Do Young Children of Alcoholics Hold More Positive or Negative Alcohol-Related Expectancies Than Controls?

Reinout W. Wiers, W. Boudewijn Gunning, and Joseph A. Sergeant

Alcohol-related expectancies and alcohol use were examined in 185 children of alcoholics (COAs) and controls, aged 7 to 18 years. Concerning the expectancies of young COAs, two contrasting hypotheses have been proposed: COAs should hold more negative expectancies than controls due to aversive learning, or hold more positive expectancies due to social learning or a more favorable response to alcohol. We propose that COAs of elementary school age hold more negative expectancies due to aversive learning, whereas older COAs hold more positive expectancies due to a more favorable response to alcohol. The critical variable with respect to the change from more negative to more positive expectancies is proposed to be the child's own initiation of alcohol use. The results of the present cross-sectional study provide suggestive evidence in favor of this hypothesis. First, elementary school-aged COAs had stronger negative expectancies than controls. Second, the hypothesized interaction between family history and own experience with alcohol was confirmed in the adolescent subsample. The proposed model should be critically tested with longitudinal data. If confirmed, the model may be of importance for prevention of alcohol-related problems in high-risk populations.

Key Words: COA, Vulnerability, Expectancy, Mediation.

A large number of studies have identified children of alcoholics (COAs) as a high-risk group for experiencing a variety of negative outcomes, including alcoholism. There is now considerable consensus that the interactions between genetic and environmental factors are crucial to the understanding of the etiology of alcoholism. One of the major goals of high-risk studies comparing nonalcoholic COAs with controls has been the identification of potential moderators and mediators of risk. Alcohol-related expectancies have been proposed to constitute an important mediator. Expectancies are powerful prospective predictors of alcohol use in adolescents and young adults. If expectancies (partly) mediate other risk factors for alcohol use and abuse, the expectancies of COAs may be expected to differ from those of controls. This had indeed been confirmed in several studies, but negative results have also been reported.

Methodological issues concerning expectancy measurement are likely to have contributed to these inconsistencies. First, some questionnaires, including the most widely used instrument (the Alcohol Expectancy Questionnaire), measure only positive expectancies, whereas other instruments measure both positive and negative expectancies. It has now been demonstrated repeatedly that adding negative expectancies significantly improves the prediction of alcohol consumption in general population samples. However, nearly all studies comparing COAs and controls have measured only positive expectancies. Second, most expectancy instruments do not differentiate expectancies with respect to dose of alcohol, whereas this has been shown to be important in relation to different patterns of alcohol use. We are not aware of studies comparing dose-related expectancies of COAs and controls.

What may be expected of the alcohol expectancies of COAs? Given the enhanced risk for later alcoholism in COAs and the association of positive expectancies with alcohol consumption, several researchers hypothesized that COAs would have stronger positive expectancies than controls. However, studies comparing young COAs and controls found the opposite pattern; young COAs had less positive expectancies (negative expectancies were not measured). In addition, it was reported that young COAs have more negative attitudes to alcohol than controls. Young COAs have also been reported to have more elaborate cognitive schemas concerning alcohol use than controls (even in preschoolers). The relatively large early experience with alcohol is likely to be primarily negative in case of COAs and could result in more negative expectancies, through aversive learning. But how would this mechanism relate to the enhanced risk for later alcohol-related problems and to the relatively strong positive expectancies that have been reported for older COAs? We propose that the literature on the alcohol expectancies in underaged COAs may be summarized in a simplified model (Fig. 1). The left panel of Fig. 1 indicates that young COAs who have not commenced drinking alcohol have more negative expectancies than controls, due to aversive modeling of parental alcohol use. It should be noted that children in general predominantly hold a negative view of alcohol before they start drinking alcohol themselves.

From the Department of Clinical Psychology, University of Amsterdam; and the Department of Child and Adolescent Psychiatry, Academic Medical Centre, Amsterdam Institute for Addiction Research, Amsterdam, The Netherlands.

Received for publication December 6, 1997; accepted July 27, 1998.

This study was supported by a grant from the Simulation Program of Health and Health Care Research of the Dutch Ministry of Public Health and Culture, and the Ministry of Education and Science.

Reprint requests: Reinout W. Wiers, Ph.D., Faculty of Psychology, University of Maastricht, P.O. Box 616, 6200 ND Maastricht, The Netherlands. R-wiers@psychology-unimas.nl

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Fig. 1. Hypothetical model representing the differential development of alcohol expectancies in COAs and controls. (Left) Young COAs without personal experience with alcohol are hypothesized to have more negative expectancies due to aversive learning. (Middle) Critical variable with respect to the hypothesized differential change in expectancies is the beginning of drinking. (Right) After substantial personal experience with alcohol, COAs are expected to have more positive expectancies than controls, due to their more favorable response to alcohol, on average.

