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Alcohol Outcome Expectancies as Socially Shared and Socialized Beliefs

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Abstract

Alcohol expectancies are important predictors of alcohol involvement in both adolescents and adults, yet little research has examined the social origins and transmission of these beliefs. This paper examined alcohol outcome expectancies collected in a cohort-sequential longitudinal study of 452 families with children followed over seven waves. Children completed interviews every six months, and parents completed interviews annually. Eighteen of 27 alcohol expectancies were highly consensual, being endorsed by significantly more than 67% of the mothers and fathers. These consensual expectancies were also highly stable over a 3-year period. Over the same period, children increased their adoption of both the positive and negative consensual alcohol expectancies. Unconditional latent growth modeling showed that piece-wise growth models with a transition at age 12 fit the data best. Both the positive and negative consensual expectancies were adopted at a faster rate between ages 8.5 and 11.5 than between ages 12 and 13.5. For negative expectancies, there was no further growth between ages 12 and 13.5. Taken together, these findings support the conceptualization of alcohol outcome expectancies as socially-shared and transmitted beliefs.

Keywords

Alcohol Expectancies; Longitudinal; Children; Adolescents

Over the past thirty years, the construct of alcohol expectancies has assumed an increasingly important role in the explanation of alcohol use and alcohol problems. Alcohol expectancies refer to beliefs about the effects of consuming alcohol. In social learning theory perspectives, alcohol expectancies are treated as beliefs that reflect the individual's experience with the use of alcohol. Positive alcohol expectancies have been shown to predict levels of alcohol involvement in both college students and young adults (McCarthy, Wall, Brown, & Carr, 2000; Sher, Wood, Wood, & Raskin, 1996; Stacy, Widaman, & Marlatt, 1990). Among adolescents, alcohol expectancies have been shown to be most predictive of the usual quantity consumed and less predictive of frequency of drinking (Chen, Grube, & Madden, 1994). Alcohol expectancies have also been shown to predict the onset of drinking (Aas, Leigh, Anderssen, & Jakobsen, 1998; Bauman, Fisher, & Chenoweth, 1985) and the onset of heavy drinking and problem drinking in adolescence (Christiansen, Smith, Roehling, & Goldman, 1989; Colder, Chassin, Stice, & Curran, 1997). More recent research has started to investigate the role of alcohol expectancies as mediators or moderators of the association of other risk factors to alcohol use, including sensation seeking, impulsivity, and delinquency (Barnow,

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Schultz, Lucht, Ulrich, Preuss & Freyberger, 2004; Meier, Slutske, Arndt, & Cadoret, 2007; Urban, Kokonyei, & Demetrovics, 2008).

Longitudinal research describing the development of alcohol expectancies among children, while rare, has shown that children develop alcohol expectancies long before they ever start drinking (Zucker, Kincaid, Fitzgerald, & Bingham, 1995). Children have definite beliefs about the characteristics of drinkers and the behavioral effects of drinking by age 10 (Dunn & Goldman, 1996; Gaines, Brooks, Maisto, Dietrich, & Shagena, 1988; Jahoda & Cramond, 1972). Expectancies about the effects of alcohol on drinkers are generally negative in childhood (Johnson & Johnson, 1995; Noll, Zucker, & Greenberg, 1990; Query, Rosenberg, & Tisak, 1998; Wiers, Gunning, & Sergeant, 1998), but become more positive as the children get older (Miller, Smith, & Goldman, 1990) and as they move into adolescence (Cumsille, Sayer, & Graham, 2000; Dunn & Goldman, 1996, 1998). A two-year longitudinal study of a sample of 8 year old girls found that positive expectancies increase and negative expectancies decrease with age within middle childhood (Hipwell, White, Loeber, Stouthamer-Loeber, Chung, & Sembower, 2005).

Expectancies regarding the effects of alcohol use are a category of social cognitions that are formed through children's interactions, both with alcohol and with the larger social environment in which they are raised. The older the children become, the more opportunities they are likely to have to learn about the effects of drinking alcohol. These opportunities are generally vicarious in early and middle childhood, and can reflect exposure to parental and other adult drinking, older sibling drinking, alcohol use in the neighborhood, alcohol portrayals on television and in the movies, and alcohol advertising in the mass media, as well as explicit socialization by the parents or others about the effects of alcohol use. As children get older, there is also likely to be more personal experience with alcohol as well and thus more chances to learn directly about the effects of alcohol. National surveys suggest that around 10-20% of 4-6th grade students have had more than a sip of alcohol in their life (Donovan, 2007), while forty percent (40.5%) of 8th-grade students and almost three-quarters (72.7%) of 12th-grade students have had some experience with alcohol (Johnston et al., 2007).

With respect to vicarious learning about the effects of drinking, national surveys show that the great majority of American adults (82.7%) have tried alcohol and that a clear majority (65.4%) drank in the past year (Chen, Yi, Falk, Stinson, Dawson, & Grant, 2006), and are thus likely to serve as models for drinking and for its effects. In addition, 71 percent of primetime television episodes sampled from the 1998-99 season included alcohol use (Christenson et al., 2000), and 83% of the 100 top-grossing motion pictures in each year from 1998 to 2002 depicted alcohol use (Dal Cin, Worth, Dalton & Sargent, 2008), as did half of the G-rated animated feature films in a recent review (Goldstein et al., 1999; see also Thompson & Yokota, 2001). There are thus multiple sources from which children can learn vicariously about the effects of alcohol use.

There has been relatively little research, however, on the antecedents of alcohol expectancies or on the transmission of alcohol expectancies from parents to children. In a longitudinal study of adolescents (Ouliette, Gerrard, Gibbons, & Reis-Bergan, 1999), direct antecedents of positive alcohol expectancies at age 18 were perceived parents' alcohol consumption, perceived peer norms for drinking, and favorable drinker prototypes (images of typical drinkers). Adolescents' own past alcohol consumption did not have a direct effect on later expectancies. In a two-wave study of 8th-graders (Martino, Collins, Ellickson, Schell, & McCaffrey, 2006), parent alcohol use, perceived parents' approval of teen drinking, and dislike of school in grade 8 significantly predicted the positiveness of alcohol expectancies in ninth grade (after controlling for 8th-grade positiveness) among 8th-grade non-drinkers. Among 8th-grade drinkers, antecedent predictors were male gender, frequency of drinking, exposure to beer concession stands, parent alcohol use, school dislike, and self-reported delinquent

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behavior. Examination of growth in a 3-item measure of social facilitation alcohol expectancies (Cumsille et al., 2000) showed that overall exposure to and rate of change in both adult and peer drinking predicted both the level and slope of alcohol expectancies between grades 5 and 7. Only the rate of change in exposure to peer drinking, however, predicted the increase in positive alcohol expectancies from grade 7 through grade 10. Evidence for the influence of genetic factors on alcohol expectancies has been equivocal (Agrawal, Dick, Bucholz, Madden, Cooper, Sher & Heath, 2007; McCarthy, Brown, Carr, & Wall, 2001; Slutske, Cronk, Sher, Madden, Bucholz, & Heath, 2002). Despite differences in the measures of alcohol expectancy examined and in the types of analyses performed, these studies agree that perceived parental and peer drinking impact later alcohol outcome expectancies in adolescents.

A first step in the process of describing the social environment as a source of beliefs about the effects of alcohol is description of the beliefs that are widely held by parents within a given culture and therefore likely to be transmitted from parents to their children. Specifically, we need to determine which beliefs about the effects of alcohol use are socially shared. In order for an alcohol expectancy to be considered a socially-shared belief, three conditions are logically necessary. First, there should be a high degree of consensus within a culture or population that such an effect occurs as a result of consuming alcohol (e.g., drinking alcohol makes people worry less, or makes them more clumsy). Consensus of belief would be shown by the demonstration that a large percentage of adults agree that drinking alcohol results in a given effect. Such beliefs could vary across cultures, and differ as a function of the usual drinking practices within the culture and the types and potency of the alcoholic beverages typically consumed. Second, the consensual beliefs should be highly stable over time. To the extent that repeated assessments of adults consistently show a high level of consensus concerning the same effects of alcohol, the stronger the argument for their categorization as socially-shared beliefs rather than just the most popular beliefs at the time the survey was completed. Third, alcohol expectancies can be viewed as socially-shared and socially-transmitted beliefs to the extent that there is evidence that there is increased adoption of these consensual beliefs by children as they move into and through adolescence. Should children show a greater tendency to adopt the alcohol expectancies that are widely shared among adults than less consensual beliefs, this would argue for a significant role of parents in the transmission of these beliefs to the next generation.

