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The relationship between individual differences in cognitive, social and personality development and the increase in complexity of children's alcohol expectancies

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The Relationship Between Individual Differences in Cognitive, Social and Personality

Development and the Increase in Complexity of Children's Alcohol Expectancies

by

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Dedication

This dissertation is dedicated to Edward Phillips, the most loving and supportive

grandfather anyone could hope to have. He was so encouraging and proud of me, and

valued my education above all else.

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ABSTRACT

The current study aimed to simultaneously examine cognitive, social and personality development in a cross-sectional sample of 3rd, 4th and 5th grade children to explore the interplay among these processes and how they relate to changes in children's understanding of alcohol. To replicate previous work, this study comprehensively examined relative increases in types of expectancies as a function of development. Results demonstrated that children in higher grades held more positive, negative and sedating expectancies of alcohol and positive alcohol expectancies increased more than negative alcohol expectancies. Improved performance on cognitive measures were associated with positive alcohol expectancy endorsement, indicating that children's ability to incorporate positive beliefs about alcohol, which are conflicting with information typically taught to children in this age range, may be related to their ability to form and articulate concepts with age.

Among male participants, sensation seeking increased with age and was strongly associated with positive ideas about alcohol use, such as wanting to experiment with alcohol or planning to drink as an adult. Social influences on alcohol expectancies included exposure to drinking. When children's parents drank more, they had higher positive, negative and sedating alcohol expectancies, indicating that they had a greater

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understanding of all potential consequences of drinking, while children whose friends drank had higher positive but not other types of expectancies. Additionally, children who turned to adults for advice held increasing levels of negative and sedating alcohol expectancies across age, while children who sought support from their peers showed higher levels of positive and arousing expectancies across age groups. The interplay between cognitive development and risk factors such as social awareness of alcohol, source of social influence, and sensation seeking personality begins to demonstrate key relationships to alcohol expectancies in late childhood. These social and personality risk factors are likely to play an even greater role in early adolescence as children move to middle school and experience puberty. This study provides a basis for future elaboration of the roles these constructs play in an individual's ability to understand the multifaceted expectations that are held in our society about the effects of alcohol on human behavior.

Introduction

      The consequences of problematic alcohol use and abuse are far reaching, influencing the physical and emotional health of the individual, in addition to his or her family members, friends, the surrounding community and society overall. In the past several decades, research examining potential risk factors of problematic alcohol use points to psychosocial development during childhood and adolescence as a time when foundational cognitive, biological, emotional, and social determinants of risk converge in ways that encourage or deter individuals from risky alcohol consumption.

      Underage alcohol use is normative in U.S. society, with almost 74% of persons age twenty-one or older reporting that they started drinking alcohol before reaching the legal age. Fifty percent of children had already tried alcohol by age fifteen (Newes-Adeyi, Chen, Williams, & Faden, 2005). Although underage alcohol use is common, the risks associated with alcohol use during key periods of development are significant. Grant and Dawson (1997) found that individuals who begin drinking before age fifteen are at four times the risk of meeting criteria for alcohol dependence as compared to those who begin after age twenty. Additionally, there is evidence indicating that the human brain continues to develop into a person's early twenties (Spear, 2000). Adolescents who are dependent on alcohol have displayed memory impairment, distorted perception of spatial relationships, and weakened verbal skills (Brown, Tapert, Granholm & Delis, 2000). Teenagers who drink heavily are also at greater risk for suicide (National Institute

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on Alcohol Abuse and Alcoholism; NIAAA, 1996, as cited in Leadership for a Drug Free America, 2002), injury (Hingston, Heeren, Jamanka & Howland, 2000), fatal crashes (National Highway and Safety Patrol; NHSP, 2001) and risky sexual behavior (Kaiser Family Foundation, 2002).

Application of expectancy theory in this area has been valuable in efforts to understand people's motivations to drink alcohol. Alcohol expectancies refer to an individual's knowledge and beliefs about the effects and consequences of alcohol consumption. These expectancies have been thought to be acquired early in life and are stored in a semantic memory network (Goldman, 1989; 1999). Numerous studies have indicated that adolescents' and adults' expectancies about alcohol influence the amount of alcohol that they consume (Brown, Goldman & Christiansen, 1985, Christiansen, Smith, Roehling & Goldman, 1989, Darkes & Goldman 1993). There is also significant evidence that children's expectancies about alcohol can influence their intentions to drink in the future (Austin & Meili, 1994) and are hypothesized to predict future drinking behavior (Dunn & Goldman, 1996; 1998; 2000).

Several researchers have explored the possibility that alcohol expectancies may serve as a mediator between identified risk factors for problem drinking and drinking behavior (Finn, Sharkansky, Brandt, & Turcotte, 2000; Henderson, Goldman, Coovert, & Carnevalla, 1994). Expectancy research can help clarify how risk factors for problems with alcohol transfer to actual alcohol use over the course of a child's development. Children's expectancies of the effects of alcohol may also facilitate or inhibit the influence of other risk factors on drinking behavior.

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Children's expectancies about the effects of alcohol develop well before the individual has any experience drinking alcohol (eg. Noll, Zucker & Greenbaum, 1990; Dunn & Goldman 1996; 1998; 2000). Therefore, they must learn these expectancies through other means such as societal norms, parental behavior, various forms of media, and peer groups. How and when children acquire information about the effects of alcohol may vary based on individual risk factors that increase the probability of developing problems with alcohol.

Development of Alcohol Expectancies

At very young ages, children develop a cognitive schema for alcohol and its use. Even preschool aged children have been shown to discriminate alcohol from other liquids, and can express awareness that adults usually drink alcohol rather than children (Noll et al., 1990). Further exploration of children's knowledge of alcohol (Miller, Smith & Goldman, 1990) revealed that children held expectancies about alcohol at all of the ages evaluated (ages 6-11). Through thorough exploration of the development of alcohol expectancies across studies, it has been well-documented that both positive and negative alcohol expectancies increase across age groups, from as young as first grade up through the twelfth grade (Dunn & Goldman, 1996, 1998, 2000; Johnson & Johnson, 1995; Cameron, Stritzke & Durkin, 2003) Additionally, several of these studies point to the age range between third and sixth grade as a time when there is a large increase in endorsement of alcohol expectancies (Dunn & Goldman, 1996, 1998; Johnson & Johnson, 1995).

This phenomenon has been illustrated through the use of individual differences scaling and preference mapping techniques used to develop a model of an alcohol expectancy memory network in multidimensional space (Dunn & Goldman, 1996, 1998). Using words elicited from children to describe the effects of alcohol and ratings of how often alcohol causes a specific expected feeling in adults, these researchers mapped the expectancy responses on two derived axes (good-bad, and sedating-arousing) based on a score from a four-point Likert scale of how often these effects of drinking are experienced. Preference mapping was then used to plot a vector through the hypothetical expectancy network to model the association pathways as a function of grade. This vector represented the judged frequency of occurrence for each alcohol expectancy word and demonstrated that younger children were more likely to have negative expectancies, make judgments based on value (positive vs. negative) rather than arousal (arousal or sedation). Older children, however, had more positive expectancies, such as "cool" or "wild", and more arousing expectancies as well. These findings were extended to show that children with personal drinking experience, or whose parents and peers had higher rates of drinking, were more likely to have positive and arousing expectancies than children who do not (Dunn & Goldman, 1998). This method was also extended to a different measure of expectancies, free associates to the phrase "Alcohol makes people …" (Dunn & Goldman, 2000). This measure was thought to be a more direct means of retrieving uncontaminated memory contents, and again younger and lower drinking children were more likely to report negative outcomes, like "bad," while older and higher drinking children would report more positive outcomes, such as "happy."

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Other research in the field has compared alcohol expectancies to non-alcohol

beverages, especially consumed primarily by adults, to distinguish alcohol expectancies

as a unique, salient and qualitatively different construct than other beverages or adult

concepts (Cameron et al., 2003; Query, Rosenberg & Tisak, 1998). Researchers have

demonstrated the salience of social consequences for adolescent or underage drinking

among children as young as first grade, both in regards to negative consequences in the

eyes of their parents and also positive consequences expected among their friends

(Johnson & Johnson, 1996). Evidence has indicated that older children feel that social

and peer approval strongly influence an adolescent's decision to drink (i.e., that older

children are more likely to describe alcohol as *cool*, such as in Dunn & Goldman, 1996).

Researchers have examined hypotheses that because of these mixed expectations,

children have specific and ambivalent opinions regarding alcohol, which may be

reflective of increased cognitive sophistication over developmental periods (Cameron et

al., 2003). This relationship may also be a sign of the continued process of differentiation

of alcohol-related concepts from less culturally laden concepts, a process that begins at

very early ages (Noll et al., 1990, Miller et al., 1990).

More recently, alcohol expectancy research among children and adolescence has

focused on the role of measurement error introduced by differences in the psychometric

properties of an instrument across developmental time periods (Shell, Martino, Ellickson,

Collins & McCaffrey, 2005) and between genders (Randolph, Gerend & Miller, 2006).

While Randolph and colleagues were able to confirm measurement invariance in regards

to gender in their sample, Shell and colleagues found psychometric differences in items

based on age, specifically in regards to differences in the meaning of some of the items. For example, older students felt that "forget their problems" or "act wild" were more positive outcomes than did younger children. Additionally, these researchers modeled alcohol expectancies using two factors: Alcohol Positivity (loads positively on positive items and negatively on negative items) and Alcohol Potency (likelihood of both positive and negative outcomes as a result of alcohol use). After the researchers controlled for psychometric differences in items based on age, they found that older students viewed alcohol more positively and as more potent than younger students, independent of their own personal experience with alcohol.

Influences on alcohol expectancies in children

Two of the most researched influences on children's expectancies of alcohol are parental drinking and media, specifically alcohol advertising. Numerous studies have identified children of alcoholics (COAs) as a group at high risk for future alcohol abuse and dependence (Schuckit, 1994). However, how it is that some COAs experience these problems while others do not is still unknown. Alcohol expectancies might play some role in this distinction. Studies comparing young COAs to controls (Miller et. al., 1990; Kraus, Smith & Ratner, 1994) have found that young COAs have more negative expectancies of alcohol than their counterparts, indicating that at this age COAs expectancies may reflect their negative experiences with an alcoholic parent. On the other hand, older adolescent COAs are more likely than their controls to have higher positive expectancies towards alcohol (Brown, Creamer & Stetson, 1987).

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Besides exposure to alcohol information within the family environment, children also learn a significant amount of alcohol expectancy information from media sources. Austin and Meili (1994) examined the alcohol expectancies of a sample of children considered at-risk for alcohol abuse. The authors examined children's perceptions of alcohol use by adults at home and people on television. They compared these perceptions to children's expectancies of the effects of alcohol, and their intention to drink alcohol in the future. They also explored the extent to which the child felt that television represents real life, how often they saw alcohol in real life, what kinds of television shows they were most likely to watch and how often. Results showed that both children's identification with television and modeling at home were positive predictors of risky expectancies of alcohol use. These expectancies were in turn predictors of intention to drink.

An experimental study concerning the effects of alcohol advertising found that children had significantly higher positive expectancies of alcohol after evaluating five beer commercials when compared to a control group that evaluated five soda commercials (Dunn & Yniguez, 1999). Using the Children's Expectancy Measure and First Associate Expectancy Measure, the authors mapped children's paths of association through a memory network. They found that children in the fourth grade who were exposed to five beer commercials had more arousing and positive expectancies and were more similar to fifth-grade control students than fourth grade controls. In turn, fifth grade students who had seen beer commercials had more arousing and positive expectancies than fifth grade controls. Although the results of this study are striking, it is important to

remember that the effects of these five beer commercials on students in a classroom could have temporarily changed children's expectancies. It does not necessarily predict how these same children would react hours or days after seeing the same commercials. Additionally, the study did little to explain the long-term effects that hundreds of commercials have on children over time as they experience in life. This study does not account for individual differences of exposure these students had to television and alcohol commercials before their experience during their participation in research began.

These basic findings illustrate some of the existing social influences on alcohol use and alcohol expectancies during childhood and adolescence. They do not, however, examine the mechanisms by which some children may be more susceptible to this risk than other children and how this interactive process may change across development. The age at which alcohol expectancies begin to shift occurs in the early stages of the transition between childhood and adolescence, a period which includes significant and rapid transformation in an individual's internal and external environment. Specifically, developmental changes in a child's cognitive capabilities, in addition to shifts in the salience of and exposure to social influences regarding alcohol, may combine to encourage or deter positive expectancies about alcohol, and subsequent alcohol use. Due to the timing of these changes in relation to the larger developmental processes associated with transition into adolescence, these differences must be examined within the context of adolescent development.

Biopsychosocial Model of Developmental Risk for Alcohol Use

Adolescence is a period of continual flux, during which an individual is moving between childhood and adulthood. During this time biological, social and emotional developmental processes combine to foster relative independence and prepare individuals for increased levels of responsibility and the possibility of sexual reproduction. These changes progress and regress over the course of adolescence, and are desynchronous with one another (Steinberg, Dahl, Keating, Kupfer, Masten & Pine, 2004). These processes, for many reasons, also place the adolescent at risk for abusing alcohol and other drugs.

Several studies have demonstrated that there may be developmental differences in an individual's propensity towards sensation seeking, or willingness to engage in risky behavior to experience novel and complex sensations (Zuckerman, 1979). Sensation-seeking has been shown to increase from adolescence to adulthood and then decrease across years later in life (Zuckerman & Neeb 1980). Increases in novelty seeking, risk taking and sensation seeking during adolescence occurs across species, including humans, rats and non-human primates, and may be a result of decreased sensitivity to stimulation (Martin, Kelly, Rayens, Brogli, Brenzel et al., 2002; Spear, 2000). In fact, more than half of adolescents have engaged in drunk driving, unprotected sex, illegal drug use, and/or minor criminal activity (Arnett, 1992).

In addition to an increased desire to engage in risky behavior, adolescents may be less biologically sensitive to drug and alcohol use. Often the effects seen in adults are absent or dampened in adolescent drug use (Spear, 2000). Because of this decreased sensitivity, adolescents are in danger of increasing the dosage of a drug to achieve the

desired effect, leading to increased levels of exposure to the harmful effects of the drug. Specifically with alcohol, adolescents who are feeling the positive effects of the drug without any sedative effects may find it easier to flood the brain with alcohol without awareness of just how much they are drinking.

During adolescence, increases in levels of sensation seeking and decreased sensitivity to alcohol may combine with the tremendous increase in social interaction with same-age or similar-age peers to further the likelihood of alcohol use. Alcohol is often used in our culture to ease social interactions, and these interactions between peers are particularly reinforcing during adolescence. Adolescents report feeling happiest in the company of their peers, and they report enjoying this social time more than any other point in the day (Spear, 2000). Adolescents may feel pressure to explore new things in their peer group, particularly activities associated with mature, adult activity, such as alcohol use.