Hence, we propose that the alcohol expectancies of all children are predominantly negative, but that the expectancies of young COAs are more negative than those of others. The relative dominance of negative expectancies could lead to a later age of onset of drinking alcohol in COAs, as indicated in Fig. 1, and to a relatively large percentage of total abstainers among older COAs.25

The right panel of Fig. 1 indicates that only when the child or adolescent has developed personal experience with drinking alcohol, the influence of inherited differences in the physiological response to alcohol becomes important. Although several researchers have proposed social learning explanations to account for the relatively strong positive expectancies in older COAs,7,12 we believe this is unlikely given the relatively weak positive expectancies in young COAs described herein. Once COAs have commenced drinking alcohol themselves (the critical variable in the middle panel of Fig. 1), they experience relatively strong direct positive effects of alcohol and relatively weak negative effects later on.1,20–31 A favorable response to alcohol is likely to influence the further development of alcohol expectancies,1,10,31 This may lead to an enhancement of positive expectancies (e.g., tension reduction, arousal),32,33 and to a weakening of negative expectancies. Dose of alcohol is likely to play a role in the differential development of expectancies, because both the favorable positive response to alcohol and the weaker intoxication effect only become apparent at higher dosages of alcohol.5,20 It should be noted that the model is simplified for ease of interpretation: positive and negative expectancies are depicted as being exact opposites and as having the same meaning for everyone, whereas this may differ for some expectancies as a function of family history (see "Discussion").

In the present study, positive and negative alcohol expectancies of young COAs and controls were compared in relation to the initiation of personal alcohol use. In accordance with the model depicted in Fig. 1, it was predicted that nondrinking COAs have stronger negative and less strong positive expectancies in comparison with controls. In contrast, those COAs who have initiated the use of alcohol were predicted to have stronger positive expectancies, especially for a high dose. Predicting negative expectancies of drinking COAs is difficult for two reasons: they have rarely been studied before, and one could predict that the negative expectancies acquired in childhood remain intact after initiation of alcohol use or alternatively that they are weakened due to relatively beneficial personal experience with alcohol.

METHODS

Participants and Recruitment

A total of 221 participants, aged 7 to 18 years old, were tested. Eleven participants could not be categorized with respect to family history and were excluded. Three had been adopted, and the alcoholic diagnosis of one of the parents of eight other children was uncertain, because contact had either been lost with the alcohol-abusing parent or because this parent had died. The remaining 210 participants could be classified with respect to family history of alcoholism (FH). Twenty of these participants had a second-degree relative with an alcohol problem, without a first-degree relative with an alcohol problem (FH-1 in the categorization of Dawson et al.26) This group was judged too small to be included in the analyses. Four participants were excluded because of missing data. All COAs were screened for signs of fetal alcohol syndrome in two ways: by screening for facial effects of fetal alcohol exposure through photographs and morphometric analysis,35 (by W.B.G.: difficult cases were discussed with a clinical geneticist) and by inquiring into the amount of alcohol the participant's mother consumed during pregnancy. One COA was excluded for possible fetal alcohol syndrome. All other COAs were given a probable negative diagnosis on both indicators. The remaining 185 participants were categorized with respect to the independent variable of primary interest: FH-70 participants had an alcoholic parent (COAs) and 115 participants did not have a first- or second-degree relative with an alcohol problem (controls). The vast majority of participants were Caucasian (96%), four participants were in the COA group, and five controls were not. Recruitment differed for COAs and controls.

COAs. COAs were primarily recruited through in- and outpatient clinics for alcohol addiction in Amsterdam and surroundings. In the 3-year sampling period, a total of 51 children of alcoholics were recruited through these clinics. An additional six COAs were recruited through the Child and Adolescent Psychiatric Outpatient Unit of the Academic Medical Center. An additional 13 COAs were recruited via the recruitment procedure for controls. All 70 COAs had at least one parent who met the criteria for alcohol dependence as assessed with the Composite International Diagnostic Interview.39 15 children had an alcoholic mother only, 44 children had an alcoholic father and an alcoholic mother, and 11 children had both an alcoholic mother and an alcoholic father.

Controls. Control children were recruited through schools in the Amsterdam region and through newspaper advertisements. No prescreening was made. No local matching strategy was used, because of the risk of identification of the alcoholic parent in the neighborhood. Moreover, even careful matching procedures often result in samples of COAs with a lower social economic status (SES) than controls.25 The original control sample was reclassified based on a family history of alcoholics categorization.33 13 participants recruited as controls had a biological parent with a DSM-III-R diagnosis of alcohol dependence and were placed in the COA group. Twenty-eight participants were excluded from the study because they were either unclassifiable with respect to family history of alcoholism, or fell into the "FH" group (only a second-degree relative with an alcohol problem). The remaining 115 controls had no first- or second-degree relative with an alcohol problem.
**EXPECTANCIES IN COAs**