The aims of the present paper are the following: a) to examine the alcohol outcome expectancies of parents to determine the degree of social consensus among adults regarding the various effects of alcohol; b) to examine the stability of these parental beliefs over time; c) to determine whether children adopt these socially shared alcohol expectancies as they grow older; and d) to examine whether there are systematic differences in these child growth trajectories as a function of child gender, race, mother's education, or parental modeling of drinking.

Method

Data were collected as part of the first seven waves of an ongoing longitudinal study of the risk factors for the early onset of alcohol use and transitions into problematic drinking (the Tween to Teen Project). Human subject procedures were approved by the University of Pittsburgh Institutional Review Board. A Certificate of Confidentiality was received from the National Institute on Alcohol Abuse and Alcoholism to help protect the identities of participants.

Procedures

Families were selected for participation using targeted-age directory and random digit dialing (RDD) sampling of families in Allegheny County, Pennsylvania (population 1.3 million), which includes the city of Pittsburgh. Directory listings were provided by Survey Sampling

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Inc. (Fairfield, CT) which uses school registration lists, magazine subscription lists, etc. to identify households likely to have children aged 6 to 11. The goal was to locate families with either an 8-year-old or 10-year-old target child and the child's biological mother. Cohorts of 8 and 10 year old children were recruited in order to capture children before they had initiated regular alcohol use, and to establish an accelerated longitudinal design. Quotas were imposed to ensure that half of the families included an 8-year-old and that half of each age-cohort would be female. Single-mother headed families and African-American families were over-sampled.

Initial contacts were carried out between March 2001 and June 2002 by the Survey Research Center of the University Center for Social and Urban Research (UCSUR) at the University of Pittsburgh. Procedures used in calling and contacting these families were described earlier (see Donovan & Molina, 2008). Eligible families were scheduled to take part in computer-assisted interviews either in their homes or at our research offices.

Parents provided signed consent for their child prior to the interviews, and both children and parents provided personal assent. Interviews were read to the children to ensure they were understood, and children responded using the computer mouse. Mother and father/partner computer-assisted interviews were completed independently in a separate room. Target children were paid $15 and parents were each paid $50. Subject payments increased slightly over time to maintain their motivation to continue in the study.

Participants

Of the 1155 potentially eligible families identified by UCSUR, we were unable to contact or screen 251 (did not return or answer our calls) and another 100 were ineligible (e.g., child was the wrong age or not a biological child, or the relevant quota had already been filled). Of the remaining 804 eligible families, 504 (63%) agreed to participate and 452 completed the Wave 1 interviews (90% of those who agreed, 56% of those eligible). Participants did not differ significantly from the other 703 families (Unable to Contacts, Ineligibles, Refusals, Non-completers) on the screening variables of mother's education (χ^2=9.2, df=6, p=.16), race (χ^2=0.79, df=2, p=.67), or age cohort of the target child (χ^2=1.7, df=1, p=.20).

Most of the recruitment quotas were met. Three of the four age-by-gender cohorts were completely filled: 122 families with a 10yo boy; 120 families with a 10yo girl; 92 families with an 8yo boy (fewer than desired); and 118 families with an 8yo girl. Twenty-three percent of the families (n=106) were headed by a single mother. The average age of the mothers was 39.0 years old (sd=5.76). Of the 346 fathers/partners, 320 (92%) participated (average age=41.6, sd=6.57). With respect to racial background, 73% (n=331) of the families were white; 24% (n=110) were African-American (twice their prevalence in Allegheny County); and 2% (n=11) were Other (twice their prevalence). With respect to mother's education: 2% had only attended high school; 20% graduated from high school; 11% had further vocational-technical training; 25% had attended college; 31% graduated from college; and 10% had post-graduate education.

Attrition over Time

Parental interviews were completed at baseline by 452 mothers and 320 fathers/partners and annually thereafter (Waves 1, 3, 5, and 7). Children were interviewed every six months. By the end of the seventh wave of data collection, three years after baseline, 91.2% of the Wave-1 target children (n=412), 90.7% of the mothers (n=410), and 94.4% of the Wave-1 fathers/partners (n=302) were still involved in the research. Comparison of the Wave-7 sample with those who discontinued showed few significant differences on the Wave-1 data. While there were no gender or cohort differences in retention, African-American families were significantly less likely to continue in the study (24% of baseline sample versus 21% of Wave-7 sample). Children who discontinued participation differed from children who continued on just

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3 of the 13 baseline measures summarizing psychosocial proneness for deviance (Value on Academic Achievement, Expectations for Academic Achievement, Intolerance of Deviance, Attitude toward Drinking, Religiosity, Susceptibility to Peer Pressure, Peer Pressure for Smoking, Peer Approval of Drinking, Peer Pressure for Drinking, General Deviant Behavior, Religious Behavior, School Activities, and Prosocial Behavior) used in Donovan & Molina (2008), which together accounted for just 3.7% of the variance in attrition.

Measurement of Alcohol Outcome Expectances

In the absence of a readily available measure of alcohol expectancies with parallel forms for adults and children, it was necessary to develop our own. The measure had to be relatively short and had to use simple phrases that 8-year-old children could understand. Items were therefore generated depicting both positive and negative effects of alcohol use, and within each category, items were generated covering physical, social, and psychological effects of drinking. This strategy is similar to that employed by Fromme, Stroot and Kaplan (1993).

One criterion for item selection was that the alcohol expectancies had to reflect beliefs about the effects of alcohol that were likely to be widely endorsed by adults in the general population. Although alcohol expectancies have been studied in adults for decades, publications typically do not report endorsement rates for the different expectancies. It was thus not possible to simply select highly endorsed items from published papers. A second consideration was that we did not want to be accused of teaching children in the study that alcohol use has effects that are demonstrably untrue or that provide them with reasons for starting to drink (e.g., drinking makes them look cool). Statements that implied that alcohol enhances cognitive or behavioral performance were excluded not only because they are untrue, but also because children, middle school students, and adolescents generally do not endorse them (Martino et al., 2006; Miller, Smith & Goldman, 1990; Slutske et al., 2002). As may be seen in Table 1, many of the final items selected are similar to questions previously used with adults, adolescents, or children.

The resulting *Alcohol Expectancies Measure* assessed parents' and children's agreement with 13 positive and 14 negative psychological, social, and physical effects of drinking (e.g., "Drinking alcohol makes people _____"). Positive and negative alcohol expectancies alternated in the instrument. Response options were strongly agree, agree, disagree, and strongly disagree. For the present analyses, strongly disagree and disagree were coded 0, and agree and strongly agree were coded 1.

Measurement of Covariates

Covariates were examined in order to determine whether growth in children's adoption of positive and negative consensual alcohol expectancies differed as a function of social background factors. The following covariates were examined: gender, racial background, mother's education, and exposure to mother and father drinking, all collected at Wave-1. *Racial Background* was assessed by mother report (0=African American, 1=white or Other). *Mother's Education* was assessed by a question asking the mother about the highest level of education she had achieved (some high school to post-graduate education). *Mother's Perceived Drinking Status* was assessed by asking children if they had ever seen their mother drinking beer, wine or liquor (scored No=0, Yes=1). *Father's Perceived Drinking Status* was assessed similarly.

Hypotheses were that higher levels of adoption of the consensual alcohol expectancies (intercepts) and higher rates of change (slopes) would be associated with white or Other ethnic/racial background, higher mother's education, and exposure to mother or father drinking. White adults and adults with more education are more likely to be current drinkers and to model alcohol use and its effects (Chen et al., 2006). Despite the absence of a hypothesis regarding gender differences, this was still an important variable to examine.

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Analytic Procedures

One-sample *t*-tests were used to determine whether each alcohol expectancy was endorsed by significantly more than 67% of the adult sample (where 50% would indicate no consensus, with equal numbers agreeing or disagreeing that alcohol had a given effect). A one-tailed test was used. Given the number of *t*-tests (k=54; 27 items per parent), a Bonferroni correction was used to achieve an experiment-wise probability of .05 (resulting in a critical $p<.0009$). A significant positive *t*-value (≥3.14) would demonstrate a high degree of consensus regarding that effect of alcohol use (significantly more than two-thirds endorsed the belief), and it is these alcohol expectancies that comprise the consensual belief measures for the children.

SPSS GLM repeated-measures analysis of variance (SPSS, Inc., Chicago, IL) was used to determine whether there was significant change over time in the mean level of parental endorsement of the alcohol expectancies over four annual waves (3 years) for the mothers and father/partners separately. Within-subject effects or longitudinal trends were assessed by *F*-ratios. It was hypothesized that consensual beliefs would be highly stable, that is, the proportion (the mean of a dichotomous 0-1 variable) agreeing with each expectancy would not change across waves, resulting in nonsignificant *F*-ratios for the within-subjects effect.