Another socially based source of information about alcohol use is the family environment. Observation of parental and sibling drinking behavior can affect what a developing adolescent feels is appropriate for themselves, for other adolescents and for adults (Ellis, Zucker & Fitzgerald, 1997). Parental attitudes towards their own drinking and towards the children's potential drinking habits can also shape an individual's expectations of alcohol use (Jacob & Johnson, 1997). During adolescence, parenting practices are often strained as increases in parent-child conflicts begin. Some research has shown that children were found to be more likely to drink if the level of closeness between a child and a parent was low, the amount of parental monitoring of the child's behavior was low, and the child perceives his or her parent as permissive rather than authoritative

(Jackson, Henriksen & Dickenson, 2004). All of these facets of parenting style are tested in new ways as children approach adolescence. Increased desire for independence, social pressures and emotional dysregulation as a result of relatively fast paced developmental capabilities can often place added strain to the consistency of parenting practices.

Apart from family environment, genetic determinants of risk can be observed in the relationship between parental drinking and the drinking patterns of their children. However, genetics influence other factors, such as personality characteristics, which in turn influence the child's choice of peer group (deviant vs. non-deviant; Schulenberg & Maggs, 2001), the parent's ability to maintain healthy parenting practices, the likelihood of passing on predisposition to psychopathology (Sher, 1997), etc., all of which are risk factors for problematic alcohol use. The interrelatedness of these variables makes it difficult to tease them apart and illustrate a single, causal pathway of risk.

This convergence of increased sensation seeking, decreased biological sensitivity and heightened social motivation may be evolutionarily adaptive in that these variables encourage individuals to explore novel things and new territories during a critical time period of sexual maturation and development towards adulthood. These processes may serve a function in that they may minimize inbreeding (Spear, 2000). Some researchers have argued that small amounts of risk taking may be considered "developmentally appropriate experimentation," because adolescents engaging in some risk taking behaviors have been found to be more socially competent than both their abstaining and frequent risk taking counterparts (Shedler & Block, 1990). Risk taking may allow adolescents to explore adult experiences and opportunities and meet critical social

milestones (Spear, 2000), such as distancing themselves from their caregivers and becoming closer to their peer group. Despite these advantages, the increases in risk taking during adolescence have serious consequences, including the dangers associated with alcohol use mentioned earlier.

Cognitive Development and its Relation to Alcohol Expectancies

While many changes are taking place during the transition into adolescence that influence variables related to personality and socialization, additional changes are occurring in relation to the individual's cognitive abilities. During late childhood and early adolescence cognitive processes become increasingly complex. Recent research regarding children's alcohol expectancies has pointed to these developmental changes in cognition as a potential pathway explaining how and why older children and adolescents have more alcohol expectancies and more diverse types of alcohol expectancies than do younger children (Cameron et al., 2003; Dunn & Goldman, 2000; Shell et al., 2005). Current theories regarding cognitive development support this hypothesis.

Piaget's (1964) early models of cognitive development described four distinct stages of cognitive development: sensorimotor (ages 0-2), pre-operational (ages 2-7), concrete operational (ages 7-11) and formal operational (from age 11). During late childhood, the concrete operational period, children learn about classification, ordering, spatial and temporal properties, and can comprehend more than one aspect of a problem or object simultaneously. Cognitive maps become increasingly organized and accurate during this time period (Piaget, 1964). Children at this age, however, can reason logically about concrete, tangible information, but they have difficulty with abstract

ideas. During the formal operational period, adolescents begin to think abstractly and form hypotheses, rather than relying on concrete ideas solidified through actual experience (Berk, 1997).

While recent science has not supported Piaget's ideas that these stages are distinct, isolated and sequential, Piagetian theory still provides a useful framework for understanding the general process of cognitive development. Development through these stages is now considered to be more gradual, with considerable overlap, and to be influenced by the cultural and experiential context in which they occur (Berk, 1997). This shift in cognitive ability from concrete, one-dimensional thought to abstract, multidimensional reasoning seems to occur in a linear fashion between the ages of 6 and 16, the age at which most adolescents are able to match adult capabilities.

Several aspects of Piagetian theory apply to the increase in amount and complexity of alcohol expectancies during this developmental period. The increased use of classification and ability to understand more than one aspect of a problem could lead to increased retention and comprehension of different potential effects of alcohol, even when they are not consistent with one another. Additionally, movement from concrete to abstract reasoning may allow an individual to think beyond his or her personal exposure to messages regarding alcohol and begin to incorporate information about how alcohol affects others; particularly peers, family members and media figures.

These ideas are supported by empirical evidence, which demonstrates that children develop an increased ability to categorize during development. In an early study, Frith and Frith (1978) demonstrated that between the ages of 4 and 16, children

use more types of features to categorize objects. Between the ages of 8 and 12, children are also more likely to use categorizing strategies to remember pictures of objects than younger children (Schlagmuller & Schneider, 2002). In this study, as children got older, they also used strategies that were increasingly complex in terms of the number of dimensions used. This finding is compatible with the existing literature that documents a transition from emphasizing only one, negative dimension of alcohol expectancies, to including both positive and negative expectancies, and finally to including dimensions of arousal and sedation.

Another study by Greve and colleagues (2000) sought to determine whether performance on the California Card Sorting Task (CCST) follows the same developmental pathway as other measures of categorization abilities. When comparing younger children ages 7-9, older children ages 10-12, young adults ages 17-19 and young adults ages 20-22, the authors found that the very young children performed more poorly on the CCST than did the older children and the older children differed from the young adults on description scores but not on sort scores. This study indicates that very young children, who are still developing their abilities to describe concepts to others, are not as sophisticated in their categorization abilities as older children, whose sophisticated ability to categorize and understand more closely parallels that of adults.

This ability to categorize based on multiple features may be due in part to the child's increased ability to recognize these features. One task used to demonstrate recognition of spatial complexity is the picture fragment task, in which a participant must study a picture and then later identify which pictures he or she had seen previously.

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Participants are required to identify pictures that are either complete or fragmented to some degree. One study showed that younger participants were only able to identify pictures with less or no fragmentation, while older children and adults were able to recognize pictures with high degrees of fragmentation (Cycowicz, Friedman, Snodgrass & Rothstein, 2000).

In another example, Siegler (1985) examined children's ability to remember the amount of a weight placed on a balance, and the distance it was placed from the fulcrum. Children were only able to remember one of these dimensions prior to age 8. Sandberg (2000) also tested the multidimensionality of children's memory by asking them to remember and indicate the location of a point in a square in a spatial memory task. The youngest children (age 5) were able to identify which half of the square the point fell on, using one dimension, either vertical or horizontal. Children a bit older located the correct quadrant that the point was located in using both dimensions. The oldest children (age 10) used both dimensions, and also were able to specify the angle and distance of the point from the center of the square. These studies support the idea that children's ability to organize and remember verbal and spatial relationships is based on increasingly complex strategies. Since alcohol expectancies are hypothesized to be processed and retrieved within a semantic association network, increasing levels of cognitive complexity in this network, as well as improved abilities of categorization and retrieval, provide viable hypotheses to explain how alcohol expectancies develop and diversify with age.

Educational Significance

Traditionally, schools have been involved in efforts to reduce student involvement with drugs and alcohol. The prevention programs available in schools have become increasingly guided by research, and have broadened their focus from the individual to include environmental influences and social norms (Bangert-Drowns 1988; Dielman 1995). Although some of these programs have been shown to be valuable, effect sizes tend to be small for general youth populations and even less effective with higher risk youth (National Institute on Alcohol and Alcoholism; NIAAA, 2005). More research is necessary to establish a means of preventing alcohol use from a developmental approach that takes into account the interplay of risk and protective factors at physiological, social and environmental levels.

There has been some promising research in the area of prevention using alcohol expectancy theory. Despite evidence that children primarily hold negative alcohol expectancies, previous prevention efforts, such as DARE, have attempted to teach these ideas to children (teaching them what they already know). As they grow older, however, they increasingly attend to the physiological responses to alcohol, and begin to expect that alcohol will either have arousing or sedating effects on their mood. Because of this pattern, Dunn and Goldman (1998) theorized that prevention efforts will be more effective if they emphasize the sedating effects of alcohol, as most young people drink to experience the more desirable, arousing feelings that increase their ability to socialize. Several researchers (Kraus et. al., 1994; Wooten, 1995; Cruz & Dunn, 2003) have attempted to challenge the positive expectancies of children and adolescents using

different media and with varying levels of success. Across all studies, more interactive

approaches that were particularly salient to the children were more effective.

Additionally, in all studies, expectancy-based programs were more effective than

traditional alcohol-information programs.

The current study can serve to improve prevention efforts by targeting underage

drinking within a developmental framework. If the interplay between developmental

processes and changes in cognition regarding alcohol is better understood, than

prevention efforts can be developed to target (1) the children who are at risk, and (2) the

social and cognitive processes that lead to increased emphasis on positive and arousing

expectancy information. This study, as well as continued expectancy and prevention

research, are crucial towards efforts to reduce underage drinking.

Overview

As described previously in this document, specific expectancies related to alcohol

use have been measured in children as young as 3 years old and develop over the course

of childhood and adolescence, even prior to actual drinking experience. During

normative development, older children and adolescents have quantitatively more

expectations about the effects of alcohol, and more diverse expectations of alcohol.

Specifically, while individuals hold both positive and negative alcohol expectancies at all

ages, younger children have significantly more negative expectancies of alcohol than

positive (Miller et al., 1990). Across the developmental period between childhood and

adolescence, there is an increase in both positive and negative alcohol expectancies, with

positive expectancies increasing at a faster rate than their negative counterparts (Cameron

et al., 2003; Shell et al., 2005). Techniques mapping the hypothetical expectancy network demonstrate that younger children are more likely to emphasize associational pathways using the valence dimension than older children, and by late adolescence and early adulthood, individuals are likely to categorize alcohol expectancies along two dimensions of valence and arousal. Finally, when individuals have more personal experience with alcohol, they are also likely to have more diverse alcohol expectancies and use more than one dimension to classify that experience (Dunn & Goldman, 1996, 1998, 2000).

Several distinct biopsychosocial processes are undergoing significant transformations at the onset of adolescence, during the same developmental time period that alcohol expectancies are transitioning. These processes, including social, personality, cognitive, environmental and biological changes, interact with one another, as well as with influences of risk for problematic alcohol use. Previous research has established that alcohol expectancies may partially mediate the effects of some risk factors, such as sensation seeking (Finn et al., 2000).

Current Study

The purpose of the current study was to examine the relative importance of aspects of three of these influences: cognitive, personality and social development, on changes in alcohol expectancies. Cognitive development during late childhood and early adolescence is substantial and cognitive capacity increases and becomes increasingly complex with age. Modification of alcohol expectancies across this time period appears to mirror this increase in complexity in that children begin to categorize alcohol

expectancy information along at least two dimensions (positive/negative and arousing/sedating) rather than just one. Additionally, increased use of abstract reasoning and assimilation of new information outside of one's personal experience, leads directly to an increase in alcohol expectancies. This relationship is especially true of positive expectancies, because the individual is no longer relying on personal experience, such as negative messages about underage alcohol use taught at school. Instead, he or she is able to incorporate more distant sources of information, such as beer commercials, spring break television programs, stories about siblings' or peers' experience with alcohol, and finally, positive and negative information about parental (adult) drinking and underage alcohol use.

The current study aimed to simultaneously examine aspects of cognitive, personality and social development in a cross-sectional sample to understand the variations in each that underpin changes in alcohol expectancies beginning within this age range. Although these are only three of multiple significant facets to development within this age range, each of these areas has specific relevance to the process of forming expectations of how alcohol affects people. To replicate and expand upon previous work, this study comprehensively examined relative increases in different types of expectancies as a function of development. Because many of the developmental changes associated with adolescence begin in middle childhood, this study examined the onset of alcohol expectancy development by comparing children in grades 3, 4 and 5.

Method

Participants

A sample was drawn from 3rd to 6th grade children attending after-school

programs offered either by YMCA Latchkey or School Age Child Care (SACC), which is

run by the School District of Hillsborough County. These programs were chosen because

they are the two largest after-school programs in the area and are available to children in

a representative sample of neighborhoods in Hillsborough County. An active informed

consent procedure was used in which the study was described to parents and they were

asked to provide permission for their child to participate. Only students who returned the

parental consent forms were allowed to participate. 32 percent of the children contacted

returned their parental permission slips and of these individuals, 75 percent agreed to

participate.

The resulting sample included 300 3rd to 6th grade students, 88 percent of which

were recruited from SACC programs (12 percent YMCA). Both sites were similar in

terms of setting (usually the school cafeteria), program structure, staff, etc. No site

differences were found for any of the independent or dependent variables. All

participants were between 7 and 12 years old, with a mean age of 9.36 years (SD = 1.01).

60 percent of participants were female. This sample was diverse; 44.3 percent of

participants identified themselves as White/Caucasian, 8 percent as Black/African-

American, 20.7 percent as Hispanic/Latino(a), 6 percent as Asian, and 24 percent as Other.

Measures

      Slosson's Oral Reading Test (SORT). This measure was given to ensure that participants met the minimum reading level required to complete the rest of the measures in this study. The Slosson's Oral Reading Test was administered individually and includes 200 words that are sorted into 10 lists based on order of difficulty. The first group is considered equivalent to a 1st grade reading level, the second group, to 2nd grade reading level, etc. If the participants could not read at a 2nd grade level, than the researcher read the questionnaires out loud to the participant. To maintain the participant's comfort level regarding the confidentiality of their data and minimize response bias, they were asked to record their own responses on a measure in front of them after each item was read to them.

      Controlled Oral Word Association Test (COWAT). To control for more general cognitive ability, the Controlled Oral Word Association Test was used to measure verbal fluency and speed of information processing (Benton & Hamsher, 1976). For the COWAT, participants were asked to produce as many items in a category, such as animals and boy's names or clothes and girl's names, as they can think of in a 1-minute trial. The resulting score was the sum total of all admissible words that fit within the category.

      Delis-Kaplan Executive Functioning System – Sorting Task (DKEFS-Sorting). This task was modeled after the California Card Sorting Task and was designed to

measure aspects of concept formation and categorization development through the use of three indexes: errors in categorization, perseverative errors, and categories achieved (Greve, Farrell & Besson, 1995). In this task the participants explain their sorting choice, which allows the administrator to assess additional outcomes such as concept articulation. Scores on the California Card Sorting Task have been shown to improve with normal development, reaching adult levels by age 10 (Greve, Love & Dickens, 2000).

Free Associates (FA). Participants were asked to complete an open-ended free-associates task in which participants answer the question "How do people feel when they drink alcohol?" with the first several responses that come to mind. This task is believed to be the purest indicator of automatically accessed memory contents (McNamara, 1992; Nelson et al., 1998, 2000). In this study, the first associates generated by participants were examined based on both the number produced as well as the range in content that is represented (number produced along the arousal and valence dimensions).

Alcohol Expectancy Card Sorting Task (CST-Alc). An additional card-sorting task was administered in which participants were asked to sort cards labeled with common alcohol expectancy terms into separate piles and name each pile that they produce. Having participant's group expectancies in this fashion provides co-occurrence values that can be used as estimates of semantic relatedness in memory (Rosenberg, 1979). These estimates can be analyzed using multidimensional scaling techniques or through cluster analysis. In this study, the card sorting piles were assessed based on the number of categories present in each child's final sort, as well as their ability to articulate the concepts used to create this sort.

Animal Card Sorting Task (CST-An). This task was developed specifically for this study to provide an alternate measure of cognitive complexity. This measure differs from the DKEFS-Sorting in that participants were asked to sort cards along more than one dimension simultaneously. This process would potentially help differentiate between cognitive complexity in general and more specific categorization processes that occur concurrently. Participants were asked to sort cards labeled with different types of animals into separate piles and then name each pile that they produce.