### Table 1. Background Variables Children

| COAs | Boys | | Girls | | | Controls | | | | | p¹ | p² | p³ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n | 12 | | 12 | | | 29 | | 22 | | | | | | |
| Age | 8.50 | 1.24 | 9.04 | 1.22 | 9.12 | 1.11 | 8.60 | 0.83 | 0.49 | 0.69 | 0.11 |
| SES | 1.83 | 0.72 | 2.00 | 0.74 | 2.20 | 0.51 | 2.20 | 0.70 | 0.058 | 0.52 | 0.68 |
| Estimated F-IQ | 98.95 | 14.07 | 93.25 | 8.05 | 105.52 | 11.34 | 101.18 | 16.55 | 0.007 | 0.15 | 0.88 |
| Vocabulary | 9.83 | 2.09 | 8.92 | 2.39 | 10.66 | 2.72 | 9.96 | 2.55 | 0.16 | 0.23 | 0.67 |
| Block design | 9.67 | 2.03 | 8.67 | 1.92 | 11.31 | 2.74 | 10.50 | 4.24 | 0.032 | 0.26 | 0.01 |
| Negative life events | 1.38 | 0.62 | 1.14 | 0.48 | 0.50 | 0.57 | 0.73 | 0.60 | <0.001 | 0.02 | 0.15 |
| Disinfectant family (%) | 7 (58%) | 4 (50%) | 3 (10%) | 7 (32%) | 0.002 | 0.20 |
| School problems (%) | 4 (33%) | 2 (17%) | 5 (17%) | 2 (8%) | 0.23 | 0.26 |
| Drinking alcohol (%) | 1 (8%) | 1 (8%) | 1 (5%) | 1 (5%) | 0.43 | 0.84 |

*Note: p¹ = p-value of comparison COA-control (main effect); p² = p-value of comparison boys-girls (main effect); p³ = p-value of interaction effect. In case of continuous variables (Age, SES, and IQ), p-values relate to F tests. For comparisons of percentages, p-values relate to x² tests (only main effects). Estimated F-IQ = estimated full-scale IQ, based on WISC-R scores on Vocabulary and Block Design subtests. Negative life events were log-transformed. M = mean; SD = standard deviation.*

### Table 2. Expectancies Children

| COAs | Boys | | Girls | | | Controls | | | | | p¹ | p² | p³ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n | 12 | | 12 | | | 29 | | 22 | | | | | | |
| Sexual enhancement | 2.10 | 1.45 | 2.10 | 1.77 | 2.40 | 1.10 | 2.40 | 1.07 | 0.008 | 0.074 | 0.86 |
| Antisocial behavior | 3.86 | 0.93 | 2.19 | 1.09 | 3.41 | 1.08 | 2.99 | 0.98 | | | |
| Negative mood | 2.02 | 1.24 | 1.71 | 0.61 | 2.39 | 0.97 | 2.27 | 0.74 | | | |
| Excitement | 2.29 | 1.07 | 1.95 | 0.76 | 1.74 | 0.74 | 1.67 | 0.74 | | | |

*Note: p¹ = multivariate p-value of comparison COA-control (main effect); p² = multivariate p-value of comparison boys-girls (main effect); p³ = multivariate p-value of interaction effect. M = mean; SD = standard deviation.*

**Procedure**

The research protocol was approved by the medical ethical committee of the Academic Medical Center–University of Amsterdam. All children were tested individually, after informed consent was signed by a parent or other legal representative of the child. The experimenter was blind to the status of the child. The study procedure took 3 hr, including two breaks. The order of the tests administered was fixed. The other tests (not reported herein) concerned primarily measures of cognitive and neuropsychological functioning. The child could earn approximately $3 (in one of the neuropsychological tests), and parents were paid travel expenses. While the child was tested, the parent was interviewed to obtain information concerning FH (EuropAs), family situation (disinfect or intact family), and negative life events during the past year. The parent also completed a number of questionnaires, including measures of current and lifetime alcohol use for the accompanying parent and for the other biological parent. The parents of all participating children received a global report concerning the psychological functioning of their child (based on those measures for which norm scores were available). It was decided that the child's substance use would not be reported to the parents in order to increase the reliability of the self-report measure of alcohol use.

**Measures**

*FH. FH was assessed with the EuropASI, based on the 5th edition of the American Addiction Severity Index.* A parent was asked whether any first- or second-degree relative ever had "a significant drinking problem— one that did or should have led to treatment." This question was asked separately for each family member. In case of any sign of alcohol abuse for any family member, the questions of the alcohol section of the FH-RDC were asked to diagnose probable alcohol dependence. Note that this screening method was used here only to make the distinction between COAs and controls as clear as possible (by excluding controls with a second-degree relative with an alcohol problem). Due to limited sample size, no further family history distinction was made within the COA group (e.g., ungenerational vs. multigenerational alcoholics).