In the accelerated longitudinal design, children in one cohort were assessed every six months at mean ages 8.5 through 11.5, while children in the other cohort were assessed at mean ages 10.5 through 13.5. Two types of analyses were carried out. First, repeated-measures analyses of variance were used to determine if there was significant change in their adoption of the socially shared positive and negative alcohol expectancies over the seven longitudinal waves. Second, unconditional latent growth modeling (LGM) analyses were carried out using Mplus 4.1 (Muthen & Muthen, 2006) to determine the shape of the growth trajectories in the children's adoption of these adult socially-shared alcohol expectancies as a function of age (ages 8.5-13.5). For the LGM analyses, the expectancy variables were transformed from measures at each of seven data waves to measures at each of 11 different ages (from 8.5 to 13.5, in half-year increments; see Bollen & Curran, 2006). This was done so that all individuals have the same age at each value on the time dimension, no matter what wave they were in at that age.

LGM models represent growth over time through the estimation of two latent constructs, one reflecting the intercept (level) and one reflecting the slope (rate of change), from manifest variables assessed at each age (see Figure 1). First, unconditional LGM models were examined to determine the shape of the across-time trajectory (linear, linear and quadratic, freed linear, piece-wise) for the adoption of the consensual alcohol expectancies. Piece-wise models permit growth over time to be modeled using two different slopes for different age ranges (see Figure 2), and are statistically identified when there are five or more waves (Bollen & Curran, 2006, Appendix 4A.2). Given our interest in how many of these alcohol outcome expectancies children had already endorsed at the earliest ages (8 and 10), we set the intercept at wave 1 rather than centering the expectancies at a later age. The relative fit of the models was determined by likelihood ratio difference tests when comparing nested models (fixed versus freed linear models), and by differences in the Bayesian Information Criterion (BIC) when comparing non-nested models (e.g., linear versus piece-wise models). Given the accelerated longitudinal design, the usual measures of goodness of fit, such as chi-square tests, CFI, and RMSEA, could not be calculated due to an inability to compute covariance estimates between all age measures (as each cohort included only 7 of the 11 ages represented). Second, conditional LGM models were examined for covariates predicting child variation about the typical across-time trajectories for the adoption of the adult socially-shared positive and negative expectancies.

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Results

Consensus Regarding the Effects of Alcohol

Table 2 presents the percent of parents, and of mothers and fathers/partners, separately, who agreed or strongly agreed with each of the 27 alcohol expectancies in Wave 1, as well as the results of the one-sample *t*-tests to determine if each percent exceeded 67%. There is significant consensus concerning 18 of the 27 effects of alcohol examined ($t > +3.14$, $p<.0009$, one-tailed; from Bonferroni correction for multiple tests). Of these, 13 were negative expectancies, with 87% or higher endorsement for 12 of the 13. Five were positive expectancies (more relaxed, less shy, worry less, less nervous, more interest in the opposite sex). One additional positive expectancy (better able to say what they feel) was endorsed by 68% of the parents (not significantly greater than 67%), but was used as the sixth expectancy in the children's measure of the adoption of socially shared positive alcohol expectancies (see below).

There was no consensus (e.g., only around 50% agreed) regarding six of the expectancies: that drinking makes people better at talking to new people (#1), feel happier (#3), be more fun at a party (#13), feel less bored (#21), feel less hopeful about the future (#22), or sleep better (#23). These six non-consensual expectancies figure below in tests of the children's adoption of adult expectancies. Less than a third agreed (more than two-thirds disagreed!) that drinking alcohol makes people enjoy meals more (#11) or be more creative (#15). These latter two items might be characterized as consensual non-expectancies. Both non-consensual expectancies and consensual non-expectancies should be less likely to be adopted by children than consensual expectancies.

Mother and father/partner groups were compared to determine whether there were equivalent levels of consensus within each group (see Table 2). In only two cases (#20 and #25) were the percentages endorsing the expectancy significantly greater than 67% for one gender but not the other, and even then, the non-significant percentages were 73% and 71%, respectively.

The percent of African American and European American mothers and fathers/partners who endorsed each alcohol expectancy was also compared. Although the consensus among the European American parents was occasionally somewhat greater than that among the African American parents, none of the *t*-tests between the races for either mothers or father/partners achieved the magnitude required by the Bonferroni-corrected probability level ($p<.0009$).

Stability of Parent Endorsements across Three Years

Repeated-measures analyses of variance (ANOVAs) were performed over the four annual waves for the mothers and for the fathers/partners. Among the consensual alcohol expectancies identified above, all 18 of the repeated-measures ANOVAs for the mothers, and 17 of 18 ANOVAs for the fathers/partners (all but #25) were not statistically significant ($p>.05$). For example, the proportion of mothers agreeing with #2 (Talk Louder) was 0.94, 0.95, 0.96, and 0.95 in the four annual waves. Thus, there was little change in the level of agreement with these consensual alcohol expectancies over the four annual waves of parental data.

The non-consensual alcohol expectancies were also stable over time. For example, the proportion of mothers agreeing that drinking makes people less bored (#21) was 0.54, 0.57, 0.58, and 0.56 at the four waves. Across the 9 non-consensual alcohol expectancy items (#1, 3, 11, 13, 15, 19, 21, 22, and 23), there were seven non-significant *F*-ratios for the mothers(all except #19 and #22) and nine for the fathers/partners. There was thus a high degree of consistency over time among adults regarding which alcohol expectancies are widely endorsed and which are not.

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Children's Adoption of Adult Consensual and Non-consensual Alcohol Expectancies

Two measures of the adoption of these adult consensual alcohol expectancies were constructed for the children. One measure reflects the number of consensual *positive* alcohol expectancies the child endorsed at each wave, computed as the sum of 0 (strongly disagree or disagree) or 1 (agree or strongly agree) responses across the 6 items (average α=.74 across 7 waves). The second measure reflects the number of consensual *negative* alcohol expectancies (out of 13) the child endorsed at each wave, computed similarly (average α=.80 across 7 waves). A third measure assessed the adoption of the *non-consensual* positive and negative expectancies (out of 6) in each wave (average α=.61). Lastly, a measure of the adoption of the two consensual *non-expectancies* was constructed (average α=.50; score = # of "disagree" responses per wave).

Table 3 presents the results of repeated-measures ANOVAs on each measure across 7 waves for each age cohort (n = 175 and 203, respectively). While all of the linear F-ratios (and several quadratic F-ratios) are statistically significant, there are interesting differences across the four measures. For the adoption of the adult consensual positive expectancies, the means for both cohorts increase significantly over time, nearly doubling for the younger cohort (from 2.3 to 4.1, out of 6 possible), with less of an increase for the older cohort. There is a significant cohort main effect (p<.001) as well as a significant linear cohort-by-time interaction (p<.05). With respect to the adoption of the negative expectancies, the means for both cohorts increase significantly over time, but the level of adoption is already very high at the youngest ages (means = 9.8 and 11.0, out of 13). Again, there is a significant cohort main effect and a significant cohort-by-time interaction (both p<.001). With respect to the adoption of the six non-consensual expectancies, there is a significant but small increase over time for both age cohorts, and a significant main effect (p<.001) but no interaction for cohort. Lastly, with respect to the consensual non-expectancies, there is a significant but small decrease in the means over time, with no cohort effects, indicating that the children generally agree with the adults that these are not effects of alcohol use. The decrease in the means over time indicates that an increasing but small number of children endorse these expectancies as they get older.

Comparison of the children's adoption of the six adult consensual positive expectancies with their adoption of the six adult non-consensual expectancies showed that they had adopted more of the former than the latter at each wave for both age cohorts (see Table 3). Paired-sample t-tests (not tabled) showed that these differences were statistically significant (p<.001) within each wave for both cohorts, and that the mean differences were larger in the later waves of data.

Across-time Growth Trajectories in the Adoption of Consensual Alcohol Expectancies

Positive Expectancies—When the data were reorganized by children's ages instead of by wave (see Figure 3), the mean number of adult socially-shared positive alcohol expectancies with which children agreed at age 8.5 was 2.2 (out of 6 possible) and doubled to 4.5 by age 13.5. Examination of the observed means suggests that this growth slows somewhat at the upper end of this age range. Unconditional LGM analyses were performed to determine the best-fitting function form to describe this trajectory over time. Table 4 presents a comparison of the measures of goodness of fit for the linear model, the fully freed linear model (freeing loadings for the 8 older ages), and a piece-wise model with a transition at age 12.0 (see Figure 2). The quadratic model failed to converge. The piece-wise model fit significantly better than the other models. In this model, all three latent-variable means were significantly different from zero: the mean intercept was 2.18 (t=21.8, p<.001), the mean slope between ages 8.5 and 11.5 was 0.581 (t=15.5, p < .001), and the mean slope between ages 12.0 and 13.5 was 0.253 (t=3.8, p<.001). The slope after age 12.0 was thus less than half that before this age. In this model, the variances about the intercept and about each of the two slopes were also significantly greater than zero (1.865, 0.210, and 0.532, respectively; all p<.001 by t-test), indicating that

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there was sufficient variance to explain in the analyses of their correlates below. In addition, the analysis revealed that the higher a child's intercept, the less growth there was later on (*r*s =-0.275 [*p*< .01] and-0.613[*p*< .01] with the first and second slopes, respectively) and that the two individual slopes were uncorrelated (*r* = 0.030, *p*>.05).