Memory Model-Based Expectancy Questionnaire (MMBEQ). The MMBEQ is an explicit alcohol expectancy measures that allows for factor score computation to examine mean changes in expectancies across age groups. It consists of 41 items which can be scored into 4 factors (positive-social, negative-arousal, sedated-impaired, and wild-crazy). Coefficients alpha for the four scales ranges from .82 - .92, and their correlations with drinking in a wide range of drinkers ranges from -.14 (sedated-impaired) to .38 (positive-social) (Dunn, 1999).

Sensation Seeking Scale for Children (SSSC). This scale was used to measure each participant's level of sensation seeking. Developed through modification of the Sensation Seeking Scale (SSS; Zuckerman, Kolin, Price & Zoob, 1964), authors of the SSSC selected items from the SSS that were relevant to children between the ages of 7 and 12 years old (Russo, Lahey, Christ & Frick, 1991). These items were further refined (Russo, Lahey, Stokes & Christ, 1993) when the authors added more child relevant items and deleted items that had poor internal consistency in a child sample. Also included in this revision were a set of appropriately modified items regarding substance use and

sexual activity. The scale consists of 26 forced-choice items that form three factors: Thrill and Adventure Seeking (TAS), Drug and Alcohol Attitudes (DAA) and Social Disinhibition (SD). The corrected split-half reliability estimate for the SSSC was $r(828)$ = .85 and the coefficient alpha was .83.

  Demographics and Drinking Questionnaire (DDQ). This instrument was compiled for the current study and contains items from state and national youth surveys and other studies of children's drinking. Items include: demographics, such as age, gender and ethnicity; alcohol use and age of onset; future intentions to drink; perceived peer and parental norms of pre-adolescent alcohol use; participants' evaluations of drinking by individuals of different ages (e.g., adults, peers, family); and questions regarding sources of social influence in the participant's life.

Transformation of Non-Normally Distributed Variables

  When examining the variables of interest, it was noted that several were non-normally distributed, including two subscales of the SSSC, the number of piles produced in both card sorting tasks developed for this study and all measures of social understanding of alcohol and alcohol use. All of these variables were transformed by taking the logarithm [$\log(t+1)$], square root [$(t+1)^{\frac{1}{2}}$] or inverse [$1/(t+1)$] of the variable. These transformations served to improve the skewness and kurtosis for the majority of these variables. The original descriptive statistics, as well as the results of these transformations can be found in Appendix K. Those that were not approaching a normal distribution were examined using non-parametric statistical procedures, such as chi-square analyses.

Procedure

Students were given written information and informed consent forms to bring home for their parents to sign. Students whose parents completed the consent forms were tested individually. At the beginning of the session, the administrator explained the informed consent to the participant, as well as a brief outline of what the study entailed. Then the administrator began the assessment battery in the following order: Slosson's Oral Reading Test (SORT); Controlled Oral Word Association Test (COWAT); Delis-Kaplan Executive Functioning System - Sorting Task (DKEFS-Sorting); Free Associates (FA); Alcohol Expectancy Card Sorting Task (CST-Alc); Animal Card Sorting Task (CST-An); Memory Model-Based Expectancy Questionnaire (MMBEQ); Sensation Seeking Scale for Children (SSSC); and the Demographics and Drinking Questionnaire (DDQ). The total assessment time took an average of 80 minutes (Range: 35-150 minutes). After the measures were completed, each participant was thanked for their participation and compensated for their time with a small toy.

Results

Overview

Results of the analyses performed were reported in four major sections examining each area explored in the current study. These areas include: (1) alcohol expectancies and (2) cognitive, (3) personality and (4) social influences. For each of these sections, changes across age and grade were examined first, and then their relationship to alcohol expectancies was explored. For sensation seeking, these analyses were divided by gender due to significant differences between males and females. Additionally, actual and future predicted drinking was examined to explore the relationships between drinking and each of the areas of interest within the current sample. Because of the cross-sectional nature of this study, none of these associations can be considered causal but instead are helpful in understanding the relationships between these constructs.

Alcohol Expectancies

Alcohol expectancies were hypothesized to have a substantial influence on individual decisions to drink alcohol, and likely to play an important role in the onset of drinking and problematic underage drinking. Previous literature had indicated that significant changes in these cognitions regarding alcohol were occurring in middle childhood, and specifically that children have more expectations about alcohol and that the emphasis shifts from more negative and sedating expectancies to more positive and arousing expectancies.

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Mean differences in expectancies by age and grade. To further explore these findings in the literature regarding changes in alcohol expectancies across age groups, differences in the mean total number of items endorsed on the MMBEQ in each grade/age group were examined (see Table 1). When participants responded to this survey they utilized a Likert scale and rated the frequency of that expectancy as either "never", "sometimes", "usually" or "always," however for the purposes of this study items on this survey were coded as either endorsed (1) or not endorsed (0). To convert the responses "never" was coded as not endorsed and all others were coded as endorsed. The total score for each subscale indicates the number of alcohol expectancies endorsed on that scale rather than the extent to which they were endorsed in a Likert scale format and allows the data to represent differences in the quantity of expectancies each participant holds about alcohol.

The total number of items endorsed increased by both age and grade, and this result was supported by a one-way analysis of variance (ANOVA) showing that more items were endorsed in higher ages and grades than were in lower ages and grades. More items were endorsed with higher grade level on the Positive-Social, Negative-Arousal and Sedated-Impaired subscales of the MMBEQ (see Figure 1) and on the Positive-Social and Negative Arousal subscales with age (see Figure 2). Additionally, significant differences were found in the number of free associates produced by age but not by grade. These results supported the hypothesis that overall expectancies increased as a function of age and grade, and indicated that children develop a broader understanding of both positive and negative consequences of drinking alcohol during late childhood.

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Figure 1

Mean differences in Alcohol Expectancy endorsement by grade
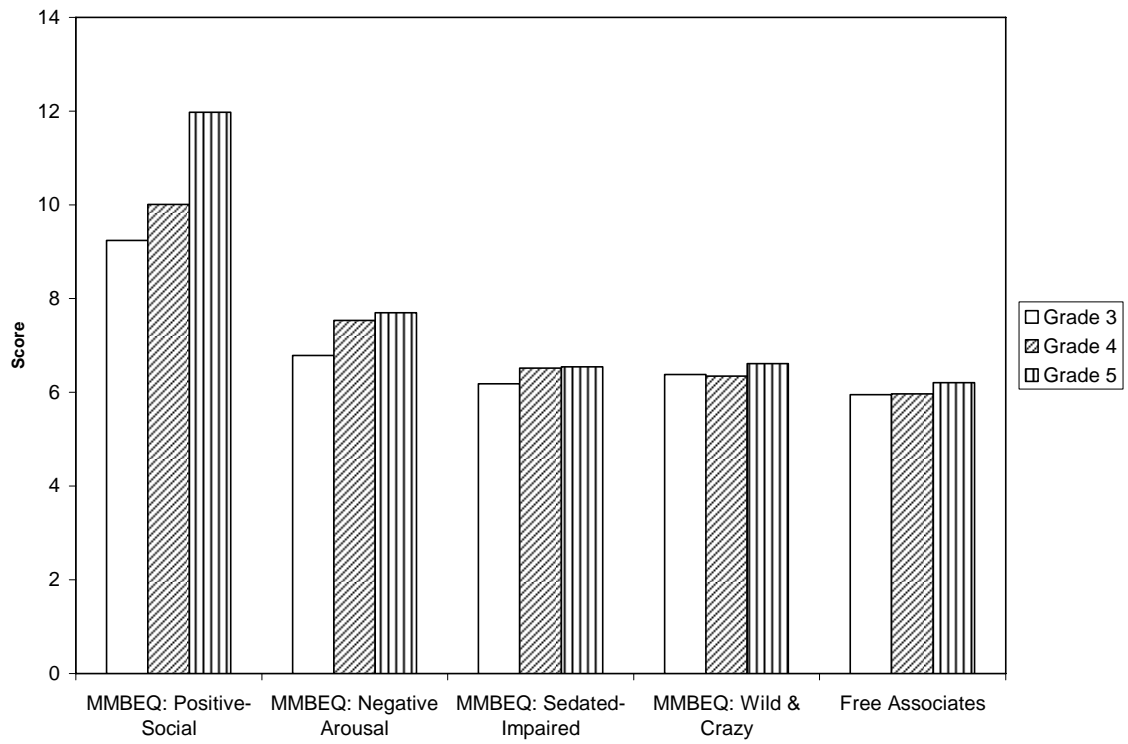
Figure 2

Mean differences in Alcohol Expectancy endorsement by age
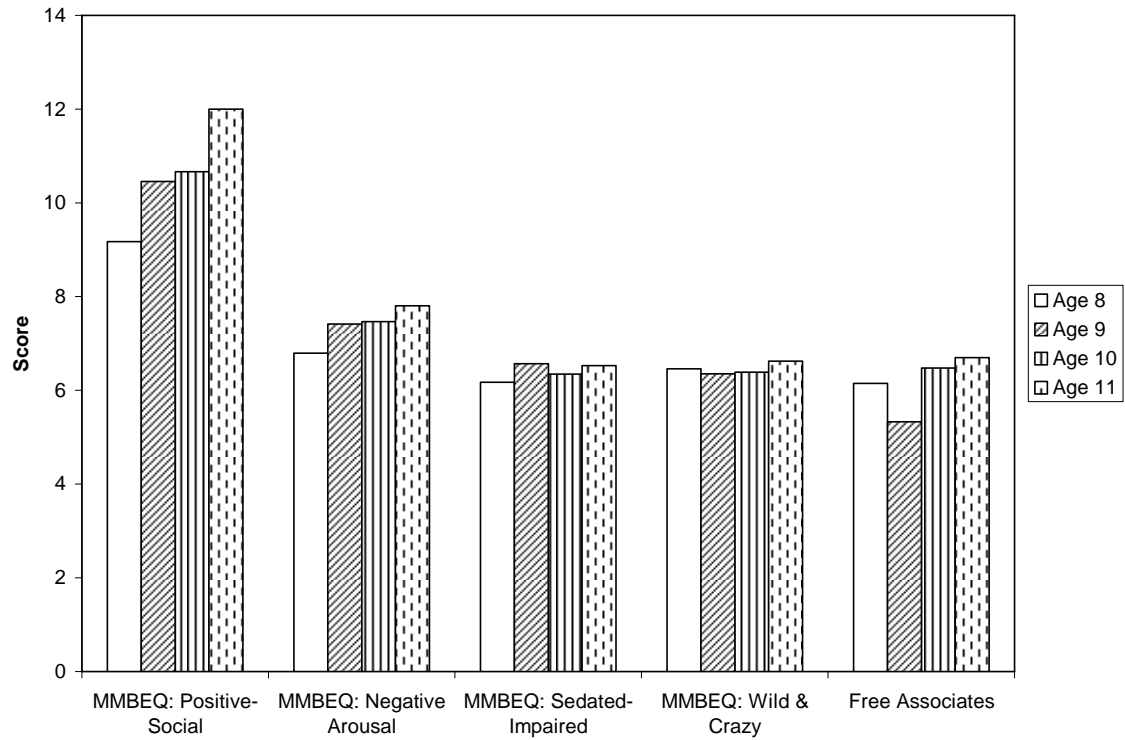
Table 1

One-way ANOVAs of differences in alcohol expectancy measures by age and grade

	Age			Grade		
Scale	F	df	*p*	F	df	*p*
MMBEQ: PS	3.681	3	.013	9.884	2	.000
MMBEQ: NA	3.020	3	.030	6.617	2	.002
MMBEQ: WC	0.626	3	.599	1.654	2	.193
MMBEQ: SI	1.816	3	.144	3.028	2	.050
MMBEQ: Total	5.311	3	.001	13.413	2	.000
Free Associates	3.784	3	.011	0.252	2	.777

Associations between expectancies and age/grade. All correlational relationships between alcohol expectancy endorsement and age or grade were positive in nature, indicating that all increased across developmental time points. As hypothesized, greater relationships existed between positive expectancy endorsement and age/grade as compared to negative expectancy endorsement. This difference was not found to be significant, however, when examined using a t-test comparing the difference of two dependent correlations from the same sample (t=.62, p=.54; Chen & Popovich, 2002). While this difference was not significant, this trend may serve as a partial explanation for the overall shift from more negative expectancies to more positive expectancies that have been established in the literature. While all expectancies may have increased over time, the relative emphasis of expectancies shifted towards the positive as a result of differential rate of acquisition of positive over negative cognitions related to alcohol.

Table 2

Zero-order correlations between alcohol expectancy endorsement and grade/age

	Grade	Age
FA: # of Free Associates	.04	.11
MMBEQ: Positive Social	.25**	.18**
MMBEQ: Negative Arousal	.20**	.16**
MMBEQ: Sedated/Impaired	.13*	.06
MMBEQ: Wild & Crazy	.08	.03

Note. * $p < .05$; ** $p < .01$

Item-by-item exploration of expectancies. A more detailed examination of alcohol expectancies was conducted by determining which specific items were differentially endorsed across age and grade (see Tables 3 and 4) and which of these differences were significant using item-by-item chi-square analyses. In general, out of 41

total items, at least 50% of participants in 3rd grade endorsed 31 items, compared to 34

items endorsed by 50% of 4th graders and 39 items endorsed by 50% of 5th graders.

Specifically, several positive expectancy words such as friendly, fun and happy increased

from less than half of the 3rd grade participants to more than half of 5th graders. Although

there were negative and sedating words that increased in endorsement as well, these

positive items were more likely to be highly endorsed in all age or grade groups. For

example, although cocky and mean increased significantly with age and grade, even in 3rd

grade over 70% of participants endorsed these items. The 4 items that were the least

likely to be endorsed within the overall sample were positive expectancies: smart, pretty,

friendly and nice; and among these four, three showed significant increases in

endorsement by age and grade.