*Family Situation ("Disinfect Family"). The parent was asked whether the nuclear family of the child was intact, or whether the child lived alone with the mother, with the father, or with someone else. This variable was dichotomized (disinfect or intact nuclear family).*

*Negative Life Events. The parent was interviewed concerning negative life events, which occurred during the year before the interview.* These events can be described as stressful and uncontrollable. Sample events include the death of a family member or a grandparent, death or loss of a pet, a parent was arrested by the police, a parent lost his or her job, a parent or the child was admitted to a hospital, fights between the parents, a parent left the family.

*SES. SES was determined on the basis of the current employment of the parents and their level of education.* The highest level of current employment of the two parents was used as the primary indicator, leading to three levels: low, middle, and high SES.

*IQ. The two subtest short forms of the WISC-R were used (Vocabulary and Block Design), which has a correlation of 0.99, with the full-scale IQ. In those participants who were 17 or 18 years old, the same subtests of the WAIS were used (the WAIS-R is not available in The Netherlands). Vocabulary was used as an indicator of Verbal IQ, Block Performance as an indicator of Performance IQ. An estimate of full-scale IQ was made after the procedure of Sattler.* The estimated full-scale IQs and the standardized scores of the two subtests are shown in Tables 1 and 2.

*School Problems. The parent was asked whether the child either repeated a grade or was going to a special school (for children with learning difficulties).*

**Alcohol Expectancies. Expectancies were measured with a different instrument in the two age groups: in participants younger than 12 years the child version of the Dutch Expectancy Questionnaire was used.***
participants 12 years and older, the adolescent-adult version of the Dutch Expectancy Questionnaire was used.\(^{19}\)

Children's Expectancies. In a general population study, two assessment methods of children's expectancies were compared.\(^{46}\) Herein, the questionnaire assessment method was used. Four first-order scales were used because a 4-factor solution had shown the best fit in the questionnaire assessment condition.\(^{46}\) The four scales consisted of the following items: after a few alcoholic drinks, people talk about sex more easily; feel like making love; kiss more readily (Sexual Enhancement); after a few alcoholic drinks people become annoying while playing a game; people become cheeky; people want to fight; people say stupid things (Antisocial); after a few alcoholic drinks, people feel tough; it is exciting to have a few alcoholic drinks with friends; after a hard day's work, people like to drink alcohol; people enjoy drinking alcohol together while watching TV (Social-Excitement); after a few alcoholic drinks, people see the future gloomy; feel insecure; and feel unattractive (Negative Mood). To create scales in the same order of magnitude, the added item scores were divided by the number of items. Four children (2 COAs and 2 controls) had one missing expectancy item. These four items were replaced with the mean scores.

Adolescent's Expectancies. Alcohol expectancies in adolescents were measured with a questionnaire developed to measure positive and negative alcohol expectancies for a low and a high dose of alcohol in adolescents and adults.\(^{19}\) This instrument was found to have good methodological properties across different sub samples categorized with respect to gender and age group.\(^{19}\) In this questionnaire, a low dose refers to "a few alcoholic drinks" and a high dose to "many alcoholic drinks." The reason for not referring to a specific dose was that the high dose effect was intended to measure expected effects of intoxication, which comes with different dosages for different people. In the analyses herein, it was decided to split up the second-order scale of low dose positive expectancies into a combined "sexual enhancement and fun" scale and the first-order scale "low-dose cognitive and motor enhancement." The reason for this was that the most consistently reported difference between COAs and controls concerns the specific expectancy of "cognitive and motor enhancement." Introducing the composite second-order variable only could result in loss of a significant effect at this specific scale. However, introducing all seven first-order scales would reduce the power to detect a difference. Therefore, the three second-order scales "low-dose negative," "high-dose negative," and "high-dose positive" expectancies were entered together with the two low-dose positive expectancies "sex and fun," and "cognitive and motor enhancement." Again, all expectancy-scales were divided by the number of items, to create scales of comparable magnitude. Eighteen individuals had one missing expectancy item, two had two missing items and one subject had five missing. All participants remained in the analyses; missing values were replaced by mean values.

Alcohol Use

Alcohol use was measured with a self-report questionnaire that was used in a large population study of adolescent substance use.\(^{4}\) Importantly, confidentiality was measured before this questionnaire was completed. Measures of lifetime and current use of alcohol and other substances were obtained. In addition, the age of the first use of the various substances was asked. For the present study, a dichotomous variable was created (alcohol use initiated or not). Next, in order to investigate the prediction of alcohol use among those who had initiated drinking, two variables were constructed: the average amount of alcohol consumed per month (a measure of quantity-frequency) and the frequency of alcoholic drunkenness. "Frequency of drunkenness" was the sum of the reported number of times five or more alcoholic consumptions were consumed on one occasion during the past 2 weeks and the reported frequency of drunkenness during the past month and the past year.