Negative Alcohol Expectancies—According to Figure 3, the mean number of adult consensual negative alcohol expectancies with which the children agreed at age 8.5 was already 9.6 (out of 13 possible) and was 12.0 at age 13.5. Examination of the observed means suggests that the rate of change in the adoption of these expectancies changes across these ages, with little change at the older ages. Results of the unconditional LGM analyses in the bottom half of Table 4 show that, again, a piece-wise model with a transition at age 12.0 fit best (although not significantly better than the freed linear model, its BIC was lower). The quadratic model failed to converge. In the piece-wise model, the mean intercept was 9.92 (*t*=71.9, *p*<.001), the mean slope between ages 8.5 and 11.5 was 0.631 (*t*=13.0, *p* < .001), and the mean slope between ages 12.0 and 13.5 was -0.030 (*t*=-0.4, *p*>.05). The slope after age 12.0 was thus slightly negative, but not significantly different from zero. The variances about the intercept and about the first slope were significantly greater than zero (2.62, and 0.154, respectively; *p*<.001 and *p*<.05), indicating that there was sufficient variance to explain in the analyses of their correlates below. The variance about the second slope was not significantly different from zero. In addition, the higher a child's intercept, the less growth there was between ages 8.5 and 11.5 (*r*s = -0.396 [*p*<.05] and-0.128 [*p*>.05] with the first and second slopes, respectively). The two individual slopes were not correlated (*r* =-0.001, *p*>.05).

Correlates of Growth in Children's Adoption of Consensual Alcohol Expectancies

Table 5 presents the results of the univariate conditional LGM analyses testing each variable in turn as a potential correlate of the level and the piece-wise slopes describing growth in children's adoption of the consensual positive and negative alcohol expectancies, as well as the results of the multivariate analyses that included all five covariates.

Positive Alcohol Expectancies—Level of adoption of adult consensual positive expectancies was unrelated to the covariates examined. None of the covariates related significantly to the intercept in the univariate or multivariate analyses (see Table 5). Variation in the rates of increase from ages 8.5 to 11.5 (slope-1) and from age 12 onward (slope-2) did not relate significantly to any of the covariates. There were thus no systematic differences affecting individual variation about the typical growth trajectory for the adoption of adult consensual positive expectancies.

Negative Alcohol Expectancies—In contrast to the results for the positive expectancies, three of the five covariates were significantly associated with initial levels of adoption of the negative alcohol outcome expectancies (see Table 5). Adoption of a greater number of the adult consensual negative expectancies was associated with being white or Other, having a more educated mother, and exposure to paternal drinking. A greater rate of increase in the adoption of negative alcohol expectancies from age 8.5 to 11.5 (slope-1) was not associated with any of the covariates, while a greater rate of growth from age 12.0 onwards displayed a trend of association (*p*<.10) with mother's education.

Discussion

The parents in our sample, as representatives of the larger social environment, presented a consistent message to their children regarding the effects of alcohol use, particularly with respect to the negative effects of drinking. Thirteen of the 14 negative alcohol outcome expectancies were endorsed by a very high proportion (80% to 96%) of the adults participating

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in the study (see Table 2). This set of expectancies included not only physical effects of alcohol (greater clumsiness, dizziness, fatigue, muddled thinking), for which one would expect such high levels of consensus, but also included psychological and social effects of drinking (e.g., greater impulsivity, greater risk-taking, greater irritability and aggressiveness, more irresponsibility).

Surprisingly, relatively few (5 of 13) beliefs concerning the positive effects of alcohol were widely shared. The list of widely-shared positive expectancies included only effects such as drinking makes people more relaxed, less shy, worry less, less nervous, and feel more interested in the opposite sex (and marginally, makes people better able to say what they feel). This lower level of consensus about the positive effects of alcohol use may have been due either to omissions in the array of potential positive effects included in the instrument (e.g., the lack of items reflecting "liquid courage" or reflecting feelings of power/dominance), or to our reliance on a community sample of adults selected on the basis of demographic variables rather than on the basis of clinical variables (e.g., alcohol dependence). Beliefs that alcohol enhances creativity (#15), makes meals more enjoyable (#11), or makes people sleep better (#23) were simply not endorsed by many of these parents.

It is possible that it is the highly consensual nature of the negative alcohol outcome expectancies that accounts for their lack of relation to later drinking that has been found in several studies of young adults (e.g., Colder et al., 1997). The negative skewness and relatively small variances that result from high levels of social sharedness could certainly reduce the potential magnitude of the correlation of negative expectancies with measures of alcohol involvement. Such a statistical cause for low relationships should be considered in addition to the arguments that positive expectancies are more consequential or more memorable than negative expectancies (Fromme et al., 1997).

The fact that fully a third of the alcohol outcome expectancy items were not widely endorsed by the parents argues that the levels of agreement seen here for the socially-shared alcohol expectancies were not due simply to a strong response set across all items. This conclusion is further buttressed by the fact that questions about the positive and negative alcohol effects alternated within the instrument.

Endorsement of those alcohol outcome expectancies that are socially shared appeared to be highly stable over time as well. The proportion of the mothers and fathers holding each of the alcohol expectancies was highly consistent across all four annual data collections, providing evidence of the long-term reliability of the level of group consensus about these beliefs. There was also a high level of consistency over time in the adults' endorsement of those expectancies that were not widely shared. This result suggests that a stable minority of adults do in fact endorse these other positive expectancies. Further research could profitably be invested in determining the characteristics of these adults and in investigating the later drinking outcomes of children who adopt such beliefs from their parents.

The finding that children increasingly adopt both the consensual adult positive and negative outcome expectancies as they move into adolescence implies that they are learning the typical effects of alcohol. Whether this learning is due to explicit socialization by parents, exposure to the alcohol use of parents, other adult relatives, and older siblings, to involvement in prevention programs in the schools, or to exposure to mass media such as prime-time television and movies is unclear. The findings do show that those beliefs about alcohol effects that are widely endorsed by adults are more likely to be adopted by the children as they move into adolescence than either the non-consensual beliefs (those endorsed by only half or fewer of adults) or the beliefs about alcohol effects that are espoused by a distinct minority of adults (see Table 3). This suggests that parents may in fact engage in anticipatory socialization of

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their children regarding the effects of drinking, even if they do not directly socialize their children's actual sipping or tasting of alcohol (see Donovan & Molina, 2008).

It should be reiterated that the present analyses were not designed to determine what familial or parental variables influence children's adoption of the alcohol expectancies held by their own parents. This is a topic for further analyses of these data, and would focus on children's adoption of not only the socially-shared expectancies but also the idiosyncratic (non-consensual) expectancies held by their own parents. The present analyses focused instead on the similarity of parental and children's alcohol expectancies at the group level of analysis, and were intended to describe the social nature of many alcohol expectancies rather than the psychological mechanisms through which expectancies come to be adopted. Nevertheless, the covariate analyses were informative. First, they showed that boys and girls did not differ either in their initial rates of adoption of the adult socially-shared expectancies or in their rates of increase in the adoption of these beliefs. Second, they showed that there were differences in children's initial levels of adoption (at ages 8 or 10) of the consensual negative (but not positive) expectancies as a function of race, mother's education, and exposure to father's drinking. Variation from the typical growth trajectories for either the positive or negative socially-shared alcohol expectancies was generally not predictable on the basis of the social background variables, suggesting that these trajectories may be fairly general in nature. Future research is of course necessary to confirm whether this is true in other samples of children.

Characterizing alcohol outcome expectancies on the basis of the degree to which they are endorsed in the larger population adds a new dimension to research on this important class of alcohol-related beliefs. This research raises a number of questions about the social sources of alcohol expectancy beliefs that have not been addressed previously. While earlier research has stated that alcohol outcome expectancies are learned vicariously in childhood, there have been few attempts to determine the content or the source of what is learned (but see Fleming, Thorson & Atkin, 2004; Grube & Wallach, 1994; Kulich & Rosenberg, 2001).