Table 3

Chi-Square Item-by-item analyses by age

Word	8	9	10	11	Chi-Square	df	p
Cocky	85.3%	87.6%	95.6%	100.0%	10.469	3	.014
Content	50.0%	69.0%	63.0%	75.0%	8.947	3	.030
Friendly	30.9%	32.0%	43.3%	52.5%	7.624	3	.054
Fun	39.7%	55.7%	56.7%	70.0%	10.084	3	.018
Happy	39.7%	50.5%	60.0%	70.0%	11.456	3	.010
Mad	73.5%	86.6%	82.2%	92.5%	7.828	3	.050
Mean	73.5%	89.7%	88.9%	92.5%	11.979	3	.007
Pretty	17.6%	41.2%	43.3%	47.5%	15.055	3	.002
Relaxed	35.3%	46.4%	55.6%	57.5%	8.000	3	.046
Sad	44.1%	60.8%	70.0%	75.0%	14.544	3	.002
Slow	77.9%	92.8%	92.2%	90.0%	10.739	3	.013

Table 4

Chi-Square Item-by-item analyses by grade

Word	3rd	4th	5th	Chi-Square	df	*p*
Carefree	72.3%	81.0%	89.5%	8.532	2	.014
Cocky	85.1%	91.4%	96.5%	7.108	2	.029
Forgetful	76.6%	82.9%	95.4%	12.468	2	.002
Friendly	25.5%	36.2%	50.0%	11.586	2	.002
Fun	42.6%	53.3%	66.3%	10.176	2	.003
Happy	38.3%	55.2%	64.0%	12.432	2	.002
Pretty	20.2%	41.9%	46.5%	15.852	2	.001
Relaxed	41.5%	43.8%	60.5%	7.687	2	.021
Sad	43.6%	69.5%	69.8%	17.933	2	.001
Slow	81.9%	92.4%	93.0%	7.537	2	.023
Smart	17.0%	20.0%	39.5%	14.314	2	.001

Alcohol expectancy complexity. In addition to understanding differences in subscales of alcohol expectancies and changes in endorsement of individual items, a measure was developed for this study to examine changes in the complexity of children's organization of alcohol expectancies. Utilizing a card sorting format, it was hypothesized that level of complexity would be represented by the number of piles produced and that this number would increase with age and grade. Contrary to this hypothesis, the number of piles produced decreased significantly with age and grade (see Table 5), indicating that (a) increased number of piles is not a good indicator of complexity within this task or (b) alcohol expectancy complexity did not increase with age and grade. It is possible that consolidation of items into fewer piles is another, unanticipated way to demonstrate complexity of thought about alcohol expectancies, although further examination is necessary to clarify if and how complexity may be expressed using this task.

To further explore differences in sorting by age and grade, independent raters examined the quality of the sorts and rated how well the piles produced met the rules that

the child developed for their card sorting strategy. Raters also examined the frequency in which children overtly used alcohol concepts during the task (mentioned an alcohol-related term in the pile names). Inter-rater reliability was adequate, $\alpha=.72$. Scores between the two raters were averaged, producing an overall scale of sort quality for this task. While there was no significant difference in the sort quality by age or grade, chi square analyses indicated that the percentage of individuals that incorporated alcohol as a concept increased by age (8 years old=24.6%, 9 years old=31.7%, 10 years old=41.6%, 11 years old= 50.0%; Chi-square=7.873, df=3, p=.049) and by grade (3rd grade=23.6%, 4th grade=38.2%, 5th grade=43.5%; Chi-square=8.257, df=2, p=.016).

Figure 3

Mean differences in the Alcohol Expectancy card sorting task

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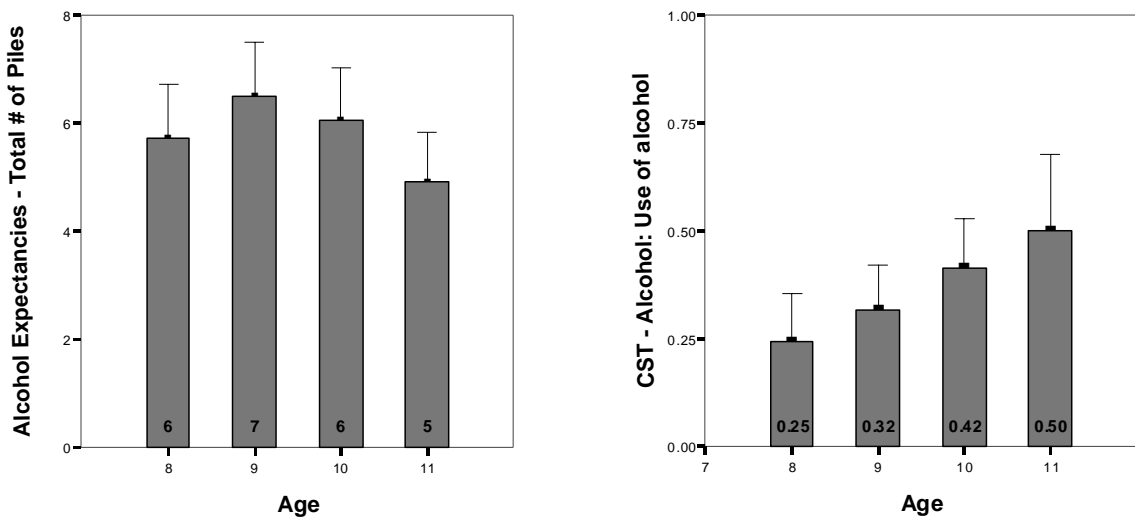
Table 5

One-way ANOVAs of differences in alcohol card sorting task by age and grade

	Age			**Grade**		
Scale	F	df	*p*	F	df	*p*
CST-Alcohol: # of Piles	9.482	3	.000	18.256	2	.000
CST-Alcohol: Sort Quality	1.496	3	.216	2.705	2	.069

Summary of alcohol expectancy findings. This examination revealed that as hypothesized, alcohol expectancies increased differentially across age and grade based on the type of expectancy endorsed. Positive alcohol expectancies demonstrated the largest increase across development, followed by negative and then sedating expectancies for alcohol. Because these changes occurred in a sample that largely did not endorse actual drinking, these findings provided evidence that these changes occur prior to drinking experience.

Although organization of alcohol expectancies was hypothesized to increase in complexity with age and grade, the sorting method used to assess complexity did not reflect the construct as expected (i.e. increase in number of piles produced). Even when other methods were used to approximate this concept (i.e. how well the piles met the child's reported sorting strategy), significant differences were not found between groups. Interestingly, the number of children who overtly used the concept of alcohol in their sorting task did increase with age and grade, indicating that younger children may have been less likely to hold to the relationship between expectancy words and alcohol while completing the task, or they were less comfortable describing their sorts in that way despite being instructed and allowed to do so. This finding may be an overall indication

of a weaker relationship between the expectancy words and the concept of alcohol among younger children when compared to older children.

Cognitive Influences

Although changes in alcohol expectancies in late childhood have been well documented, as well as supported by the current findings, it has been unclear why and how these changes occur. It was hypothesized that one key factor in the differences in alcohol expectancies by age and grade may be changes in cognitive development occurring within this age range. Following replication of increases in alcohol expectancies with age and grade, cognitive developmental tasks occurring in this age range were explored to determine whether they may play a role in these changes in alcohol expectancies.

Mean differences in cognitive abilities by age and grade. To establish the baseline phenomenon of improvement in cognitive skills, significant increases in cognitive ability with age and grade were demonstrated with increased raw scores on several measures; including the Slosson's Oral Reading Test, COWAT letter and category subscales, and DKEFS Sorting Task subscales (see Figures 4 & 5) and supported using one-way ANOVA's (see Table 6). Unfortunately, similarly to the CST-Alcohol, the number of piles and sort quality for the CST-Animal, which was developed to mirror other measures of cognitive development, did not differentiate participants by age or grade. These results demonstrate that children improved in reading level, verbal fluency, concept formation and articulation, and categorization development across age and grade.

Figure 4

Mean differences in cognitive measures by age
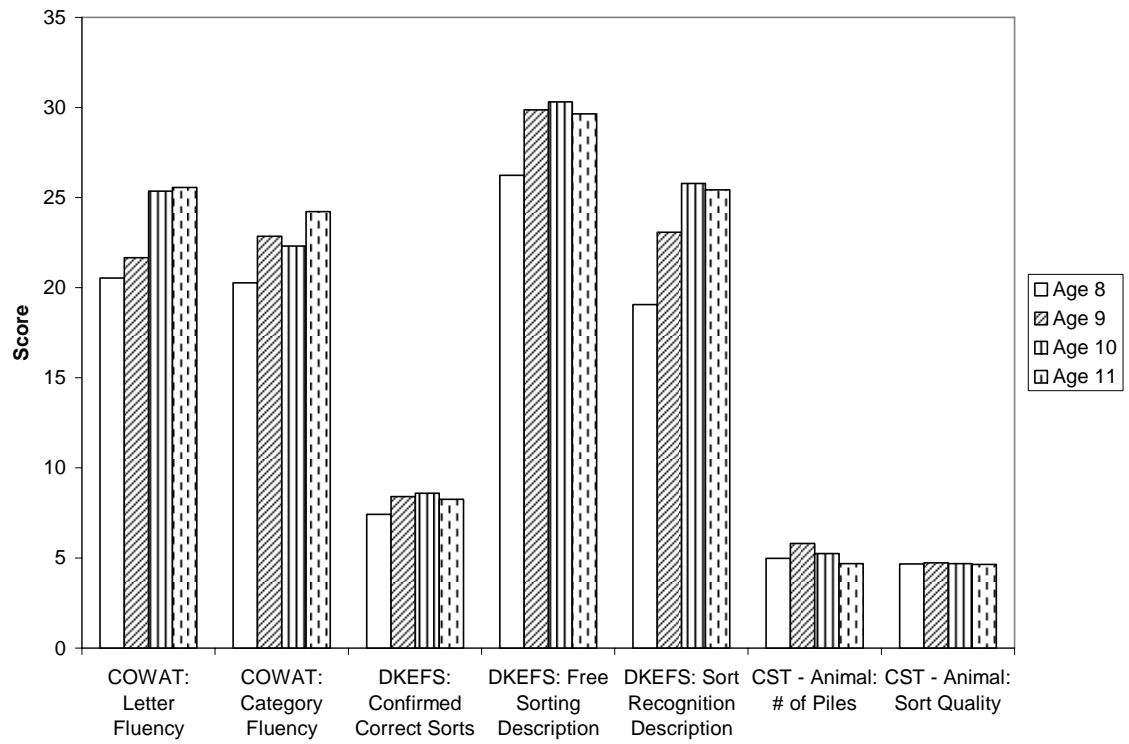
Figure 5

Mean differences in cognitive measures by grade
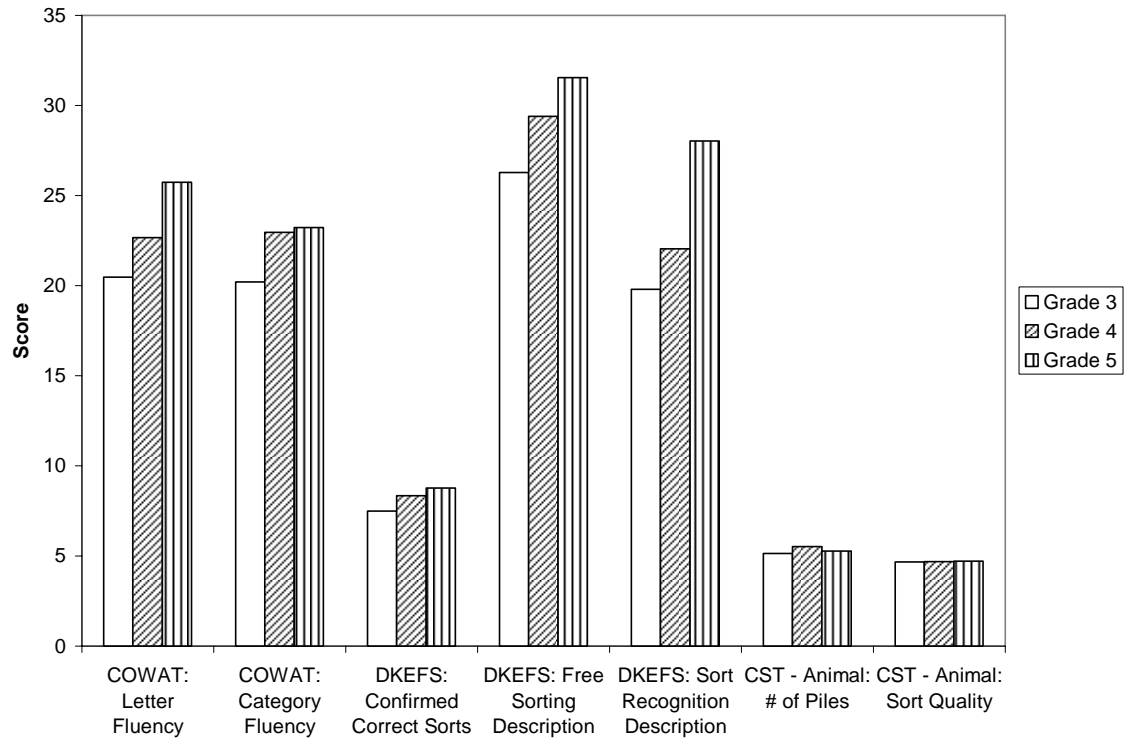
Table 6

One-way ANOVAs of differences in cognitive measures by age and grade

	Age			Grade		
Scale	F	df	*p*	F	df	*p*
Slosson's Oral Reading	10.61	3	.000	33.52	2	.000
COWAT: Letter	8.75	3	.000	12.39	2	.000
COWAT: Category	4.39	3	.005	8.06	2	.000
DKEFS: Correct Sort	3.37	3	.019	6.97	2	.001
DKEFS: Free Description	3.05	3	.029	8.00	2	.000
DKEFS: Recognition Des.	0.50	3	.679	2.40	2	.092
CST-Animal: # Piles	1.36	3	.254	0.32	2	.724
CST-Animal: Sort Quality	0.43	3	.729	0.17	2	.847

Associations between cognitive ability and alcohol expectancies. Correlational analyses were performed to examine the relationships between these changes in cognitive ability and alcohol expectancy endorsement (see Table 7). Scaled scores were used for all cognitive measures to remove variance accounted for by age because of increases in both cognitive scales and alcohol expectancy scales with age and grade. These analyses demonstrated that cognitive abilities, particularly regarding concept formation and articulation and categorization development, were correlated with positive alcohol expectancies while controlling for age, indicating that children with more mature conceptual skills were more likely to endorse positive beliefs about alcohol. As predicted, cognitive maturity or flexibility was associated with an increase in positive alcohol expectancies, which arguably represent the most difficult alcohol expectancies for a child to incorporate given that most of the information given to children about alcohol is typically negative.

In addition, expected positive relationships were found between verbal fluency and the ability to produce more free associates indicating that improved ability to verbalize a concept was present in an alcohol context as well as among more general concepts. Interestingly, increased category-based verbal fluency was found to be associated with heightened endorsement of negative, sedating and arousing expectancies. Finally, individuals who were able to describe card sorts done by the task administrator provided fewer free associates. These findings were unexpected and proved difficult to interpret. Further research is necessary to establish the reliability of these relationships in other samples, as well as their potential meaning.

Table 7

Zero-order correlations between cognitive variables and alcohol expectancies

	MMBEQ Positive	MMBEQ Negative	MMBEQ Sedation	MMBEQ Arousal	Free Associates
COWAT: Letter	-0.03	0.06	0.05	0.07	0.19**
COWAT: Category	0.01	0.13*	0.21**	0.12*	0.22**
DKEFS: Correct Sort	0.13*	-0.09	0.03	-0.04	-0.06
DKEFS: Free Description	0.16**	-0.03	0.08	0.00	-0.03
DKEFS: Recognition	0.18**	0.05	0.10	0.03	-0.19**

*Note. * $p < .05$; ** $p < .01$*

To control for the potential effect of verbal fluency on the relationship between cognitive complexity and alcohol expectancies, partial correlations were conducted (see Table 8). In these analyses, positive correlations were still found between DKEFS scores and positive alcohol expectancies, and these correlations were not affected by controlling for verbal fluency. Negative relationships became significant, however, between DKEFS scores and free associates. This relationship between DKEFS scores and free associates is unexpected, and is distinct from the child's verbal fluency ability because verbal fluency scores were positively correlated to DKEFS scores (r's=.13-.23). While the reliability of this finding should be tested in future research, it indicates that potentially children who can more effectively form and articulate concepts, are less able to find words to describe the effects of alcohol, despite their ability to find words that describe other concepts. It is unclear from the present study why that would be true.