RESULTS

The dependent variables of primary interest (expectancies) were analyzed separately for children and adolescents, because of the different instruments used in these two age groups. For this reason, the background variables are also reported separately for the children and adolescents. Because gender differences in children's expectancies have been reported,\(^{22}\) gender was introduced as a second independent variable in the analyses of the expectancies and therefore also in the analyses of the background variables.

**Elementary School Children**

**Background Variables.** Seventy-five children under 12 completed the Alcohol Expectancy Questionnaire for children; 51 controls and 24 COAs. Boys and girls differed on none of the background variables, and no significant interaction between gender and the presence or absence of an alcoholic parent was found for any of the variables (see the two last columns in Table 1). However, COAs came from families with a significantly lower SES \(F(1,71) = 5.02, p = 0.028\), and COAs experienced more negative life events than controls in the year before the interview \(F(1,71) = 16.76, p < 0.001\) (log-transformed because of a significant Box test for the untransformed variable). In addition, a higher percentage of COAs than controls came from disintact families \(x^2(1) = 9.2, p = 0.002\).

Only four children were reported to have drunk alcohol on more than one occasion (2 COAs, 2 controls), which did not allow for a meaningful comparison between drinkers and nondrinkers in this age group. COAs had a significantly lower estimated full scale IQ \(F(1,71) = 5.10, p = 0.027\). Further inspection of the results on the two subs tests used to estimate IQ showed that the difference in intelligence was primarily due to lower scores of the COAs on Block Design \(F(1,71) = 4.77, p = 0.032\). No significant differences between COAs and controls were found on Vocabulary, which is probably the most important subtest with respect to the comparison on the (verbal) expectancy questionnaire (Table 1). COAs and controls did not differ significantly in the percentage of children who were reported to have school problems.

**Expectancies.** A 2 × 2 (COA status by gender) multivariate analysis of covariance (MANCOVA) was run with age and SES as covariates and the four expectancies as dependent variables. The assumptions of multivariate ANOVA (MANOVA) were not violated. The main multivariate effect for COA status was significant \(F(4,66) = 3.8, p = 0.008\) (Table 2). The main effect for gender was not significant, but could be described as a trend \(F(4,66) = 2.3, p = 0.074\). The interaction between COA status and gender was not significant (Table 2). The pattern of results remained identical in a repeated analysis without the four individuals who were reported to have experience with drinking alcohol. The dichotomous variable disintact family was not directly controlled for because of the considerable overlap with the independent variable of primary interest: COA status. Instead, in case of a significant result with the COA variable, an additional control analysis was run with "Disintact Family" as an alternative independent variable. No significant main effect was found for this variable \(p = 0.18\), suggesting that the main effect found is due to parental alcoholism, rather than to the associated dichotomous variable "Disintact Family." When estimated full-scale IQ and negative life events were entered as extra covariates into the original MANCOVA, the COA main effect remained significant \(F(4,63) = 4.08, p = 0.005\). It may be concluded that the alcohol expectancies of young COAs differ significantly from those of controls. The age- and SES-adjusted means on the four expectancy scales are presented in Table 2.

The relative importance of the four dependent variables with respect to the multivariate difference between COAs and controls was judged on the basis of a discriminant analysis, with the "F-to-remove" index of a stepwise discriminant analysis after entering all variables, as advised by Huberty and Morris.\(^{48}\) Relative importance of the four expectancies was as follows:
Table 3. Background Variables Adolescents

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<thead>
<tr>
<th></th>
<th>Boys</th>
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<td>M</td>
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<tr>
<td>n</td>
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<td>32</td>
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<tr>
<td>Age</td>
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<td>14.34</td>
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<tr>
<td>SES</td>
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<tr>
<td>Estimated F-IQ</td>
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<td>9.56</td>
<td>99.11</td>
<td>16.19</td>
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<tr>
<td>Vocabulary</td>
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<td>2.43</td>
<td>10.14</td>
<td>3.02</td>
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<td></td>
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<td>Block design</td>
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<td>9.57</td>
<td>3.84</td>
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<td>1.34</td>
<td>0.49</td>
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<tr>
<td>Distinct family (%)</td>
<td>10 (56%)</td>
<td>16 (57%)</td>
<td>6 (19%)</td>
<td>9 (28%)</td>
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<tr>
<td>School problems (%)</td>
<td>5 (29%)</td>
<td>7 (25%)</td>
<td>5 (15%)</td>
<td>14 (44%)</td>
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<td></td>
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<tr>
<td>Drinkers (%)</td>
<td>8 (44%)</td>
<td>17 (61%)</td>
<td>19 (59%)</td>
<td>16 (50%)</td>
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Note: Analysis of covariance (age covaried). Means for these two variables are adjusted for age effects. \( p^1 \) = \( p \)-value of comparison boys-girls (main effect); \( p^2 \) = \( p \)-value of interaction effect. In case of continuous variables (Age, SES, and IQ), \( p \)-values relate to \( F \) tests. For comparisons of percentages, \( p \)-values relate to \( \chi^2 \) tests (only main effects). Estimated F-IQ = Estimated full-scale IQ, based on WISC-R scores on Vocabulary and Block Design subtests. Negative life events were log-transformed. \( Q^2 \) = log-transformed quantity-frequency, estimated number of standard drinks per month. Intoxication = log-transformed index of frequency of alcohol intoxication. M = mean; SD = standard deviation.