The present research suggests that there are age-related differences in the sources influencing the growth of positive and negative alcohol outcome expectancies. Given the already high level of endorsement of the negative expectancies within these child data, most of their growth had to have occurred at even younger ages than those studied here. Much of the actual growth seen here was with respect to the adoption of the adult socially-shared positive alcohol outcome expectancies. Further growth in these positive expectancies (consensual as well as idiosyncratic) may well be discovered as we continue to follow this sample into and through adolescence. Consensual adult alcohol expectancies may play less of a role in the adoption of positive outcome expectancies than do peer alcohol expectancies and personal experience with alcohol as these children move through adolescence.

Limitations of the present research include the fact that the data were collected in a single county in the northeastern United States. Given the demographic composition of this county, there were few Hispanic or Asian American families involved in the research. It is therefore unclear whether the same alcohol expectancies would be as widely shared within these subcultures as well. Similarly, the degree of consensus concerning these alcohol expectancies is unknown in other cultures or national groups. To the extent that other cultures drink different alcoholic beverages and consume them in different quantities and in other contexts, there are likely to be a number of differences from the findings reported here. A second limitation of the research is the age range of the adults/parents participating in this research. It is possible that a younger, non-parental sample of adults might provide different, possibly less consensual, ratings of their agreement with these alcohol outcome expectancies. An additional limitation is that the alcohol outcome expectancies examined here comprise only a subset of all those that could potentially have been included. Given the time constraints of the computer-assisted

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interviews and the wide array of instruments that comprised the interviews, it was not possible to include a greater number of the potential items from the extant literature. Certainly, other researchers should be encouraged to determine and to report the degree of consensus among their participants in their endorsements of additional alcohol outcome expectancy items they have collected. Such findings would add to the bank of culturally-appropriate alcohol expectancies for use in future studies of their socialization.

These results attesting to the consensual nature of many of these alcohol outcome expectancies and to their stability over time argue for the socially-shared nature of these alcohol expectancies. In effect, these parental alcohol expectancies constitute a stable rather than a moving target whose intergenerational transmission can more easily be studied in future research. The present results support the use of these alcohol expectancy items in socialization research investigating children's internalization of parental alcohol expectancies, and constitute a first step in delineating the social sources of alcohol outcome expectancies.

Acknowledgments

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References

Aas HN, Leigh BC, Anderssen N, Jakobsen R. Two-year longitudinal study of alcohol expectancies and drinking among Norwegian adolescents. Addiction 1998;93:373–384. [PubMed: 10328045]

Agrawal A, Dick DM, Bucholz KK, Madden PAF, Cooper ML, Sher KJ, Heath AC. Drinking expectancies and motives: A genetic study of young adult women. Addiction 2007;103:194–204. [PubMed: 18199298]

Barnow S, Schultz G, Lucht M, Ulrich I, Preuss UW, Freyberger HJ. Do alcohol expectancies and peer delinquency/substance use mediate the relationship between impulsivity and drinking behavior in adolescence? Alcohol & Alcoholism 2004;39:213–219. [PubMed: 15082458]

Bauman KE, Fisher LA, Chenoweth RL. Relationship between subjective expected utility and behavior: A longitudinal study of adolescent drinking behavior. Journal of Studies on Alcohol 1985;46:32–38. [PubMed: 3974233]

Bollen, KA.; Curran, PJ. Latent curve models: A structural equation perspective. Hoboken, NJ: Wiley; 2006.

Brown SA, Christiansen BA, Goldman MS. The Alcohol Expectancy Questionnaire: An instrument for the assessment of adolescent and adult alcohol expectancies. Journal of Studies on Alcohol 1988;48:483–491. [PubMed: 3669677]

Chen, CM.; Yi, H.; Falk, DE.; Stinson, FS.; Dawson, DA.; Grant, BF. Alcohol use and alcohol use disorders in the United States: Main findings from the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), U S Alcohol Epidemiologic Data Reference Manual. Vol. 8. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 2006. NIH Publication No 05-5735

Chen M, Grube JW, Madden PA. Alcohol expectancies and adolescent drinking: Differential prediction of frequency, quantity, and intoxication. Addictive Behaviors 1994;19:521–529. [PubMed: 7832010]

Christenson, PG.; Henriksen, L.; Roberts, DF. Substance use in popular prime-time television. Washington, DC: Office of National Drug Control Policy; 2000.

Christiansen BA, Goldman MS, Inn A. The development of alcohol-related expectancies in adolescents: Separating pharmacological from social learning influences. Journal of Consulting and Clinical Psychology 1982;50:336–344. [PubMed: 7096736]

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Christiansen BA, Smith GT, Roehling PV, Goldman MS. Using alcohol expectancies to predict adolescent drinking behavior after one year. Journal of Consulting and Clinical Psychology 1989;57:93–99. [PubMed: 2925979]

Colder CR, Chassin L, Stice EM, Curran PJ. Alcohol expectancies as potential mediators of parent alcoholism effects on the development of adolescent heavy drinking. Journal of Research on Adolescence 1997;7:349–374.

Cumsille PE, Sayer AG, Graham JW. Perceived exposure to peer and adult drinking as predictors of growth in positive alcohol expectancies during adolescence. Journal of Consulting and Clinical Psychology 2000;68:531–536. [PubMed: 10883572]

Dal Cin S, Worth KA, Dalton MA, Sargent JD. Youth exposure to alcohol use and brand appearances in popular contemporary movies. Addiction 2008;103:1925–1932. [PubMed: 18705684]

Donovan JE. Really underage drinkers: The epidemiology of children's alcohol use in the United States. Prevention Science 2007;8:192–205. [PubMed: 17629790]

Donovan JE, Molina BSG. Children's introduction to alcohol use: Sips and tastes. Alcoholism: Clinical and Experimental Research 2008;32:108–119.

Dunn ME, Goldman MS. Empirical modeling of an alcohol expectancy memory network in elementary school children as a function of grade. Experimental and Clinical Psychopharmacology 1996;4:209–217.

Dunn ME, Goldman MS. Age and drinking-related differences in the memory organization of alcohol expectancies in 3rd-, 6th-, 9th-, and 12th-grade children. Journal of Consulting and Clinical Psychology 1998;66:579–585. [PubMed: 9642899]

Fleming K, Thorson E, Atkin CK. Alcohol advertising exposure and perceptions: Links with alcohol expectancies and intentions to drink or drinking in underaged youth and young adults. Journal of Health Communication 2004;9:3–29. [PubMed: 14761831]

Fromme K, D'Amico EJ. Measuring adolescent alcohol outcome expectancies. Psychology of Addictive Behaviors 2000;14:206–212. [PubMed: 10860120]

Fromme K, Katz E, D'Amico E. Effects of alcohol intoxication on the perceived consequences of risk taking. Experimental and Clinical Psychopharmacology 1997;5:14–23. [PubMed: 9234035]

Fromme K, Stroot E, Kaplan D. Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy measure. Psychological Assessment 1993;5:19–26.

Gaines LS, Brooks PH, Maisto S, Dietrich M, Shagena M. The development of children's knowledge of alcohol and the role of drinking. Journal of Applied Developmental Psychology 1988;9:441–457.

Goldstein AO, Sobel RA, Newman GR. Tobacco and alcohol use in G-rated children's animated films. Journal of the American Medical Association 1999;281(12):1131–1136. [PubMed: 10188668]

Grube JW, Wallach L. Television beer advertising and drinking knowledge, beliefs, and intentions among schoolchildren. American Journal of Public Health 1994;84:254–259. [PubMed: 8296950]

Hipwell AE, White HR, Loeber R, Stouthamer-Loeber M, Chung T, Sembower MA. Young girls' expectancies about the effects of alcohol, future intentions and patterns of use. Journal of Studies on Alcohol 2005;66:630–639. [PubMed: 16331848]

Jahoda, G.; Cramond, J. Children and alcohol: A developmental study in Glasgow. London: Her Majesty's Stationery Office; 1972.

Johnson HL, Johnson PB. Children's alcohol-related cognitions: Positive versus negative alcohol effects. Journal of Alcohol and Drug Education 1995;40:1–12.

Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. Monitoring the Future national survey results on drug use, 1975-2006: Volume I Secondary school students. Bethesda, MD: National Institute on Drug Abuse; 2007. NIH Publication No 07-6205

Kulick AD, Rosenberg H. Influence of positive and negative film portrayals of drinking on older adolescents' alcohol outcome expectancies. Journal of Applied Social Psychology 2001;31:1492–1499.

Kushner MG, Sher KJ, Wood MD, Wood PK. Anxiety and drinking behavior: Moderating effects of tension-reduction alcohol outcome expectancies. Alcoholism: Clinical and Experimental Research 1994;18:852–860.