Table 8

Partial correlations between cognitive variables and alcohol expectancies controlling for

verbal fluency

	MMBEQ Positive	MMBEQ Negative	MMBEQ Sedation	MMBEQ Arousal	Free Associates
DKEFS: Correct Sort	0.13*	-0.11	0.01	-0.05	-0.12*
DKEFS: Free Description	0.16**	-0.05	0.05	-0.01	-0.10
DKEFS: Recognition	0.18**	0.03	0.06	0.01	-0.26**

*Note. * p < .05; ** p < .01*

   Summary of cognitive influences on alcohol expectancies. As expected, positive

relationships were found between various indices of cognitive abilities and both age and

grade. Additionally, hypothesized relationships were found between cognitive abilities

and alcohol expectancies, while controlling for changes associated with age, indicating

that these changes in cognitive processes may contribute to the development of alcohol

expectancies. Specifically, concept formation and articulation, and categorization

development were correlated with positive alcohol expectancies, and this finding was

robust when controlling for verbal fluency. This association is valuable to understanding

how developing cognitive abilities may assist the incorporation of new ideas about

alcohol, among other concepts. The ability to recognize and assimilate information to

broaden conceptual understanding of a topic, such as alcohol, and categorize the

information gathered, may play a role in the development of alcohol expectancies.

Additionally, verbal fluency was associated with the number of free associates produced;

indicating that improved ability to verbalize a concept is present in an alcohol context as

well as among more general concepts.

Personality Influences

In addition to cognitive changes across developmental time periods, personality differences in sensation seeking were also examined because individuals high in thrill seeking and social disinhibition have been shown to be at higher risk for alcohol use and alcohol-related problems. Additionally, research has shown that sensation seeking may increase as children approach adolescence. Due to significant differences in mean sensation seeking by gender, data was examined separately for male and female participants.

Mean differences in sensation seeking by age and grade. Among male participants, significant increases were found in sensation seeking scores across ages [$F (3,176)=.759, p=.05$] (see Figure 6). No differences were found by grade or among female participants by either age or grade. This difference indicates that increases in sensation seeking occurred earlier in males than in females, which may be related to a consistent finding that males show higher rates of sensation seeking overall.

Association between sensation seeking and alcohol expectancies. Contrary to previous literature, however, sensation seeking was not correlated with the MMBEQ subscales or free associates produced in the overall sample. When this was examined separately by gender, other measures that reflect children's positive expectancies of alcohol were included, such as the drug and alcohol attitudes subscale of the SSSC and children's expectations of the frequency and quantity of alcohol they will drink once they become adults. Both of these measures relate to how positively children feel towards

drinking or using substances and are correlated with positive alcohol expectancy

endorsement on the MMBEQ (r = .17, .22 and .20 respectively, p<.01).

Figure 6

Mean differences in Sensation Seeking by age for male and female participants
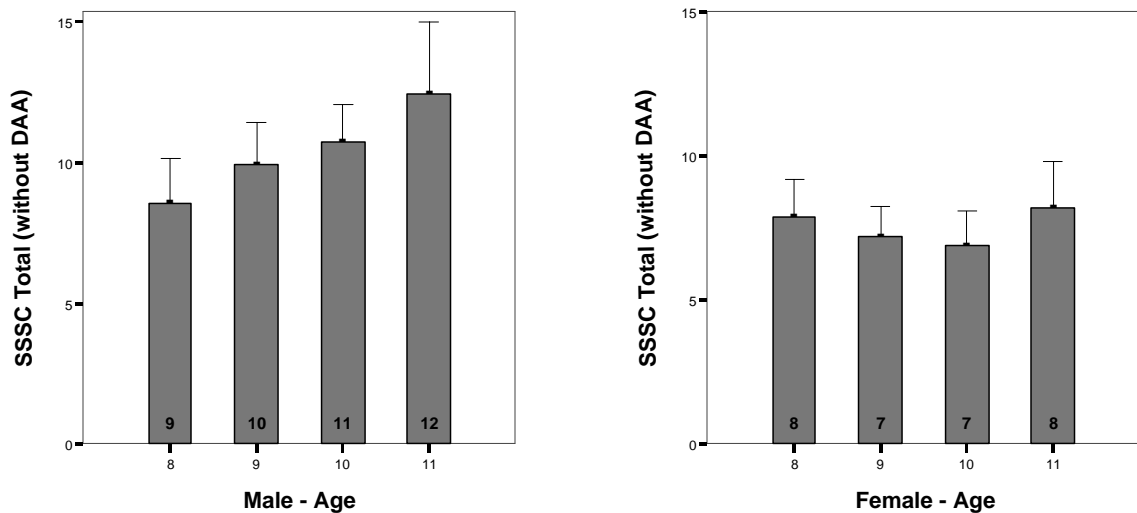
Table 9 clarifies how relationships between alcohol expectancies and sensation

seeking differed between male and female participants. Within both groups, drug and

alcohol attitudes were correlated positively with social disinhibition, and future

expectations of drinking were correlated with both thrill and adventure seeking and social

disinhibition, as predicted. This finding indicates that children who scored higher in

sensation seeking were more likely to show interest in experimenting with drugs or

alcohol or drinking more once they reach adulthood. Among male participants, no

subscales on the MMBEQ were found to be related to sensation seeking, although the

correlation between thrill and adventure seeking and positive alcohol expectancies approached significance in the hypothesized direction. This finding is contrary to the literature, which has shown that positive expectancies are strongly related to sensation seeking, both in children (Anderson et.al. , 2005; Bekman, 2005) and adults (Zuckerman, 1979). Negative and sedating alcohol expectancies were positively associated with social disinhibition in female participants, which was unexpected. Although it is unclear why this gender difference was present, there was some evidence that female participants endorsed negative and sedating expectancies at a slightly (non-significantly) higher rate than male participants. It is possible that female children who were at higher risk for alcohol-related problems also had higher levels of social disinhibition and greater exposure to consequences of alcohol use through their family environment, increasing the likelihood of endorsing more alcohol expectancies. It may be true that because these children were female, they were more likely to endorse negative and sedating expectancies because those are more salient to females in this age range. Data in this sample that help support this theory indicated that in female participants, social disinhibition was significantly associated with family alcohol use (r=.17, p=.046). It may be important to explore these relationships further in future studies with larger sample sizes to determine if this finding is stable across samples and what additional factors may be related.

   Summary of personality influences on alcohol expectancies. In summary, among male participants sensation seeking did increase significantly with age, and in general sensation seeking demonstrated expected correlations with positive attitudes towards

drugs and alcohol, as well as to the quantity and frequency with which participants predicted they would drink as adults. Sensation seeking subscales, however, showed insignificant or unexpected relationships with MMBEQ subscales, although the relationship between male thrill and adventure seeking and positive alcohol expectancies approached significance. The differences between these results and previous studies may in part be due to measurement differences, as other studies utilized expectancy measures based on the Alcohol Expectancy Questionnaire-Adolescent Version (AEQ-A).

Table 9

Zero-order correlations between alcohol expectancy measures and sensation seeking subscales for male and female participants

	Male			**Female**		
	SSSC TAS	SSSC SD	SSSC Total	SSSC TAS	SSSC SD	SSSC Total
MMBEQ Positive	.14	.02	.11	.08	.11	.09
MMBEQ Negative	.03	-.16	-.05	.10	.16*	.14
MMBEQ Sedation	- .01	-.04	-.04	.11	.17*	.16*
MMBEQ Arousal	- .04	-.16	-.09	-.02	.04	.01
MMBEQ Total	.10	-.08	.04	.11	.18**	.16*
Free Associates	.01	-.05	-.02	.04	.12	.08
SSSC DAA	.15	.34**	.24**	.11	.34**	.22**
Future Frequency	.34**	.26**	.34**	.30**	.35**	.37**
Future Quantity	.37**	.30**	.38**	.30**	.35**	.38**

Note. $* p < .05$; $** p < .01$

Social Influences

Finally, a third area of development hypothesized to contribute significantly to the development of alcohol expectancies is social development. Items from the DDQ were examined to determine if there was an increase in social influences regarding alcohol and a shift in the source of social influence, from parents to peers, as children approach

adolescence. To examine changes in participants' social understanding of alcohol use,

several variables were computed using these items, including: perceived social norms for

alcohol (amount participant believes other children their age are drinking), perceived

beliefs about alcohol use (participant's impressions about how other's would feel if the

participant drank alcohol), peer drinking, parental drinking, and overall social awareness

of alcohol (combined score of all questions regarding social understanding of alcohol).

Social influences in the current sample. In general, these scales revealed

relatively low levels of exposure to and awareness of alcohol use in their environment

among participants in the sample. Out of the total sample, 90% reported that their friends

had not had a drink of alcohol in the past year, over 95% felt that only a few students in

their grade had ever tasted alcohol or been drunk, and over 90% said that their friends

would be unhappy if the participant drank alcohol, and that they would feel unhappy if

their friends drank alcohol.

Mean differences in social influences by age and grade. When these variables

were examined across grade and age, no significant differences were found, either using

one-way ANOVA's or chi-square analyses. It is likely that this lack of differences was

due to low levels of drinking exposure and discussion about alcohol among participants

and their peers at this age range, since they were relatively young. It is also possible that

the measure used was unable to accurately detect smaller levels of variation of these

social constructs in this sample.

In addition to social information about alcohol, three sources of social influence

(and potentially this information about alcohol) were examined using the last 5 questions

of the DDQ (e.g. who understands you better than anyone else). Based on the

participant's responses, scores demonstrated the extent to which participants were

influenced by (a) peers, (b) adults and (c) media. The amount that participants were

influenced by each of these social groups was examined using chi-square analyses;

however no significant relationships were found relative to age or grade, even though it

was expected that social influence by peers would increase across this time period and

parental influence would decrease.

   Associations between social influences and alcohol expectancies. Despite the

lack of predicted changes in social influences with age and grade, when relationships

between social understanding of alcohol and alcohol expectancies were examined,

several relationships became apparent. Correlations were found between the number of

items endorsed on the Positive-Social scale of the MMBEQ and social norms regarding

alcohol, beliefs about whether others would approve of the participant drinking alcohol

and overall social awareness of alcohol (see Table 12). This finding indicated that

children with a heightened awareness and understanding of alcohol, as well as more

lenient norms about whether their peers are drinking alcohol, were more likely to endorse

positive alcohol expectancies. In addition, exposure to parental drinking was correlated

with endorsement of alcohol expectancies on three of the four subscales, including

Positive-Social, Negative-Arousal and Sedated-Impaired while exposure to peer drinking

was primarily correlated to Positive-Social alcohol expectancies (see Table 12). This

relationship indicated that children whose parents drink had more knowledge of multiple

effects of alcohol, both positive and negative, than children whose parents do not.

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Alternatively, children whose peers drank demonstrated increased knowledge of only the positive effects of alcohol, probably because their friends were less likely to have experienced or talked about the negative effects of alcohol at such a young age.

Table 10

Zero-order correlations between social variables, alcohol expectancy endorsement and sensation seeking subscales

	MMBEQ Positive	MMBEQ Negative	MMBEQ Sedation	MMBEQ Arousal
Social Norms	.18**	.03	-.02	.10
Alcohol Beliefs	.14*	.02	.04	.04
Peer Drinking	.12*	-.01	-.10	.01
Parent Drinking	.21**	.13*	.13*	.09
Overall Awareness	.23**	.08	.03	.05
Social Influence: Adult	.04	-.04	.02	-.02
Social Influence: Peer	-.03	.04	-.04	.01
Social Influence: Media	-.03	-.03	.07	.02

*Note. * p < .05; ** p < .01*

In addition to social experience of alcohol, the investigator was interested in how different sources of social influence, such as peers, adults or media, would affect children's understanding of alcohol. Although no significant differences were found in the amount in which these influences were present in each age or grade group, differences were found in the rate at which alcohol expectancies were acquired by age and grade based on who the children were influenced by (see Table 11). As predicted, among children most influenced by peers, there were significant increases in positive and arousing alcohol expectancies by grade, and positive expectancies by age. Among children most influenced by adults, negative and sedating experiences increased by grade, but not by age. So although in both groups, alcohol expectancies increased overall with

age/grade, different expectancies were learned within different groups of children.

Unfortunately, because this data was cross-sectional in nature we cannot insure that this

pattern would hold true if it was the same children followed over time, but this data lends

support to the idea that whether children are more influenced by peers or adults may

serve as a risk or protective factor while developing a greater understanding of alcohol.

Table 11

One-way ANOVAs of differences in alcohol expectancy measures by age and grade

for children more influenced by either adults or peers

	Age			**Grade**		
Scale	F	df	*p*	F	df	*p*
Participants more influenced by peers (N=100; N=105)						
MMBEQ: PS	7.358	3	.000	15.056	2	.000
MMBEQ: NA	.503	3	.681	1.589	2	.209
MMBEQ: SI	1.968	3	.124	0.767	2	.467
MMBEQ: WC	.244	3	.865	3.650	2	.030
Participants more influenced by adults (N=171; N=176)						
MMBEQ: PS	.165	3	.920	1.581	2	.209
MMBEQ: NA	2.224	3	.087	3.891	2	.022
MMBEQ: SI	1.058	3	.369	3.193	2	.044
MMBEQ: WC	.279	3	.841	0.377	2	.686

Associations between social influences and sensation seeking. Also important to

note is that all measures of social awareness of alcohol, including both peer and parent

measures, were correlated with sensation seeking subscales (see Table 12). Of interest,

thrill and adventure seeking had the strongest relationship with frequency of parental

drinking, and social disinhibition was most strongly related to higher rates of drinking

among their peers. This association may indicate a biological predisposition for

sensation seeking for children whose parents are heavier drinkers, and distorted social

norms of alcohol use in individuals with higher social disinhibition.

In addition to relationships to alcohol expectancies, further analyses revealed that

the source of social influence for participants was also differentially related to sensation

seeking. Specifically, children who were more socially influenced by adults endorsed

less social disinhibition and lower drug and alcohol attitudes. On the other hand, children

who were more socially influenced by media endorsed higher social disinhibition and

children more socially influenced by peers endorsed higher drug and alcohol attitudes.

Table 12

Zero-order correlations between social influence and sensation seeking subscales

	SSSC: TAS	SSSC: DAA	SSS: SD
Social Norms	.13*	.23*	.12*
Alcohol Beliefs	.19**	.27**	.22**
Peer Drinking	.21**	.25**	.21**
Parent Drinking	.23**	.02	.16*
Overall Awareness	.29**	.19**	.19**
Social Influence: Adult	-.07	-.18**	-.13*
Social Influence: Peer	.05	.16**	.08
Social Influence: Media	.02	.08	.15**

*Note. * p < .05; ** p < .01*

Summary of social influences on alcohol expectancies. In summary, although

hypothesized changes were not found across age and grade for social awareness of

alcohol and differences in the primary source of social influence, social awareness was

correlated with positive alcohol expectancies as well as sensation seeking, indicating that

these three indices of risk were strongly interrelated in this sample and influenced

children's ideas about alcohol. Specifically, parental drinking was most robustly

associated with positive alcohol expectancies, and also served as the only social variable

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to be associated with higher rates of three out of four types of alcohol expectancies. This relationship indicated the strength of influence that parental drinking has on children's understanding of alcohol.