“Antisocial behavior” \( (F_{A} = 3.9) \), “Negative mood” \( (F_{A} = 3.1) \), “Excitement” \( (F_{A} = 2.9) \), and “Sexual enhancement” \( (F_{A} = 0.7) \). COAs and controls are best discriminated on the basis of their negative expectations (antisocial behavior and negative mood). Interestingly, the more positively correlated concept of “outgoing or externalizing behavior” (excitement) is also stronger in COAs than in controls. It may be further noted that the negative expectancy of antisocial behavior is the strongest expectancy in all subgroups of children (highest mean scores). Hence, in accordance with the hypothesis, all children tested had primarily negative expectations, and COAs had even stronger negative expectancies than controls, especially of antisocial behavior.

Adolescents

Background Variables. One hundred and ten adolescents completed the Adolescent Alcohol Expectancy Questionnaire (46 COAs and 64 controls). As in the younger subsample, the adolescent COAs had a significantly lower SES than controls \( F(1,106) = 4.98, p = 0.028 \) and had experienced more negative life events during the year before the interview than the controls \( F(1,106) = 29.56, p < 0.001 \). In contrast to the younger subsample, the adolescent COAs did not have a significantly lower estimated full-scale IQ. However, the analyses of the separate subtests again indicated that COAs scored lower on Block Design, but not on Vocabulary (Table 3). Like the young sample, the adolescent COAs came significantly more often than disintact families \( \chi^2 (1) = 12.5, p < 0.001 \). In the adolescent sample, approximately half of the participants were reported to have drunk alcohol on more than one occasion, which allowed for a direct test of the hypothesis that expectancies differ as a function of the interaction between the presence of an alcoholic parent (COA) and personal experience with alcohol in this age group.

It should be noted that, among the subgroup of adolescents who had commenced drinking alcohol \( (n = 60) \); Table 3, bottom panel), the mean age of COAs was significantly higher than the mean age of controls \( F(1,56) = 9.80, p = 0.003 \). For this reason, age will be controlled for in all subsequent analyses.

Adolescents' Expectancies. A \( 2 \times 2 \times 2 \) (COA status \( \times \) gender \( \times \) drinking status) MANCOVA was run with age and SES as covariates and five expectancy scales as dependent variables: “low-dose sex and fun,” “low-dose cognitive-motor enhancement,” “low-dose negative expectancies,” “high-dose positive expectancies,” and “high dose negative expectancies.” Two univariate tests of homogeneity of variance were significant: for cognitive and motor enhancement and for low-dose positive expectancies \( (p < 0.01) \), but the multivariate Box test was not significant \( (p = 0.11) \). Because the largest sample (controls) was less than twice larger than the smaller sample (COAs), this violation was judged acceptable. As predicted, the two-way interaction between COA and drinking status was significant \( F(5,96) = 2.6, p = 0.031 \) (Table 4). Note that the data in Table 4 are presented with respect to the two independent variables of primary interest (COA and drinking status), whereas ignoring gender differences. The reason is that all gender effects were nonsignificant (main effect and all interactions with gender). The other main effects (COA and drinking status) also failed to reach significance, but the interaction between these independent variables was significant, as hypothesized (Table 4). As in the analyses herein, a control analysis was run with “Disintact Family” as independent variable instead of COA. In contrast to “COA status,” “Disintact Family” did not show a significant interaction with drinking status \( (p = 0.82) \). Adding negative life events
as an extra covariate to the original MANOVA did not change the results: the interaction between COA and drinking status remained significant \( F(5,98) = 2.7, p = .024 \), with all main effects remaining nonsignificant.

Concerning the significant interaction between COA and drinking status, the relative importance of the dependent variables was again judged on the basis of the discriminant function, representing the optimal multivariate discrimination between the four groups (drinking and nondrinking COAs and controls). The relative importance of the five expectancies with respect to this Discriminant function was as follows: "high-dose positive" (\( F_R = 5.2 \)), "sexual enhancement and fun" (\( F_R = 4.0 \)), "low-dose negative" (\( F_R = 1.8 \)), "high-dose negative" (\( F_R = 0.7 \)), and "cognitive and motor enhancement" (\( F_R = 0.2 \)). It may be concluded that drinking and nondrinking COAs and controls differ most strongly on positive expectancies, especially on high-dose positive expectancies and on the low-dose positive expectancy of "sex and fun." Nondrinking COAs had lower scores on positive expectancies for a high dose of alcohol, in comparison with drinking COAs and drinking and abstaining controls (Table 4). The pattern of results of "sex and fun" was as hypothesized: nondrinking COAs had the lowest mean on this positive expectancy and drinking COAs as the highest. The predicted pattern was not found for the low-dose positive expectancies of cognitive and motor enhancement.