Leigh BC. Beliefs about the effects of alcohol on self and others. Journal of Studies on Alcohol 1987;48:467–475. [PubMed: 3669675]

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Leigh BC, Stacy AW. Alcohol outcome expectancies: Scale construction and predictive utility in higher order confirmatory models. Psychological Assessment 1993;5:216–229.

Martino SC, Collins RL, Ellickson PL, Schell TL, McCaffrey D. Socio-environmental influences on adolescents' alcohol outcome expectancies: A prospective analysis. Addiction 2006;101:971–983. [PubMed: 16771889]

McCarthy DM, Brown SA, Carr LG, Wall TL. ALDH2 status, alcohol expectancies, and alcohol response: Preliminary evidence for a mediation model. Alcoholism: Clinical and Experimental Research 2001;25:1558–1563.

McCarthy DM, Wall TL, Brown SA, Carr LG. Integrating biological and behavioral factors in alcohol use risk: The role of ALDH2 status and alcohol expectancies in a sample of Asian Americans. Experimental and Clinical Psychopharmacology 2000;8:168–175. [PubMed: 10843299]

Meier MH, Slutske WS, Arndt S, Cadoret RJ. Positive alcohol expectancies partially mediate the relation between delinquent behavior and alcohol use: Generalizability across age, sex, and race in a cohort of 85,000 Iowa schoolchildren. Psychology of Addictive Behaviors 2007;21:25–34. [PubMed: 17385952]

Miller PM, Smith GT, Goldman MS. Emergence of alcohol expectancies in childhood: A possible critical period. Journal of Studies on Alcohol 1990;51:343–349. [PubMed: 2359308]

Muthén, LK.; Muthén, BO. Mplus user's guide. Vol. 4. Los Angeles, CA: Author; 2006.

Noll RB, Zucker RA, Greenberg GS. Identification of alcohol by smell among preschoolers: Evidence for early socialization about drugs occurring in the home. Child Development 1990;61:1520–1527. [PubMed: 2245743]

Ouellette JA, Gerrard M, Gibbons FX, Reis-Bergan M. Parents, peers, and prototypes: Antecedents of adolescent alcohol expectancies, alcohol consumption, and alcohol-related life problems in rural youth. Psychology of Addictive Behaviors 1999;13:183–197.

Query LR, Rosenberg H, Tisak MS. The assessment of young children's expectancies of alcohol versus a control substance. Addiction 1998;93:1521–1529. [PubMed: 9926556]

Rohsenow DJ. Drinking habits and expectancies about alcohol's effects for self versus others. Journal of Consulting and Clinical Psychology 1983;51:752–756. [PubMed: 6630690]

Sher KJ, Wood MD, Wood PK, Raskin G. Alcohol outcome expectancies and alcohol use: A latent variable cross-lagged panel study. Journal of Abnormal Psychology 1996;105:561–574. [PubMed: 8952189]

Slutske WS, Cronk NJ, Sher KJ, Madden PAF, Bucholz KK, Heath AC. Genes, environment, and individual differences in alcohol expectancies among female adolescents and young adults. Psychology of Addictive Behaviors 2002;16:308–317. [PubMed: 12503903]

Stacy AW, Widaman KF, Marlatt GA. Expectancy models of alcohol use. Journal of Personality and Social Psychology 1990;58:918–928. [PubMed: 2348377]

Thompson KM, Yokota F. Depiction of alcohol, tobacco, and other substances in G-rated animated feature films. Pediatrics 2001;107:1369–1374. [PubMed: 11389259]

Urban R, Kökönyei G, Demetrovics Z. Alcohol outcome expectancies and drinking motives mediate the associate between sensation seeking and alcohol use among adolescents. Addictive Behaviors 2008;33:1344–1352. [PubMed: 18619739]

Wiers RW, Gunning WB, Sergeant JA. Do young children of alcoholics hold more positive or negative alcohol-related expectancies than controls? Alcoholism: Clinical and Experimental Research 1998;22:1855–1863.

Zucker RA, Kincaid SB, Fitzgerald HE, Bingham CR. Alcohol schema acquisition in preschoolers: Differences between children of alcoholics and children of nonalcoholics. Alcoholism: Clinical and Experimental Research 1995;19:1011–1017.

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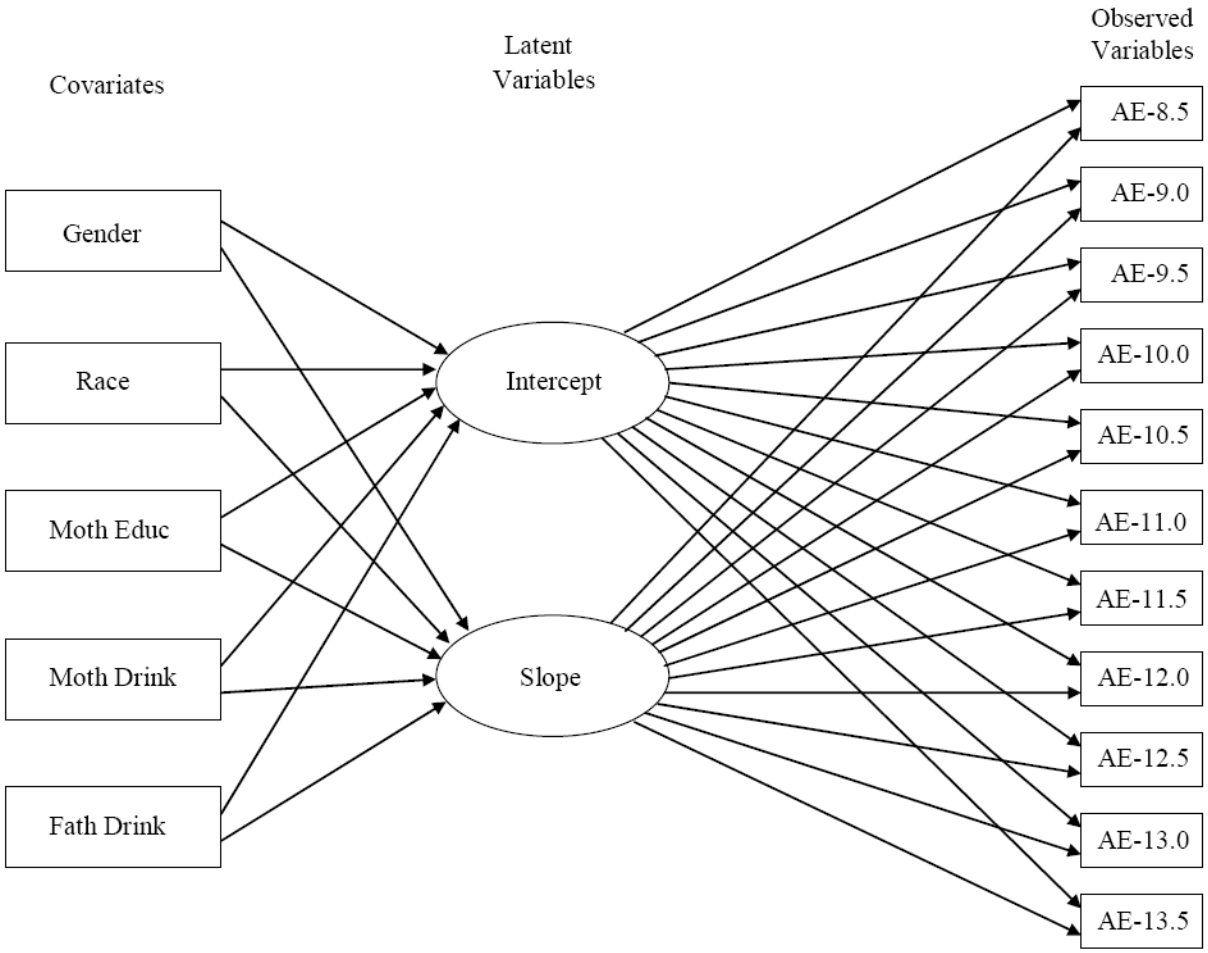

Figure 1.
Conditional Linear Latent Growth Model for Alcohol Outcome Expectancies (AE) from Ages 8.5 through 13.5 (Loadings from Intercept to AE 8.5-AE 13.5 were fixed at 1.0. Loadings from Slope to AE 8.5-AE 13.5 were fixed at 0.0 to 5.0 in 0.5 increments, respectively, reflecting their half-year time separations.)