Finally, who children were most likely to be influenced by significantly affected the types of ideas they held about alcohol. Children influenced by adults were more likely to develop negative and sedating alcohol expectancies across age or grade, have lower rates of positive drug and alcohol attitudes and less social disinhibition. Children more influenced by peers were more likely to develop positive and arousing alcohol expectancies with age and grade, and had higher levels of positive drug and alcohol attitudes. In combination with the relationships between social and personality variables, these results indicate that while these children may be too young to be demonstrating significant changes in these aspects of development, these influences are still closely related to the ideas that children have about alcohol and are strong indicators of risk.

Current and Future Drinking

In addition to exploring the relationships between influential variables on alcohol expectancy development, it is helpful to note how the phenomenon of early-onset drinking presented in this sample. To assess current drinking, children were asked the frequency and quantity with which they have drank alcohol, how old they were the first time they drank alcohol, whether they had their parent's permission to drink alcohol when they did, and in what setting they have had a drink of alcohol. Out of a sample of 300 participants, 30 participants indicated that they had at least a few sips of a drink of alcohol in their lifetime. Of these children, only 5 indicated that they had more than a

few sips of a drink, and only 7 indicated that they have had a drink of alcohol one time a year or more. Within this sample, three children indicated that they have a drink with alcohol at least 1-4 times per week. Of those children who have had a drink of alcohol, 11 children said their first drink was at age 7 or 8, and only 5 participants said that they did not have their parent's permission to drink. Five of these children reported drinking at a religious event, 6 reported drinking during a holiday or special occasion, 12 reported drinking at home and 3 at a restaurant.

Although over 60% of the total sample believed that they would not drink alcohol in their future, the amount that participants believed they would drink alcohol increased across both age and grade, and also differed significantly by gender (see Table 13). Male participants planned to drink more often and larger amounts as adults than female participants, but female participants showed no significant increase in future drinking expectancies either by age or grade. Similar to findings in regards to sensation seeking, it is likely that risk for drinking onset begins at younger ages for males than for females.

Table 13

One-way ANOVAs of differences in expected future drinking by age and grade for

male and female participants

	Age			**Grade**		
Scale	F	df	*p*	F	df	*p*
Males						
Future Drinking Frequency	1.979	3	.121	4.837	2	.010
Future Drinking Quantity	3.358	3	.021	7.202	2	.001
Females						
Future Drinking Frequency	1.413	3	.241	1.703	2	.185
Future Drinking Quantity	0.844	3	.471	1.035	2	.358

Interplay Between Risk and Protective Factors and Current Drinking. To

illustrate the relationships found between constructs measured within this study, and their

risk and protective roles in late childhood alcohol use, 10 children were selected as

"drinkers" and their assessment results were examined in a more qualitative manner.

These children were selected either because they had more than a few sips of an alcoholic

drink or they drink alcohol at least one time per year. Due to the low base rate of

drinking in this age range, it was significant to explore how these children compared to

other children their age, although given the small number of children, it was also

important to take into account reporting errors or exaggerations that may have explained

some of their data.

These 10 children were on average slightly older and more advanced in school

than the general sample. Six of these children were female and seven were white or

Hispanic. Eight of these children expected that they will drink alcohol at least once a

year or more as adults, and six of them expected that they will drink at least two or more

drinks per occasion. This percentage was significantly more than the general sample, of

which only 28% believed they would drink at least once a year, and only 11% believed

they would drink at least two or more drinks per occasion.

Five of these children indicated that one of their parents drank at least once a

month, in contrast to 30 percent of the general sample. They also endorsed much higher

perceptions of drinking among their peers, particularly among their close friends. These

children reported that they trusted and turned to their friends for support, and were less

likely to turn to adults in their life. Although they did not differ in the amount of alcohol

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expectancies endorsed on any of the MMBEQ subscales, they scored higher on all

sensation seeking subscales. Cognitively, these children appeared to perform equally to

the overall sample on verbal fluency tasks and slightly worse than the overall sample on

the DKEFS card sorting task subscales, indicating that they may lack some cognitive

maturity and flexibility that other children their age may have.

Discussion

The purpose of the current investigation was to explore the relationships existing between cognitive, social and personality development and changes in alcohol expectancies as children approach adolescence. Differences were found between types of alcohol expectancies acquired, and their relationships to shifts occurring in each area of biopsychosocial development. The relationships between these constructs proved to be complex and not always as originally predicted.

Alcohol Expectancies

As the primary building block for this study due to their role in decisions to initiate drinking or engage in problematic drinking behaviors (Christiansen et al., 1989; Smith, Goldman & Greenbaum, 1995), relative changes in alcohol expectancies were examined to demonstrate a developmental pattern of alcohol expectancy acquisition as individuals move through middle childhood. Three of the four alcohol expectancy subscales and the number of free associates produced showed increases across age and grade, with larger increases among positive expectancies and smaller increases in negative and sedating subscales. These results support findings in the literature that late childhood is a key developmental time point during which children's understanding of alcohol is changing both in quantity and relative content, not just in regards to positive vs. negative content but also sedating alcohol expectancies (Dunn and Goldman, 1996,

1998, 2000; Cameron et al., 2003; Shell et al., 2005). Additionally, when sorting alcohol expectancy words, the number of children who overtly used the concept of alcohol in their sorting task also increased with age and grade. This finding may mean that older children are more likely to maintain a connection between the concept of alcohol and adjectives that can be used to described how alcohol can influence people throughout the course of the task, potentially indicating a stronger relationship between the concepts.

These findings also clarify a discrepancy in the literature discussed by Cameron and colleagues (2003), by demonstrating that throughout childhood individuals hold all types of expectancies, positive, negative, arousing and sedating, but that the emphasis shifts as children age. Due to a misunderstanding of the multidimensional scaling methodology, Cameron et al. (2003) had proposed that Dunn and Goldman (1996, 1998, 2000) were demonstrating that children have an "overwhelmingly negative" view of alcohol. The data from Dunn and Goldman (1996, 1998, 2000) as well as this study demonstrated that the relative changes in expectancies move from primarily negative to increasingly positive, but this is a result of the rate at which these expectancies are obtained rather than the absence of one type of expectancy or another.

Cognitive Influences

One of the primary areas of inquiry for this project was to examine whether improvements in cognitive development occurring within this age range, such as abilities to solve complex cognitive tasks (Luna & Sweeny, 2004), were related to the acquisition of alcohol expectancies. In addition to improvements found in various indices of cognitive ability with age and grade, relationships between cognitive abilities and alcohol

expectancies were partially supported. Specifically, concept formation and articulation, and categorization development were found to be correlated with positive alcohol expectancies, and this finding was robust when controlling for verbal fluency. Additionally, verbal fluency was associated with the number of free associates produced; verifying that ease of verbal description of a concept increases with age or grade and this association is similarly true whether the topic is clothing or alcohol.

Although improvement in cognitive skills would not be expected to put a child at increased risk, a possible explanation would be that those children who were able to think more complexly may be able to recognize, hold and categorize more alcohol expectancies and a broader range of types of alcohol expectancies than other children their age. Because most children hold negative beliefs of alcohol, it is possible that adding positive alcohol expectancies may be associated with cognitive maturity, as was true in this sample. This increased understanding of positive alcohol expectancies, which may be more distal information for children at this age, may be a partial explanation for an increase in overall risk for alcohol use as children approach adolescence.

Personality Influences

Sensation seeking was explored due to the well-documented role that high novelty seeking, reward dependence and related features of impulsivity, behavioral undercontrol and poor response inhibition play in relation to risk for problems with alcohol in the future (Finn, Mazas, Justus, Steinmetz, 2002; Nigg, Glass, Zucker et al., 2004; Nigg, Wong, Martel et al., 2006). Previous research has demonstrated an increase in sensation seeking during adolescence, and in this sample, sensation seeking increased with age

among males but not among females, potentially indicating an earlier onset of personality-based risk for males. This finding is opposite to studies examining pubertal development, which indicate that females experience earlier onset of puberty than males. Although sensation seeking is hypothesized to be closely related to pubertal development, this finding indicates further that this personality trait has a specifically strong and distinct influence within males that may overwhelm this difference in onset of pubertal development.

Sensation seeking was associated with positive attitudes towards drugs and alcohol, and to participant's expectations of future drinking quantity and frequency as adults, however was not correlated with MMBEQ subscales as predicted. Previous research has found a positive correlation between sensation seeking and expectancies in children as young as fifth grade (Anderson et al., 2005; Bekman, 2005), but both of these studies used items based on the AEQ-A. One potential reason for this is that the alcohol expectancy measure in this sample may reflect the beliefs about alcohol in a different way than other measures of alcohol expectancies have in the past, specifically using vocabulary with which children were less familiar and providing minimal sentence context for the expectancy words provided. To alleviate this concern, children were given standardized definitions of any words that they did not know, but this still may have affected their responses in an unknown way. Regardless of this, strong relationships between sensation seeking and other risk factors such as family and social influences on alcohol use indicate that even at this age, sensation seeking was associated with risk in this sample as it has been in others.

Social Influences

Another key set of variables that may have contributed to changes in alcohol expectancies were differences in the social environment as children approach adolescence. Although children approaching adolescence have been shown to spend more time with peers and less time with adults, predicted increases in exposure to drinking among peers, expectations about peer drinking, beliefs about the appropriateness of alcohol use among peers and differences in source of social influence across age and grade were not supported by the data from this sample. Several explanations can account for this: (1) this type of increase in social approval, awareness and exposure do not occur in children within this age range, (2) small changes in these concepts could not be detected using the current measure (3) small effect sizes could not be found in a sample of this size. Due to the relationships found between variables of interest, as well as the low base rate of actual drinking in the sample, it was likely that the young age of the participants accounted for the lack of findings in this area. This was supported by findings in the literature that peer influence actually increases in early adolescence rather than late childhood, and peaks between ages 11-13, just following the ages of children in this sample (Berndt, 1979; Steinberg & Silverberg, 1986).

Although unrelated to age or grade, social variables were found to be associated with positive alcohol expectancies and sensation seeking, indicating that these three areas of development are strongly related to one another. Specifically, parental drinking was associated with increases in positive, negative and sedating alcohol expectancies, indicating that children with parents who drank had a broader understanding of the

perceived effects of alcohol. The relationship existing between social disinhibition and increased social awareness, exposure and more lenient norms and beliefs about drinking might have been due to the fact that these children were less familiar with what is appropriate for children their age in social situations. Based on this study, the direction of this relationship is unclear, but provides interesting preliminary data as to some ways that personality risk may combine with social understanding of alcohol to promote alcohol expectancy development, even in young children before these aspects of risk are fully developed. Important to note is that it is unclear if these participants' perception of how much their parents drink is an accurate reflection of their parent's actual drinking. Miller and colleagues (1999) found that in third through sixth grade, children's perceptions of parent drinking were correlated with parent's reports of their own drinking, although there was a significant portion of reliable, unshared variance as well, indicating that there was considerable error in children's report of their parent's drinking. Two important factors that may influence children's perceptions of their parent's drinking habits include how open their parents are about their drinking behavior, as well as the child's attention to the presence of alcohol in their home or other environments. Previous research (Steinberg, 2003; Bekman, 2005) has indicated that the attention to, and recognition of, alcohol in the environment may in itself be associated with risk for alcohol-related problems because children who are more likely to note the presence of alcohol may also be intrigued by it and have a heightened level of interest in consuming alcohol.

Another factor examined in this study was the extent to which outside influences affect children's perceptions of alcohol. Within this sample, influence by peers, adults or the media were not directly correlated with age, grade or alcohol expectancies, however greater reliance on peer influence was associated with increases in positive and arousing alcohol expectancies across grade, and these participants also had higher levels of positive drug and alcohol attitudes. These results may relate to findings in the literature indicating that adolescents who relate more closely with peers are more likely to engage in risky behavior and associate with delinquent peer groups (Fuligni, Eccles, Barber & Clements, 2001). This relationship may indicate that individuals who are more influenced by peers may be less familiar with age-appropriate behaviors in general, including drinking behavior. Greater adult influence was associated with increases in negative and sedating alcohol expectancies across grade, as well as lower rates of positive drug and alcohol attitudes and less social disinhibition. This finding likely also relates to the benefits that have been found in supportive adult relationships that provide warmth, moderate discipline, and help to reduce stress (Shedler & Block, 1990). The connection of this information regarding social influence and personality predisposition and further relationships to alcohol expectancy development indicate a potential pathway of risk that may be explored further in future longitudinal studies.

Summary

Although a complex series of relationships were revealed in these results, several key findings should be highlighted:

    (a) Alcohol expectancies increased and broadened across middle childhood.

(b) Cognitive skill in concept formation and articulation, and categorization increased in middle childhood and were correlated with positive alcohol expectancies.

(c) Sensation seeking increased for male participants with age, and was associated with positive ideas about alcohol in all children, but not with MMBEQ subscales.

(d) Although social awareness of alcohol did not increase significantly with development, exposure to alcohol and more permissive ideas about alcohol use were strongly associated with sensation seeking and positive alcohol expectancies, all indicators of risk for future alcohol use.

(e) Parental drinking was the most significant social predictor for all subscales of alcohol expectancies.

(f) Although children did not demonstrate increased peer influence and decreased adult influence across development, those who were influenced by peers were at higher risk for positive views of drugs and alcohol and those influenced by adults were more likely to develop negative views of substance use and show less social disinhibition. These relationships strengthened with age.

Limitations

When evaluating the current findings, some limitations of this study should be taken into account. The most important limitation to note is the drawback of using cross-sectional data to explore a developmental phenomenon, which essentially only allows for the demonstration of correlational relationships. While using the current design we were able to make inferences about how these changes occur across time, it would add a

tremendous value to follow children as they develop and examine these changes as they occur across individuals over time.

Another drawback to this study is that data was gathered from children approaching adolescence but who have still not undergone pubertal or environmental shifts (i.e. middle school) that may dramatically affect the developmental processes being examined. Although the sample was selected specifically to target children prior to the onset of drinking, it is possible that these children may have been too young to adequately capture influences of social environment and personality on expectancy development. Further exploration in a middle school population may be able to elaborate on the next stages of some of the processes that may have barely begun among participants in the sample at hand.

This sample was collected in after-school programs rather than the regular school day (during formal school hours), which may affect how representative the sample is of children in this age range. It is estimated that only 15% of grade school children are enrolled in after-school programs and these children are more likely to come from working families and families with single parents (Afterschool Alliance, 2004). Children who participate in after-school care may also be at lower risk for substance use, depression, poor academic performance and risky sexual behavior, potentially in part as a result of being in an after-school program (Miller, 2003). In support of the representativeness of the current sample, public schools and the YMCA are the top two providers of after-school care in the nation (Afterschool Alliance, 2004). Another factor influencing sample representativeness was the rate at which parent's gave consent for

their children to participate using an active consent procedure. 32 percent of the children contacted returned their parental permission slips and of these individuals, 75 percent agreed to participate. Dent and colleagues (1993) found that students who were assessed without receiving active consent from parents were less likely to live with both parents and were higher in risk-taking, lower in self-esteem, and lower in assertiveness than those whose parents had responded. In these respects, children in the current study may have been at lower risk for substance use problems in the future than children who did not participate but attended the same after-school programs. Taking all of these factors into account, these children may be at higher risk than their peers in some respects but at lower risk in others. Additionally, although this sample could be considered large in light of the depth of the assessments performed, it is likely that it may not have been large enough to detect smaller, more subtle differences between age groups or among higher-risk youth. This may be especially true for items regarding social conceptualization of alcohol, given the low base-rate of drinking among this sample and also among their friends or peers.