**Alcohol Consumption in COAs and Controls.** Two other issues related to the initiation of alcohol use in adolescent COAs and controls were investigated. First, the age of the first alcoholic drink was compared between drinking COAs and controls (\( n = 60 \)). In agreement with the averasive earning hypothesis (before personal experience with alcohol), it was found that the reported age of the first alcoholic drink was significantly higher for COAs, in comparison with controls \( F(1,56) = 4.64, p = 0.035 \), with no effect of gender (Table 3, bottom panel). Second, it was investigated whether drinking COAs consumed more alcohol than drinking controls (Table 3, bottom panel). After controlling for age, this was not the case on a (log-transformed) measure of weekly alcohol consumption, nor on a (log-transformed) measure of frequency of intoxication.

**DISCUSSION**

In the present study, alcohol expectancies of underaged COAs and controls were compared. Separate measures were used for elementary school. The central hypothesis was that the expectancies of COAs would differ from those of controls as a function of their personal experience with alcohol. It was expected that young nondrinking COAs would have more negative and less positive expectancies than controls, whereas older COAs who had initiated drinking alcohol themselves would have more positive alcohol expectancies. The results of the present cross-sectional study provide suggestive evidence in favor of the hypothesized interaction between COA status and one's own experience with drinking alcohol, as depicted in Fig. 1.

First, among elementary school children, COAs had stronger negative expectancies than controls, especially for antisocial behavior. This was in agreement with the left panel of Fig. 1. In contrast to one earlier finding, an interaction was found between gender of the child and family history of alcoholism. Second, the expectancies of adolescents showed the hypothesized interaction between the presence or absence of an alcoholic parent and the initiation of alcohol use, in the absence of a main effect for COA. This was in agreement with the middle panel of Fig. 1. Further inspection of this interaction showed that nondrinking COAs had less positive expectancies for a high dose of alcohol than drinking COAs and controls. In agreement with the hypothesis, nondrinking COAs scored lowest on the low-dose positive expectancy of "sex and fun," and drinking COAs scored highest. The positive low-dose expectancy of "cognitive and motor enhancement" did not show the predicted pattern, which is remarkable, because this expectancy has been repeatedly reported to differ between COAs and controls. This negative finding, as well as the lack of difference between drinking COAs and controls on positive expectancies for a high dose, are prob-
ably due to the relatively low level of alcohol consumption in the present sample. These positive expectancies of drinking COAs may develop only after more personal experience with alcohol. Hence, the right panel of Fig. 1 was only partly confirmed in the present study (for “sex and fun”), but has been reported in several other studies in which older samples with higher levels of alcohol consumption were measured.\textsuperscript{7,12,13} Third, the significantly later age of alcohol onset in COAs in comparison with the controls may be interpreted from the perspective of the stronger aversive modeling before personal experience with alcohol in COAs than in controls. However, given that the drinking COAs were significantly older than the drinking controls, this difference could be (partly) due to a memory effect. Moreover, whether COAs initiate drinking at a relatively late or early age is likely to depend on other factors, such as alcohol-related family stress, parent–child relationships,\textsuperscript{52} and whether the child is affiliated with deviant peers.\textsuperscript{4}

Although we believe the present results provide suggestive evidence in favor of the hypothesized model, three caveats should be noted.

First, the distinction between positive and negative expectancies made for present purposes is overly simplistic. Positive and negative expectancies are not opposites, as can be concluded both from studies demonstrating that negative expectancies predict a unique portion of variance in alcohol consumption beyond that predicted by positive expectancies,\textsuperscript{17–19} and from semantic network studies of expectancies.\textsuperscript{52,53} Moreover, what constitutes a positive expectancy for one individual may constitute a negative expectancy for another. One way to derive what is a positive and what is a negative expectancy is by inspecting the sign of the regression weights, assuming that a positive sign indicates a positive expectancy and a reason to drink, and a negative sign a negative expectancy and a reason to moderate drinking.\textsuperscript{19} Interestingly, a recent study of young adult COAs and controls indicated that expected aggression was a positive predictor of alcohol use in COAs and that the same expectancy was a negative predictor of alcohol use in controls.\textsuperscript{33} If replicated, this constitutes an important finding, indicating that expected aggression has a more positive valence to COAs than to controls. Herein, the expectancies of young COAs were found to differ mostly from controls with respect to the expectancy of “antisocial behavior.” Most likely, this constitutes a negative expectancy, directly related to the antisocial or aggressive behavior of the alcoholic parent under the influence of alcohol. However, in case of an older COA who has initiated drinking alcohol, the valence of the same expectancy may become more positive, because it is related to the COA’s own experienced feeling of power and arousal under the influence of alcohol.\textsuperscript{16} This would indicate that not only the pattern of expectancies changes as a function of personal experience of alcohol, but also the valences associated with the different expectancies. In view of the indication that the valence of expectancies may differ as a function of FH, we believe