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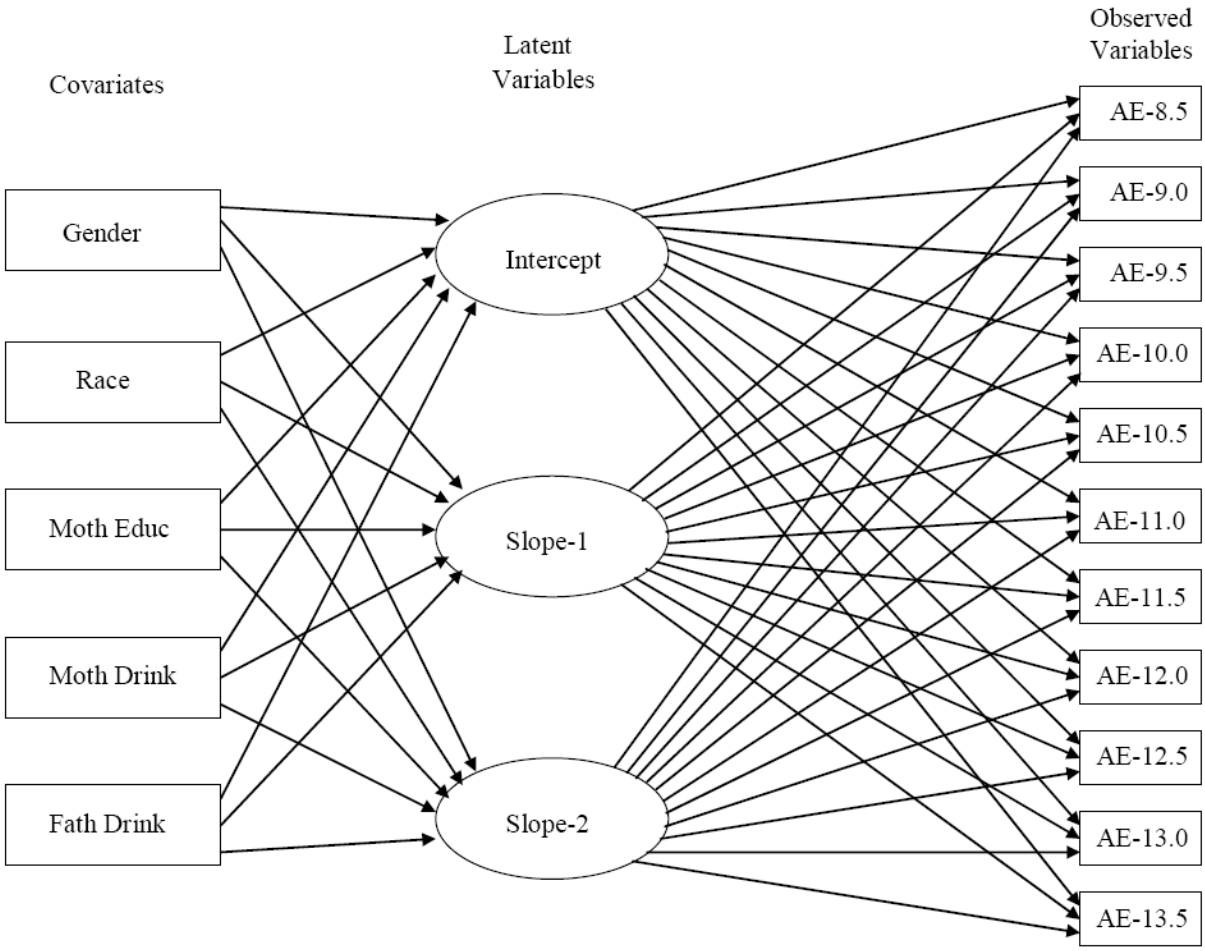

Figure 2.

Conditional Piece-wise Latent Growth Model for Alcohol Outcome Expectancies (AE) from Ages 8.5 through 13.5, with Transition at Age 12.0. (Loadings from Intercept to AE 8.5-AE 13.5 were fixed at 1.0. Loadings from Slope-1 to AE 8.5-AE 11.5 were fixed at 0.0 to 3.0, respectively, in 0.5 increments, and from Slope-1 to AE 12.0-AE 13.5 were all fixed at 3.5. Loadings from Slope-2 to AE 8.5-AE 12.0 were fixed at 0.0, and from Slope-2 to AE 12.5-AE 13.5 were fixed at 0.5, 1.0, and 1.5, respectively.)

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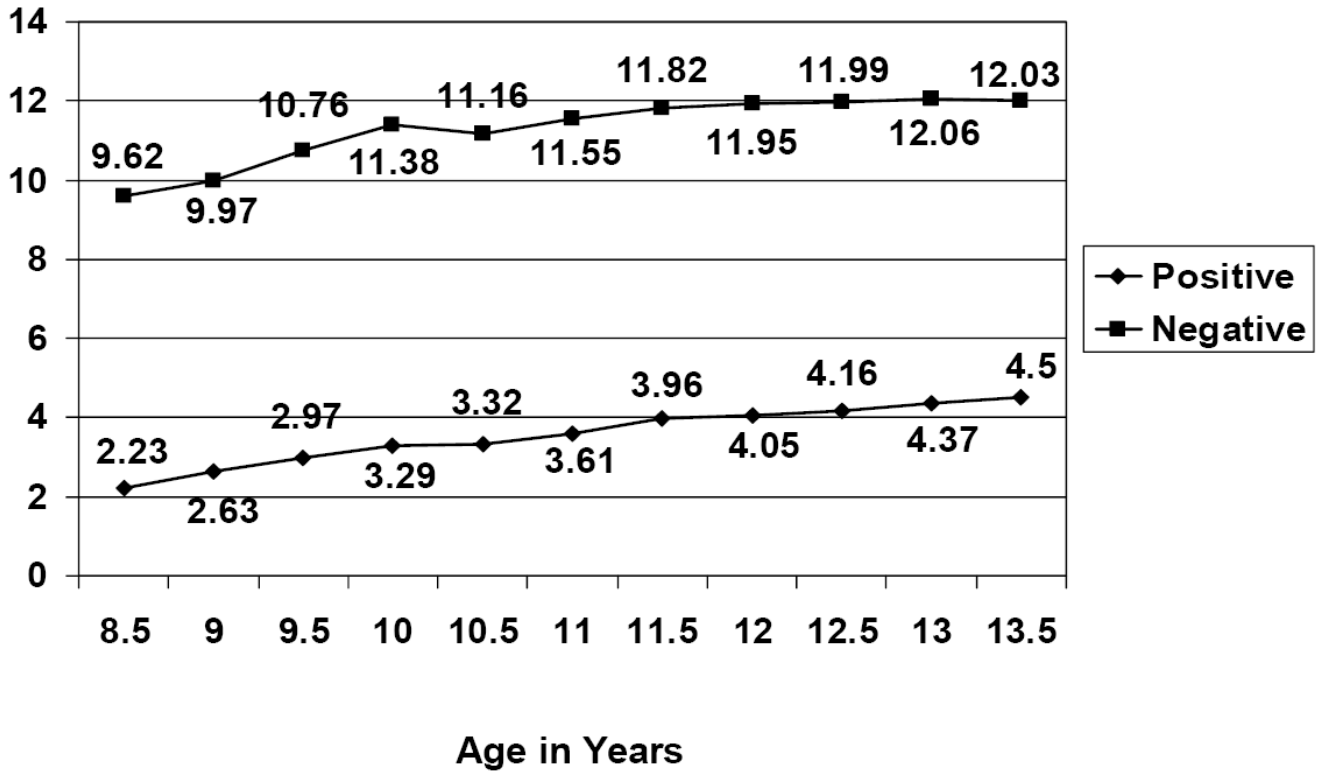

Figure 3.
Observed Means on Consensual Positive and Consensual Negative Alcohol Outcome Expectancies among Children, by Age in Years.

