (lifetime)	Yes (vs. no)	1.34 (0.76-2.37)	
Addiction mother (lifetime)	Yes (vs. no)	1.11 (0.46-2.68)	
Smoking father	Medium (vs. no)	1.28 (0.85-1.93)	
	High (vs. no)	1.21 (0.77-1.92)	
Smoking mother	Medium (vs. no)	0.99 (0.66-1.49)	0.99 (0.66-1.49)
	High (vs. no)	1.38 (0.95-2.02) †	1.38 (0.95-2.02) †
Alcohol use father	Medium (vs. no)	1.55 (0.82-2.93)	
	High (vs. no)	1.54 (0.82-2.88)	
Alcohol use mother	Medium (vs. no)	1.43 (0.92-2.23)	
	High (vs. no)	1.13 (0.69-1.83)	
Child's psychosocial functioning			
Registered by PCH (ages 4-10)			
Attention problems/ hyperactivity	Yes (vs. no)	1.58 (0.97-2.57) †	1.52 (0.93-2.48) †
Emotional problems	Yes (vs. no)	0.77 (0.54-1.09)	
Behavioural problems	Yes (vs. no)	0.94 (0.54-1.62)	
Positive behaviour	Yes (vs. no)	1.34 (0.99-1.81) †	1.31 (0.97-1.77) †
Child's psychosocial functioning			
Reported by teacher (ages 10-12)			
Attention problems	Yes (vs. no)	1.31 (0.89-1.93)	
Activity/impulsivity	Yes (vs. no)	1.40 (0.88-2.23)	
Anxious/depressive	Yes (vs. no)	1.27 (0.73-2.19)	

Table 2. Continued

Predictor		Crude[a] OR (95% CI)	Adjusted[b] OR (95% CI)
Aggressive behaviour	Yes (vs. no)	2.20 (1.34-3.63)*	2.20 (1.34-3.63)*
Delinquent behaviour	Yes (vs. no)	1.74 (0.89-3.41)	
Child's psychosocial functioning			
Reported by parent (ages 4-10)			
Use of healthcare (types)	Yes, one (vs. no)	1.17 (0.68-2.02)	
	Yes, more than one (vs. no)	1.00 (0.52-1.92)	

[a] Crude=univariate; *P*<0.10 for inclusion in the multivariate model.
[b] Adjusted for the other variables in the model.
* p<0.05
[†] p<0.10

Table 3 shows the results of the final multivariate analysis with all predictors that were associated at *P*<0.10 in the multivariate analyses per set. Four models were constructed instead of five, because for the fifth no variable sufficed the criterion. The first model assessed the effect of educational level of the father, ethnicity and gender on early recurrent alcohol use. In the next model, smoking behaviour of the mother was added. Adjusted for the other factors, smoking behaviour of the mother was not significant. The effect of educational level of the father, ethnicity and gender hardly changed and remained significant (*P*<0.05). In the third model, the PCH-registered child factors of attention problems/hyperactivity and positive behaviour were added. The effects of both factors were not significant. The effects of the other factors in the model hardly changed. In the fourth model we added teacher-reported aggressive behaviour. This factor independently predicted early recurrent alcohol use (*P*<0.05). The effects of the other factors in the model hardly changed.

We checked whether the results were similar when restricted to respondents without missing values, i.e. without imputed values. In general the results were comparable, but due to the lower number of cases in the analyses, the accuracy of estimated was somewhat smaller. In the final multivariate analysis in each model, the effect of ethnicity [Model 4: odds ratio (OR)=1.89, 95% confidence interval (CI)=0.64–5.52] and teacher-reported aggressive behaviour (Model 4: OR=1.82, 95% CI=0.92–3.59) became non-significant, probably due their relatively low prevalence combined with a lower power in case of not imputing missing values.

Table 3. Multivariate logistic regression estimates for the associations of educational level father, ethnicity, gender, smoking mother, attention problems/ hyperactivity, positive behaviour and aggressive behaviour with early recurrent alcohol use (age 10-14 years): OR (95% CI)

Predictor		Model 1	Model 2	Model 3	Model 4
Educational level father	Middle (vs. high)	1.79 (1.18-2.72)*	1.78 (1.17-2.71)*	1.78 (1.17-2.71)*	1.77 (1.16-2.70)*
	Low (vs. high)	1.83 (1.21-2.78)*	1.79 (1.17-2.73)*	1.77 (1.16-2.71)*	1.71 (1.12-2.62)*
Ethnicity	Non-immigrant (vs. immigrant)	2.29 (1.05-5.00)*	2.26 (1.03-4.95)*	2.27 (1.04-4.97)*	2.31 (1.05-5.09)*
Gender	Boy (vs. girl)	1.90 (1.40-2.58)*	1.90 (1.40-2.59)*	1.86 (1.36-2.54)*	1.80 (1.31-2.56)*
Smoking mother	Medium (vs. no)		0.90 (0.59-1.37)	0.90 (0.59-1.36)	0.89 (0.59-1.35)
	High (vs. no)		1.24 (0.84-1.83)	1.22 (0.83-1.81)	1.17 (0.79-1.75)
PCH-Attention problems/hyperactivity (ages 4-10 years)	Yes (vs. no)			1.26 (0.76-2.08)	1.16 (0.70-1.94)
PCH-Positive behaviour (ages 4-10 years)	Yes (vs. no)			1.30 (0.96-1.78)[†]	1.31 (0.97-1.78)[†]
Teacher-reported aggressive behaviour (ages 10-12 years)	Yes (vs. no)				1.86 (1.11-3.11)*

* p<0.05

[†] p<0.10

DISCUSSION

This study examined the potential predictors of early recurrent alcohol use during early adolescence. A limited set of factors were found to be predictive mulitvariately. We found that teacher-reported aggressive behaviour, educational level (low or middle) of the father, ethnicity (being a non-immigrant) and gender (i.e. being a boy) were independent predictors of early recurrent alcohol use.