future studies of alcohol expectancies in COAs and controls could benefit from including an explicit measure of subjective valence. In alcohol expectancy research, the moderating influence of value on expectancies has been little investigated, and the increase in outcome variance explained by inclusion of value has been modest.\textsuperscript{34,55} The reason may have been that most expectancies have approximately the same value to most people: “fun,” for example, is almost tautologically a positive expectancy. However, the general conclusion that a measure of value adds little to the explained variance may not be valid in studies, including high-risk groups such as COAs.

A second issue concerns the dose-related expectancies. In the questionnaire used in adolescents, a limited number of high-dose items were assessed.\textsuperscript{19} Future studies should preferably include a larger number of high-dose expectancies relating to both negative and positive effects. Especially the “illogical” high-dose positive expectancies are promising, given the results herein, in young male binge drinkers of the general population\textsuperscript{49} and in alcoholics with a positive FH.\textsuperscript{56} Given the large individual differences in alcohol effects, it is questionable whether it is a better strategy to refer to a fixed number of alcoholic drinks or to use a less specific term, such as “many drinks,” as used herein.

Third, some methodological limitations of the present study deserve mentioning. The limited number of participants did not allow for detailed analyses, including interactions between gender of the alcoholic parent(s) and the child. In addition, although a general measure of negative life events was used, no specific measure of alcohol-related problems in the family was assessed. Adding such a measure could provide more information concerning aversive modeling of parental alcohol-related behaviors in young CoAs. The influence of peers on the development of expectancies has not been investigated herein and could provide further insights. Finally, although the results of the present study and those of earlier studies comparing young COAs and controls are generally consistent with the proposed model, the critical test should come from a longitudinal study. We hope the present study may stimulate longitudinal investigations of the development of alcohol expectancies in young COAs and controls who begin drinking alcohol.

Which consequences would follow for prevention of alcohol-related problems in COAs and controls, assuming that the model presented herein will prove to be correct? It has been argued that early modification of alcohol expectancies would be helpful in preventing alcohol abuse later in life, especially in populations at risk, such as COAs.\textsuperscript{22} However, in view of the dominance of negative alcohol expectancies in elementary school children in general,\textsuperscript{23,24} and in COAs in particular (this study), we doubt whether it will be helpful to further increase negative expectancies in young COAs before they start drinking themselves. In young COAs, early interventions may better be aimed at external-
izing problem behavior of the child or, at the mother’s supervision, factors shown to be longitudinally predictive of problem behaviors, including alcohol abuse in adolescence and adulthood. Different types of alcohol expectancies may be relevant in this context: the effects parents expect of alcohol on the interactions with their children. In contrast, in young adolescents who have initiated drinking alcohol, interventions aimed at alcohol expectancies and alcohol consumption patterns of COAs would seem more helpful. Because alcohol consumption is almost normative among older adolescents in most Western countries, including The Netherlands, it may be questioned whether abstinence is a realistic and desirable goal. Acknowledging positive effects of a moderate amount of alcohol and reducing positive expectancies for a high dose of alcohol in adolescents may be better strategies to prevent the onset of problematic alcohol use. It also implies that the odds are high that COAs will eventually initiate drinking alcohol, even if aversive learning makes them start at a later age. Alarmingly, a pattern of “weekend bingeing” has become prevalent among Dutch adolescents in their late teens, especially among boys. Weekend bingeing may constitute an extra risk factor to COAs due to their favorable response to alcohol and the resulting enhancement of positive expectancies for a high dose. Apart from being a risk factor for developing alcoholism, binge drinking constitutes a major health problem in its own right. With respect to high-risk groups, it is possible that COAs mistakenly believe the alcohol-related problems of their parents will not apply to them, once they have experienced a favorable response to alcohol themselves, while in fact, such a response constitutes an extra risk factor. It could be further tested whether informing COAs about the long-term risks of a favorable response to alcohol is a helpful strategy in preventing alcohol-related problems.

In conclusion, results from a number of earlier studies, as well as those of the present study, have provided preliminary evidence suggesting that alcohol expectancies of COAs change more extremely from negative to positive in comparison with controls. Aversive learning is likely to be the dominant factor before the child has developed personal experience with alcohol. Differences in physiological response to alcohol are likely to be the most important factor after alcohol consumption has begun. The model proposed should critically be tested with longitudinal data. If the model holds, it may have important consequences with respect to prevention of alcohol abuse in high-risk adolescents.

ACKNOWLEDGMENTS

We would like to thank Ken Sher for helpful comments on an earlier version of the manuscript and Herman Vinckers for help with the preparation of the manuscript.

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