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Table 1

Alcohol Outcome Expectancy Items Examined and Sources of Similar Items

Items	Sources of similar items
DRINKING ALCOHOL MAKES PEOPLE:	
1. Better at Talking to New People.	Fromme et al. (1993)
2. Talk Louder.	Brown et al. (1987); Dunn & Goldman (1996); Fromme et al. (1993); Leigh (1987)
3. Feel Happier or in a Better Mood.	Brown et al. (1987); Dunn & Goldman (1996); Kushner et al. (1994)
4. More Likely to Do Dangerous Things.	Dunn & Goldman (1996); Fromme et al. (1993); Leigh & Stacy (1993)
5. Feel More Relaxed.	Brown et al. (1987); Dunn & Goldman (1996); Fromme et al. (1993); Kushner et al. (1994); Leigh & Stacy (1993); Rohsenow (1987)
6. Feel More Drowsy or Tired.	Dunn & Goldman (1996); Leigh (1987)
7. Less Shy.	Brown et al. (1987); Kushner et al. (1994); Leigh & Stacy (1993); Rohsenow (1987)
8. Fight More.	Leigh (1987); Rohsenow (1987)
9. Worry Less about Things.	Brown et al. (1987); Dunn & Goldman (1996); Kushner et al. (1994); Rohsenow (1987)
10. Lose Their Tempers More Quickly.	Dunn & Goldman (1996)
11. Enjoy Meals More.	Kushner et al. (1994)
12. More Clumsy.	Fromme et al. (1993); Leigh & Stacy (1993); Rohsenow (1987)
13. More Fun at a Party.	Brown et al. (1987)
14. Think Less about Others' Feelings.	
15. Come Up with New Ideas More Easily.	Brown et al. (1987); Fromme et al. (1993); Kushner et al. (1994)
16. More Likely to Do Things without Thinking.	
17. Feel Less Nervous.	Dunn & Goldman, 1996
18. Feel Dizzy or Light-headed.	Brown et al. (1987); Dunn & Goldman, 1996; Fromme et al. (1993); Leigh (1987)
19. Better Able to Say What They Feel.	Brown et al. (1987); Fromme et al. (1993); Rohsenow (1987)
20. Be More Bossy.	Brown et al. (1987)
21. Feel Less Bored.	Kushner et al. (1994)
22. Feel Less Hopeful about the Future.	
23. Sleep Better.	Kushner et al. (1994); Rohsenow (1987)
24. Think Less Clearly.	Fromme et al. (1993); Leigh (1987)
25. Feel More Interested in the Opposite Sex.	Brown et al. (1987); Leigh & Stacy (1993)
26. Think Less about Their Responsibilities.	Brown et al. (1987); Fromme et al. (1993); Rohsenow (1987)
27. Forget Things More Easily.	Dunn & Goldman (1996)

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Table 2

Percent Agreement with Alcohol Expectancy Items and One-Sample *t*-tests (test value = 67%).

	Parents (n=772)		Mothers (n=452)		Fathers (n=320)	
DRINKING ALCOHOL MAKES PEOPLE:	**%**	***t***	**%**	***t***	**%**	***t***
1. Better at Talking to New People.	49	-9.8	47	-8.6	53	-5.1
2. Talk Louder.	94	30.8*	95	26.2*	93	17.3*
3. Feel Happier or in a Better Mood.	58	-4.9	54	-5.5	64	-1.1
4. More Likely to Do Dangerous Things.	91	22.9*	92	19.6*	89	12.6*
5. Feel More Relaxed.	84	12.9*	84	10.1*	84	8.1*
6. Feel More Drowsy or Tired.	88	18.5*	90	16.3*	86	9.7*
7. Less Shy.	90	21.3*	89	15.1*	91	15.3*
8. Fight More.	87	15.9*	89	15.1*	83	7.5*
9. Worry Less about Things.	77	6.8*	76	4.3*	79	5.5*
10. Lose Their Tempers More Quickly.	88	17.5*	90	17.0*	84	8.1*
11. Enjoy Meals More.	27	-23.2	24	-21.5	32	-11.7
12. More Clumsy.	94	31.3*	96	32.6*	91	14.5*
13. More Fun at a Party.	39	-16.1	34	-14.8	45	-7.8
14. Think Less about Others' Feelings.	88	18.3*	91	17.3*	85	8.8*
15. Come Up with New Ideas More Easily.	17	-37.0	14	-32.2	21	-20.2
16. More Likely to Do Things w/o Thinking.	95	36.7*	96	31.5*	94	20.5*
17. Feel Less Nervous.	83	11.7*	82	8.5*	84	8.1*
18. Feel Dizzy or Light-headed.	89	17.2*	90	16.3*	87	8.6*
19. Better Able to Say What They Feel.	68	0.7	68	0.6	68	0.4
20. Be More Bossy.	78	7.3*	81	7.9*	73	2.3
21. Feel Less Bored.	56	-6.1	55	-5.1	58	-3.4
22. Feel Less Hopeful about the Future.	45	-11.5	47	-8.6	43	-7.7
23. Sleep Better.	50	-9.1	46	-9.0	55	-3.8
24. Think Less Clearly.	94	33.2*	95	27.8*	93	19.1*
25. Feel More Interested in the Opposite Sex.	73	4.1*	71	1.8	77	4.3*
26. Think Less about Their Responsibilities.	92	24.9*	93	21.5*	90	13.7*

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	Parents (n=772)		Mothers (n=452)		Fathers (n=320)	
DRINKING ALCOHOL MAKES PEOPLE:	**%**	***t***	**%**	***t***	**%**	***t***
27. Forget Things More Easily.	92	21.5*	94	24.2*	88	9.4*

Note. The *t*-test compared the percent agreeing with each outcome to 67%. Positive *t*-values are greater than 67%; negative *t*-values are less than 67%.

* $p < 0.0009$ ($t > +3.14$) with Bonferroni correction (one-tailed test).

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Table 3

Means in Waves 1-7 on Measures of Adoption of Adult Alcohol Outcome Expectancies by Age-cohort (Ages 8.5-11.5 vs. 10.5-13.5)

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	*F*	Linear *F*	Quad. *F*
Consensual Positive										
8-year-olds	2.28	2.59	2.95	3.25	3.51	3.85	4.12	44.8***	152.1***	ns
10-year-olds	3.14	3.40	3.83	4.02	4.14	4.37	4.50	34.1***	102.7***	4.7*
Consensual Negative										
8-year-olds	9.79	9.90	10.81	11.37	11.27	11.74	11.75	29.0***	128.3***	6.9**
10-year-olds	11.02	11.47	11.93	12.03	12.04	12.10	12.10	14.1***	45.2***	14.6***
Non-consensual										
8-year-olds	1.73	1.74	2.02	1.93	2.19	2.39	2.57	12.8***	41.5***	ns
10-year-olds	2.17	2.18	2.38	2.51	2.56	2.43	2.42	15.3***	45.7***	ns
Consensual Non-exp										
8-year-olds	1.64	1.70	1.66	1.71	1.68	1.59	1.51	3.2**	7.6**	9.0**
10-year-olds	1.62	1.64	1.65	1.59	1.65	1.48	1.52	3.3**	6.4*	ns

*** $p<.001$.

** $p<.01$.

* $p<.05$.

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Table 4

Comparison of the Fit of Alternative Function Forms, Separately, for Adoption of Consensual Positive and Consensual Negative Alcohol Outcome Expectancies (LL=Log-Likelihood for A-B Comparison, BIC=Bayesian Information Criterion for Other Comparisons)

Positive Expectancies					
Models	**Measures of Fit**			**Model Comparisons**	
	LL	**BIC**	**df**	**A**	**B**
A. Linear (Fixed)	-5222.2	10542.3	45	-----	
B. Linear (8 Freed)	-5216.7	10580.1	37	5.5	-----
C. Piece-wise @ 12.0	-5192.1	10506.5	41	35.8***	73.6***
Negative Expectancies					
A. Linear (Fixed)	-6174.3	12446.4	45	-----	
B. Linear (8 Freed)	-6144.3	12435.4	37	30.0***	-----
C. Piece-wise @ 12.0	-6154.2	12430.6	41	15.8**	-4.8

*** $p < .001$.

** $p < .01$.

df = degrees of freedom (for comparisons, df = difference in model df's).

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Table 5

Covariates of Piece-wise Growth Curves on Adoption of Positive and Negative Consensual Alcohol Outcome Expectancies Standardized Coefficients)

	Adoption of Positive Alcohol Expectancies					
	Intercept		**Slope-1**		**Slope-2**	
Covariate	**Univariate**	**Multivariate**	**Univariate**	**Multivariate**	**Univariate**	**Multivariate**
Gender	-0.027	-0.029	0.043	0.048	0.003	-0.001
Race	0.043	0.055	0.008	-0.027	-0.004	-0.033
Mother Educ.	-0.036	-0.038	0.135	0.129	0.075	0.061
Mother Drinking	-0.029	-0.075	0.093	0.104	0.142	0.155
Father Drinking	0.051	0.068	-0.001	-0.032	0.047	-0.027
	Adoption of Negative Alcohol Expectancies					
	Intercept		Slope-1		Slope-2	
Covariate	Univariate	Multivariate	Univariate	Multivariate	Univariate	Multivariate
Gender	0.016	0.017	0.011	0.013	-0.451	-0.436
Race	0.231**	0.180*	-0.178	-0.147	-0.195	-0.260
Mother Educ.	0.276***	0.252**	-0.135	-0.106	0.571†	0.545†
Mother Drinking	0.083	-0.103	-0.062	0.056	0.181	0.235
Father Drinking	0.179*	0.193†	-0.106	-0.094	0.013	-0.168

Note. Gender was coded 0=Female, 1=Male. Race was coded 0=African-American, 1=white/Other.

*** $p<.001$.

** $p<.01$.

* $p<.05$.

† $p<.10$.