Finally, measurement of the complexity of alcohol expectancies was not sufficiently captured with proposed measure and limited the author's ability to clarify the relationship between alcohol expectancy complexity and overall cognitive development. Contrary to hypotheses, children did not produce more piles in the alcohol expectancy card sorting task at higher ages or grades as an indication of increased complexity of thought in regards to alcohol. It is unclear if these expected differences were not found because (a) complexity of thought surrounding alcohol expectancies does not change

within this age range, (b) this task was not sensitive to those changes, or (c) number of piles produced is a poor indicator of complexity. Although the researcher did attempt to further examine the data produced by this task by comparing ratings of the quality of the sorts, judged as how well the piles met the rules that the child set for themselves, this data also did not demonstrate differences by age or grade. Given that both card sorting tasks developed specifically for this study produced identical patterns of data in terms of the number of piles produced, it is likely that further exploration of ways to score or interpret this data may provide additional insight into both alcohol expectancy complexity and the manner in which this type of card sort is approached by children in this age range.

Conclusions and Future Directions

The complex relationships between constructs and developmental processes illustrated in this study point to the importance of continued research in this field. Several hypothesized relationships were revealed, including increases in alcohol expectancies across age groups, relationships between cognitive flexibility and alcohol expectancy development, social influences in the lives of the participants and relative increases in positive and arousing or negative and sedating alcohol expectancies, and a complicated series of relationships between early social understanding of alcohol, personality predisposition, heredity, environmental exposure and alcohol expectancies. While some of these analyses performed were able to elaborate on processes that have been well-established at this age, many other influences had only just begun or not yet started to play a role in the development of cognitions about alcohol, including pubertal development and further changes in the social environment as children transition into

middle and high school. As has been shown in previous research, these processes

continue through high school and young adulthood, also interplaying with an

accumulation of drinking experiences that both confirm and deny previously held beliefs.

Longitudinal exploration of these interactive events can begin to tease apart causal

relationships and better prepare researchers to understand this phenomenon and

potentially focus prevention efforts.

There is a growing interest in the literature regarding the ways in which alcohol

expectancies form during childhood and continue to develop across adolescence and

adulthood. These preliminary findings specifically regarding cognition and development

indicate that this may be a time during which these views are first consolidating and

broadening to incorporate information in the child's environment. Ultimately, a better

understanding of the development of alcohol expectancies in children, and how much this

intake of information is affected by preexisting internal characteristics as compared to

environmental cues, may provide society with the tools to intervene prior to the

development of problematic drinking problems that are associated with high positive

alcohol expectancies later in life.

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Appendices

Appendix A: Slosson's Oral Reading Test

Materials:
    Slosson Oral Reading Test Word Lists
    Record Form

Instructions:
I want to see how many of these words you can read. Please begin here and read each word aloud as carefully as you can. (Point to the first word on the word list card) **When you come to a difficult word, do the best you can and if you cannot read it, say "pass" and go on to the next word.**

Begin with a list two grade levels below the participant's current grade. Present one list at a time to the examinee. If the participants is not able to read all of the words on their starting list, than administer the lists prior until they are able to read the entire list correctly. Keep a tally of the number of words the participant reads correctly. Discontinue testing once the participant gets 10 or more words incorrect on one list, or once they complete the 5th grade list.

Make sure participant does not see if the answer is right or wrong. If the participant asks if his/her answer is right or wrong, give a non-definite answer, such as: **You are doing very well** or **No one is expected to get all the words correct**.

Score as an error any word that is mispronounced (except international or regional accents) or omitted, as well as a word that takes more then about 5 seconds to pronounce (unless the person has a speech defect). Count it as an error if the participant gives more than one pronunciation or seems uncertain about a word. Also, count it as an error if the word ending is changed, the tense of the word is changed, or part of the word is changed.

Count the total number of words pronounced correctly on each word list and record this in the space marked total. In addition, sum the total for lists P-5. Any lists not administered prior to the first 20 score should also be counted as 20 points.

List P	**List 1**	**List 2**
Total:	Total:	Total:
List 3	**List 4**	**List 5**
Total:	Total:	Total:
Grand Total:		

Appendix B: Controlled Oral Word Association Task

Materials:
      Record Form
      Stop watch
      Pen or Pencil

Instructions:

I'm going to say a letter of the alphabet. When I say begin, I want you to tell me as many words as you can that begin with that letter. You will have 60 seconds before I tell you to stop. None of the words can be names of people, or places, or numbers. For example, if I gave you the letter T, you could say take, toy, tooth, and so forth, but you should not say Tom because that is a person's name, you should not say Texas because that is the name of a place, and you should not say twelve because that is a number. Also, do not give me the same word with different endings. For example, if you say take, you should not also say takes and taking. Do you have any questions?

Display the summarized instructions and say:

Here is a page that will help you remember the rules.

The first letter is F. Ready? Begin.

Start timing. On the record form, write the examinee's responses verbatim in the column labeled "F". Record responses that the examinee generates during the first 15 seconds in the first box, and so forth.

If the examinee fails to make a response after any 15 second interval, say: **Keep going.** Provide this prompt only once per trial. The first time an examinee generates three consecutive words that do not start with the designated letter, say, "**The letter we are using now is ___.**" Provide this prompt only once per trial.

After 60 seconds say:

Stop.
The next letter is A. Ready? Begin.

Start timing. Record the examinee's responses. After 60 seconds, say:

Stop
The next letter is S. Ready? Begin.

Start timing. Record the examinee's responses. After 60 seconds say:

Stop.
Now we are going to do something a little different. This time, I want you to tell me as many items of clothing as you can. It doesn't matter what letter they start with. You will have 60 seconds before I tell you to stop. Do you have any questions? Ready? Begin.

Start timing. On the record form, write the examinee's responses verbatim in the column labeled clothing. At the end of 60 seconds, say:

Stop
Now tell me as many girls' names as you can. You will have 60 seconds before I tell you to stop. Ready? Begin.

Start timing. Record the examinee's responses. At the end of 60 seconds, say:

Stop.

Scoring:

- Circle each incorrect response (Name of person, place or number, grammatical variants of an earlier response, wrong letter or category)
- Circle each repeated response and mark with an R
- Mark the number correct in each 15 second interval in the small box in the bottom, right-hand corner.
- Add the total number correct per letter/category
- Record the number incorrect due to:
  - Set-Loss
  - Repetition
- Contractions (e.g. aren't), slang words, swear words, and compound words are scored as correct (eg. apple, applesauce, etc.)
- Grammatical variants are counted as incorrect (e.g. fast, faster, etc.) and are recorded as a set-loss error.
- Clothing:
  - Items typically sold in a clothing store or a clothing department
  - Jewelry items and cloth (e.g. cotton) are not scored as correct
  - Similar items of clothing are all counted as correct (e.g. dress shirt, t-shirt, etc.)
- Girl's Names:
  - All names are counted as correct, including names used for both boys and girls, unusual names, variations of the same name, nicknames, and language variations (e.g. John, Juan).

	F	A	S
First Interval 1-15 seconds	☐	☐	☐
Second Interval 16-30 seconds	☐	☐	☐
Third Interval 31-45 seconds	☐	☐	☐
Fourth Interval 46-60 seconds	☐	☐	☐
Letter Total: _____ **Scaled Score:** _____	Total Correct ____ Total Set Loss Errors ____ Total Repetition Errors ____	Total Correct ____ Total Set Loss Errors ____ Total Repetition Errors ____	Total Correct ____ Total Set Loss Errors ____ Total Repetition Errors ____

	Items of Clothing	**Girl's Names**
First Interval 1-15 seconds	☐	☐
Second Interval 16-30 seconds	☐	☐
Third Interval 31-45 seconds	☐	☐
Fourth Interval 46-60 seconds	☐	☐
Category Total: _____ **Scaled Score:** _____	Total Correct ____	Total Correct ____
	Total Set Loss Errors ____	Total Set Loss Errors ____
	Total Repetition Errors ____	Total Repetition Errors ____

Appendix C: Delis-Kaplan Executive Functioning System - Sorting Task

Materials:
 Record Form
 Practice Card Set
 Card Sets 1 and 2
 Stopwatch

Discontinue:
For Condition 1: Free Sorting; discontinue administration of each card set after any of the following conditions is met:
 a. The examinee indicates that he or she cannot identify any more sorts, even after receiving a single prompt to keep trying
 b. 240 seconds (4 minutes) of cumulative sorting time have elapsed (note that the time the examinee takes to describe the sorting rules or concepts is not included in this cumulative sorting time)
 c. The examinee has completed 10 attempted sorts

For Condition 2: Sort recognition; administer all 8 target sorts of each card set regardless of the number of times an examinee fails to describe the correct sorting rules.
Discontinue administration of each sort after any of the following conditions is met:
 a. The examinee provides a correct or incorrect description
 b. The examinee indicates that he or she cannot identify the sorting rules
 c. 45 seconds have elapsed after the examiner made the sort and the examinee failed to provide a description response

Instructions:
Screening Pretest
Place stimulus sheet in front of the examinee. Say:

I'd like you to read these words out loud and tell me if there are any words you would like me to explain. Go ahead.

 If the examinee reads a word incorrectly, record the word in the designated space on the record form and provide the correct pronunciation. After the examinee reads all of the words, say:

Do you know the meaning of all of these words?

If the examinee does not know the meaning of a word, read the definition provided in the following list. You may repeat these definitions if the examinee asks you to do so. In the space provided in the record form, record any word with which the examinee has difficulty understanding. Sum the number of words that the examinee read incorrectly.

Also sum the number of words that the examinee failed to understand and for which he or she required explanation.

Airplane	a vehicle that flies in the air with wings
Bus	a large motor vehicle that can carry many people
Car	a motor vehicle moving on four wheels
Coffee	a hot drink often used to start the day
Duck	a swimming bird with a bill and webbed feet
Eagle	a bird of prey known for its sharp vision and flying ability
Ears	parts of the body used for hearing
Hat	something worn on the head for warmth or shade
Heat Wave	a period of time when it is unusually hot
Iced Tea	a cold drink prepared from tea leaves
Milk Shake	a drink usually made from milk, syrup and ice cream
Mouth	a part of the head used for eating and speaking
Rice	a white or brown grain that is often eaten with vegetables or sauces
River	a large stream of flowing water
Rocks	hard pieces of mineral or stone
Sandwich	two slices of bread containing food such as meat and cheese
Sea	a large body of salt water
Shoe	something worn on the foot for warmth and protection
Snow	water that freezes into soft, white flakes and falls from the sky
Soup	a liquid food usually with meat, fish or vegetable flavor and is usually served hot
Sunshine	light or rays from the sun
Tiger	a large, meat eating animal that belongs to the cat family
Toes	the 5 front parts of a foot

Condition 1: Free Sorting – Practice Set

Use the following prompts as indicated:

- If 30 seconds elapse with no sorting response, say, "**Try to sort them into two groups.**" Provide this prompt only once for each card set.
- If a description response is not given after a sort, say, "**How did you make the two groups?**"
- Explain only once each new rule violation made during the entire sorting test (including Condition 2)
- For only the first overly abstract description, say, "**Good, but how did you specifically sort each group?**" Provide this prompt only once for the entire sorting test (including Condition 2)
- The examinee may be reminded of previous description responses for a card but only if he or she explicitly requests that information.
- If the examinee indicates that he or she cannot identify any more sorts, give the prompt to "**keep trying**" only one time each.

Say:

I'm going to show you six cards that can be sorted in different ways. I want you to see how many different ways you can sort the cards. Let me show you what I mean with these cards.

Place the six cards of the practice set in a random, oval arrangement on the table in front of the examinee. Position the cards about one inch apart from one another. Make sure the words on the card are facing the examinee. Say:

Look at these cards. Watch how I sort them into two groups, with three cards in each group.

Sort the cards into groups of circles and squares. Align the two groups of three cards each in two vertical columns. Point to the appropriate groups and say:

Next I'll explain how I sorted them by saying this group has circles and this group has squares. Notice how I explained both groups and not just one of them.

Mix up the six cards again and say:

Now watch while I sort them another way, again with two groups and three cards in each group.

Sort the cards into male and female names and say:

I will explain how I sorted them by saying, this group has boys' names and this group has girls' names. Do you have any questions about how I did this?

Condition 1: Free Sorting – Card Set 1

Say:

I'm going to show you six new cards that can be sorted in many different ways. I'd like to see how many different ways you can sort these cards. Each time, make only two groups with three cards in each group. The three cards in each group should be the same in some way. After you sort the cards into two groups, tell me how you did it. Be sure to tell me how you sorted both groups, not just one of them. Once you sort the cards one way, do not sort them that way again. Work as quickly as you can. Here is a page that will help you remember these rules.

Place the six cards from Card Set 1 in a random, oval arrangement in front of the examinee. Make sure the words on the cards are facing the examinee. Say:

Now try sorting these cards in as many different ways as you can. Ready? Begin.

Start timing. Allow the examinee to sort the cards into two groups. The examinee is not required to arrange the card groups into vertical columns, but simply to cluster them

 together in some way. Stop the stopwatch when the examinee has completed his or her sort and begins to describe his or her first sorting strategy. Record verbatim the examinee's description, the sorting response made and the elapsed sorting time. Do not reset the stopwatch to zero. The previous sorting time is added to all subsequent sorting times within each card set. Then mix up the cards and place them in a random, oval arrangement in front of the examinee, with the words on the cards facing the examinee. Say:

Now try to sort them in a different way

Start timing. Repeat these procedures for each sort produced by the examinee until a discontinue criterion is met. After recording the total cumulative sorting time for the first card set administered, reset the stopwatch to zero.

Condition 1: Free Sorting – Card Set 2

Say:

I'm going to show you six new cards that can be sorted in many different ways. Like before, I'd like to see how many different ways you can sort these cards. Each time, make only two groups with three cards in each group. The three cards in each group should be the same in some way. After you sort the cards into two groups, tell me how you did it. Be sure to tell me how your sorted both groups, not just one of them. Once your sort the cards one way, do not sort them that way again. Work as quickly as you can. Again, here is the page that will help you remember these rules.

Place the six cards from Card Set 2 in a random, oval arrangement in front of the examinee. Make sure the words on the cards are facing the examinee. Say:

Now try sorting these cards in as many different ways as you can. Ready? Begin.

Start timing. Allow the examinee to sort the cards into two groups. The examinee is not required to arrange the card groups into vertical columns, but simply to cluster them together in some way. Stop the stopwatch when the examinee has completed his or her sort and begins to describe his or her first sorting strategy. Record verbatim the examinee's description, the sorting response made and the elapsed sorting time. Do not reset the stopwatch to zero. The previous sorting time is added to all subsequent sorting times within each card set. Then mix up the cards and place them in a random, oval arrangement in front of the examinee, with the words on the cards facing the examinee. Say:

Now try to sort them in a different way

Start timing. Repeat these procedures for each sort produced by the examinee until a discontinue criterion is met. After recording the total cumulative sorting time for the first card set administered, reset the stopwatch to zero.