The predictive value of teacher-reported psychosocial functioning was stronger than PCH-registered psychosocial functioning in the prediction of early recurrent alcohol use. This confirms findings of a previous study on problem behaviour later on.[23] Our study did not find a significant association between PCH-registered psychosocial functioning and early recurrent alcohol use, whereas a limited numbers of studies found such an association for parent and/or child-reported psychosocial behaviours,[14,24] along with the use of other substances.[7] Considering this, one might expect that psychosocial behaviour would be related to early recurrent alcohol use. The lack of statistically significant associations in our study could be explained by an inaccuracy in the registration of psychosocial functioning by PCH as may occur in routine practice. Another explanation may be that the quality of the identification of psychosocial functioning by PCH is too poor. It has been shown that identification of psychosocial functioning varied seriously among PCH professionals.[25,26] Furthermore, even though not statistically significant, the lower bounds of the 95%CIs of the adjusted associations of attention problems/hyperactivity and positive behaviour were close to 1. Psychosocial functioning registered by PCH tends to be predictive for early recurrent alcohol use and may be significantly associated with early alcohol use when registered accurately.

Another main finding of our study was that early externalizing problems were stronger predictors of early recurrent alcohol use than internalizing problems, especially teacher-reported aggressive behaviour. Studies on the prospective association of aggressive behaviour with *early* alcohol use are very scarce. Regarding the few available ones, our results are consistent with those of Dobkin et al.[5] who found a prospective association between aggressive behaviour at 10 years and alcohol use at 13 years of age. However, they do not support the findings of Hayatbakhsh et al.,[7] who did not find a prospective association between aggressive behaviour at 5 years and initiation of alcohol use before 14 years of age. The long period between the two measurements in the latter study might explain its different findings. Our findings regarding the significant prospective association can be explained by an aetiological relationship, between aggressive behaviour and alcohol use, or by a common cause model. The latter seems most reasonable, as suggested in previous research.[27,28] These common factors may be personality factors (such as risk-seeking) or social environmental characteristics (such as a lack of parental supervision).[28] Our study showed that aggressive behaviour is a marker for future alcohol use during early adolescence.

Our study did not find a prospective association between parental alcohol use and early recurrent alcohol use in their children, which is in line with a study of Konings et al.[29] Most earlier studies found an association,[30,31] but focused on older adolescents. Older adolescents are more aware of the alcohol use of their parents than early adolescents are.[32] Parents may consume alcohol mainly late in the evening which is not observed by young adolescents. Furthermore, over time parents may become somewhat less strict in terms of setting alcohol-specific rules,[33] which would exacerbate alcohol modelling effects over time. Our results are partly in line with the findings of Macleod et al.[13] Macleod et al. showed a significant association between parental alcohol use and early alcohol use, but only for mothers and not for fathers. However, this association was very weak and may only have been detected because of the relatively large sample of that study.

Regarding the socio-demographic factors, we largely identified the same early predictors as have been found in previous research. Educational level, ethnicity, and gender were consistently found to be associated with alcohol use.[14,34,35] However, we did not find an association between parental divorce and early recurrent alcohol use. In recent years, many studies showed that parental divorce increased the risk of problem behaviour in adolescence,[36,37] but the type of problem behaviour may differ over age. Middle or late adolescents may respond with alcohol use,[38] since the availability of alcohol increases with age,[39] whereas early adolescents may exhibit other risky behaviours in response to parental divorce.

Strengths and limitations

The strengths of this study are its prospective design, high response rate and high rate of retrieval of the PCH files. Another strength is the young age at which alcohol use was measured. Furthermore, a strength is the use of several predictors which made it possible to examine the impact of each predictor, independent of several other factors, in relation to early recurrent alcohol use. A final strength of this study is its multi-informant approach.

A limitation of this study is that not every child in the TRAILS sample, dependent on the municipality, was invited for a consultation at a PCH. This reduced the power of our study to detect associations. A second limitation is that alcohol use was measured based on self-reports of the adolescents. However, self-reported alcohol use has been shown to be rather valid.[40] A third limitation may be the inaccurate registration by PCH. This would lead to an underestimation of the contribution of PCH to the prediction of early recurrent alcohol use. A final limitation is that the participating parent has to report about possible addictions of the other parent or on both biological parents, which may introduce information bias.

Implications

Our results show that socio-demographic factors such as educational level of the father, ethnicity and gender, as well as aggressive behaviour are indicators for early recurrent alcohol use. This may help PCH professionals in the identification of children at risk of early drinking. We did not find significant associations of PCH-registered psychosocial functioning with early alcohol use, but improvement of the PCH registration may contribute to the identification of children at risk of early recurrent alcohol use. PCH may bring about this improvement by using reliable and valid instruments for the measurement of psychosocial functioning or by including teacher information on the child's psychosocial functioning.

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