Condition 2: Sort Recognition – Card Set 1

Use the following prompts for the Sort Recognition condition:
- If no response given 30 seconds after a sort is made by the examiner, say, **"How are the cards in each group the same?"**
- Explain only once each new rule violation made during the entire Sorting Test. If a rule violation was made and explained in Condition 1 (Free Sort), do not explain it again if the same rule violation is committed in Condition 2 (Sort Recognition).

Place the cards in a single random group in front of the examinee. Say:

Now I'm going to put these cards into two groups of three cards each. The three cards in each group will be the same in some way. I want you to tell me how the cards are the same in each group. Be sure to tell me how I sorted both groups, not just one of them. I will use a different way of sorting the cards each time I put them into groups.

Place the cards into two groups (in vertical columns) for the first sort according to the sorting rules specified here. Start timing to ensure that the examinee provides a description response within the time limit (45 seconds). Record verbatim the examinee's description of the sort in the designated space in the record form. Reset the stopwatch to zero for the next sort. After recording the examinee's description of the first sort, say.

Good. Now I'm going to sort the cards in a different way. Again, I want you to tell me how I sorted the two groups.

Present each sort in the order listed here (see next page). Each time you begin a new sort say:

Now try this one.

Record verbatim the examinee's description of each sort and reset the stopwatch to zero.

Condition 2: Sort Recognition – Card Set 2

Place the cards from Card Set 2 in a single random group in front of the examinee. Say:

Like before, I'm going to put these cards into two groups of three cards each. The three cards in each group will be the same in some way. I want you to tell me how the cards are the same in each group. Be sure to tell me how I sorted both groups,

not just one of them. I will use a different way of sorting the cards each time I put them into groups.

Place the cards into two groups for the first sort according to the sorting rules specified here and in the record form. Start timing to ensure that the examinee provides a description response within the time limit (45 seconds). Record verbatim the examinee's description of the sort in the designated space in the record form. Reset the stopwatch to zero for the next sort.

After recording the examinee's description of the first sort, say:

Good. Now I'm going to sort the cards in a different way. Again, I want you to tell me how I sorted the two groups.

Present each sort in the order listed here and in the record form. Each time you begin a new sort, say:

Now try this one.

Record verbatim the examinee's description of each sort and reset the stopwatch to zero.

	Card Set 1	Card Set 2
1st	Small Cards (Bus, Car, Eagle) Large Cards (Airplane, Duck, Tiger)	Diagonals Close (Ears, Shoe, Socks) Diagonals Apart (Hat, Mouth, Toes)
2nd	Animals (Duck, Eagle, Tiger) Transportation (Airplane, Bus, Car)	Body Parts (Ears, Mouth Toes) Clothing (Hat, Shoe, Socks)
3rd	Straight Outer Edges (Airplane, Bus Tiger) Curved Outer Edges (Car, Duck, Eagle)	Triangles Above Word (Ears, Mouth Socks) Triangles Below Word (Hat, Shoe, Toes)
4th	One-Syllable Words (Bus, Car, Duck) Two-Syllable Words (Airplane, Eagle, Tiger)	Cursive Letters (Ears, Hat, Toes) Printed Letters (Mouth, Shoe, Socks)
5th	Blue Cards (Bus, Duck, Tiger) Yellow Cards (Airplane, Car, Eagle)	Plural Words (Ears, Socks, Toes) Singular Words (Mouth, Shoe, Hat)
6th	Air (Airplane, Duck, Eagle) Land (Bus, Car, Tiger)	Diagonals Slope Up (Ears, Hat, Shoe) Diagonals Slope Down (Mouth, Socks, Toes)
7th	Red Label (Airplane, Bus, Duck) White Label (Car, Eagle, Tiger)	Related to Head (Ears, Hat, Mouth) Related to Feet (Shoe, Socks, Toes)
8th	Uppercase Letters (Bus, Duck, Eagle) Lowercase Letters (Airplane, Car, Tiger)	Filled Triangles (Ears, Mouth, Shoe) Empty Triangles (Hat, Socks, Toes)

Scoring:

The examinee's description of each group of a sort is scored independently (2, 1, or 0 points). If the examinee gives a novel correct description to a repeated sort, the description can be scored as correct, even though the actual sort is coded as a repeat sort.

2 point description:
- Reflects the general concept, rule or category of items found in that group.
- Is not limited only to a specific feature or attribute of the members of the group.
- Is not overly inclusive.

1 point description:
- Conveys only a specific feature common to all of the members of the group.
- Reflects an overly inclusive category that applies not only to all of the members of the group but also to related items outside the group.
- Is an overly abstract description that represents a superordinate category of both groups of sorted cards but fails to identify each specific group.
- Applies to all of the members of the group but in an imprecise or partially accurate way.
- Is a vague description that is clarified by the examinee's pointing to indicate the correct rule or concept.

0 point description:
- Is "don't know" or no response.
- Is incorrect for the group generated.
- Identifies a category or concept only of a subgroup of the larger target group.
- Conveys a specific feature or attribute that is found in some but not all of the members of the group.
- Identifies one of the target sorting rules for the card set, but the rule does not match the actual sort generated.
- Represents a "2-1" response in which the examinee identifies two objects and one object found in each group.
- Is so overly inclusive that it could apply to items in both groups and does not identify or distinguish the two groups.
- Consists of the three stimulus words simply linked together in one or more sentences.
- Is a repetition of a previously correct description.

"Not" Statements:

An examinee might describe the two groups by labeling one of the groups and stating that the other group does not have that attribute. In most cases a "not" statement receives a score of 0 points for the group it describes. "Not" statements can be awarded 1 point if the two target concepts are opposites because then the negation of one of the concepts does identify the concept of the other group.

Materials:

Record Form
Stop watch
Pen or Pencil

Instructions:

In a moment, I am going to ask you a question. When I say begin, I want you to tell me as many words or short phrases as you can think of. You will have 60 seconds before I tell you to stop, so do this as quickly as you can.

For example, if the question was:

Please name as many pieces of furniture as you can.

You might say:

Chair
Table
Couch
Bookshelf
Desk
Bed
Dresser
Night Stand
Cabinet
Lamp

Please remember that all of your answers are confidential.

The question is:

How do people feel when they drink alcohol?

Ready, begin.

	Alcohol
First Interval 1-15 seconds	☐
Second Interval 16-30 seconds	☐
Third Interval 31-45 seconds	☐
Fourth Interval 46-60 seconds	☐
	Total # of Responses: _____

Appendix E: Alcohol Expectancy Card Sorting Task

<u>Materials</u>:
>   Stimulus Cards
>   Scoring Sheet

<u>Administration</u>:
The AECST consists of 41 stimulus cards with a single word printed on each card. Participants are asked to sort the cards into piles and state the rule upon which they based their sorting strategy (Free Sort). They have up to 10 minutes to complete this task.

<u>Instructions</u>:
Place stimulus sheet in front of the examinee. Say:

I'd like you to read these words out loud and tell me if there are any words you would like me to explain. Some of these words are harder than others. Go ahead.

If the examinee reads a word incorrectly, record the word in the designated space on the record form and provide the correct pronunciation. After the examinee reads all of the words, say:

Do you know the meaning of all of these words?

If the examinee does not know the meaning of a word, read the definition provided in the following list. You may repeat these definitions if the examinee asks you to do so. In the space provided in the record form, record any word with which the examinee has difficulty understanding. Sum the number of words that the examinee read incorrectly. Also sum the number of words that the examinee asked to be defined.

Less nervous	less emotional or less scared
Active	energetic or moving around a lot
Cocky	thinking too much of yourself, conceited
Content	satisfied with things as they are, comfortable or happy
Dangerous	unsafe, hazardous or something that could hurt or kill you
Dizzy	faint, lightheaded, feels like you head is spinning
Dumb	not smart, stupid
Friendly	liking to be with other people or liking to meet other people
Funny	something that is fun or humorous that makes you feel good
Happy	cheerful and joyous
Loud	unpleasant sound or harsh sound
Mad	feeling or showing anger
Nasty	to hurt others and to be mean
Pretty	beautiful, attractive, and pleasing
Relaxed	quiet and mellow
Rude	not polite
Sad	depressed or miserable

Scared	nervous, anxious, or upset
Sleepy	drowsy or tired
Slow	not moving quickly, sluggish
Smart	clever, intelligent, and able to learn
Talkative	talking a lot
Wild	unpredictable or crazy
Calm	quiet, peaceful, mellow
Fun	happy and exciting
Jolly	cheerful and joyous
Outgoing	social and liking to meet others, friendly
Quiet	making little or no noise
Cool	not goofy or nerdy
Goofy	silly or foolish
Less upset	less scared or less emotional
Mean	unkind, making other people feel bad
Nice	being good to others and making them feel good
Sick	not feeling well with stomach pain or headaches
Hurt others	to cause pain or harm to people
Forgetful	someone does not remember things
Crazy	reckless and uncontrollable
Good	pleasant, enjoyable
Stupid	dumb or unintelligent
Carefree	not worried about anything
Hyper	full of energy

Then say:

In this card game you will be presented with some words that describe ways people sometimes feel when they have been drinking alcohol and are under the influence of alcohol. These words will be presented on cards that can be sorted in many different ways. Your task is to sort these words into groups that you think belong together based on the meaning of the words. You may create as many groups as you would like and each group may have as many words as you want. Each word may only go in one group. You may change the groups until you are happy with the final groups. After you have finished the game, pick a label name for each group and then describe to me how you sorted the cards. If you have any questions, let me know at this time.

If the examinee begins to sort the words based on word length, alphabetical order, etc., please remind them that should sort the words into groups that belong together based on their meaning.

Ask the child to label each pile and then to describe how they sorted the cards. Write their responses word for word, as best as you can.

Alcohol Expectancy Card Sorting Task (AECST) – Record Form

Total # of piles: _____   Total incorrect: _____   Total not understood: _____

Words incorrectly read:

1. _____   4. _____   7. _____
2. _____   5. _____   8. _____
3. _____   6. _____   9. _____

Words not understood:

1. _____   4. _____   7. _____
2. _____   5. _____   8. _____
3. _____   6. _____   9. _____

Description of sorting:

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Alcohol Expectancy Card Sorting Task (AECST) – Record Form

Pile #1 Name:	**Pile #2 Name:**
# of items:	# of items:
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.
11.	11.
12.	12.
13.	13.
14.	14.
15.	15.
16.	16.
17.	17.
18.	18.
19.	19.
20.	20.
Pile #3 Name:	**Pile #4 Name:**
# of items:	# of items:
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.
11.	11.
12.	12.
13.	13.
14.	14.
15.	15.
16.	16.
17.	17.
18.	18.
19.	19.
20.	20.

<u>Materials</u>:
      Stimulus Cards
      Scoring Sheet

<u>Administration</u>:
The ACST consists of 41 stimulus cards with a single word printed on each card.
Participants are asked to sort the cards into piles and state the rule upon which they based
their sorting strategy (Free Sort). They have up to 10 minutes to complete this task.

<u>Instructions</u>:
Place stimulus sheet in front of the examinee. Say:

**I'd like you to read these words out loud and tell me if there are any words you
would like me to explain. Some of these words are harder than others. Go ahead.**

 If the examinee reads a word incorrectly, record the word in the designated space on the
record form and provide the correct pronunciation. After the examinee reads all of the
words, say:

Do you know the meaning of all of these words?

If the examinee does not know the meaning of a word, read the definition provided in the
following list. You may repeat these definitions if the examinee asks you to do so. In the
space provided in the record form, record any word with which the examinee has
difficulty understanding. Sum the number of words that the examinee read incorrectly.
Also sum the number of words that the examinee asked to be defined.

Alligator	large reptiles having sharp teeth and powerful jaws
Bear	a mammal with a shaggy coat and a short tail
Camel	a humped, long-necked mammal
Cat	a household pet that meows
Chicken	a common farm bird that clucks
Cow	a farm animal that produces milk and moos
Crocodile	large reptiles having sharp teeth and powerful jaws
Deer	hoofed mammals, the males have antlers
Dog	a household pet that barks
Dolphin	a water mammal smaller than a whale and with a long snout
Duck	swimming birds with a broad, flat bill and webbed feet
Fish	cold-blooded water animals with fins and gills
Frog	amphibian with webbed feet and long hind legs that croaks
Gorilla	a large ape with a large body and coarse, dark hair
Hamster	small rodent pet with large cheek pouches and a short tail
Hawk	birds of prey with a short hooked beak and strong claws
Horse	large hoofed mammal with a long mane and tail
Koala	an Australian marsupial with thick gray fur and large ears
Lion	large meat-eating cat with a tufted tail, and the males have a mane

Lizard	reptiles with a scaly long body, four legs, and a long tail
Manatee	water mammals with front flippers and a horizontally flattened tail
Monkey	long-tailed, medium-sized primates
Moose	hoofed mammal, males have large antlers
Mouse	small rodents with a pointed nose, small ears and a long tail
Owl	nighttime bird with hooked claws, a round face and short beak
Panda	mammal that looks like a bear with black and white markings
Penguin	water birds with wings like flippers and webbed feet
Pig	mammals with short legs, hooves, bristly hair, and a snout
Rabbit	long-eared, short-tailed mammals
Robin	songbirds with gray and black feathers on top
Seal	water mammals with a smooth body and flippers
Shark	large meat-eating fish with small, sharp scales
Sheep	woolly mammal with horns
Snake	reptiles with no arms and legs, a "S shaped" long body and fangs
Toad	related to frogs, but spend more time on land and have drier skin
Turkey	a large farm bird with brown feathers and a bare head
Turtle	a reptile with a shell that can pull in its head and legs
Vulture	a bird of prey with dark feathers that eats dead animals
Whale	a water mammal with flippers, a tail and blowholes for breathing
Wolf	a wild dog that lives and hunts in packs
Zebra	a fast, wild mammal that looks like a horse, with white and black stripes

Then say:

In this card game you will be presented with different kinds of animals. These words will be presented on cards that can be sorted in many different ways. Your task is to sort these words into groups that you think belong together based on the meaning of the words. You may create as many groups as you would like and each group may have as many words as you want. Each word may only go in one group. You may change the groups until you are happy with the final groups. After you have finished the game, pick a label name for each group and then describe to me how you sorted the cards. If you have any questions, let me know at this time.

If the examinee begins to sort the words based on word length, alphabetical order, etc., please remind them that should sort the words into groups that belong together based on their meaning.

Ask the child to label each pile and then to describe how they sorted the cards. Write their responses word for word, as best as you can.

Animal Card Sorting Task (ACST) – Record Form

Total # of piles: _____   Total incorrect: _____   Total not understood: _____

Words incorrectly read:

1. _____   4. _____   7. _____
2. _____   5. _____   8. _____
3. _____   6. _____   9. _____

Words not understood:

1. _____   4. _____   7. _____
2. _____   5. _____   8. _____
3. _____   6. _____   9. _____

Description of sorting:

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Animal Card Sorting Task (ACST) – Record Form

Pile #1 Name:		Pile #2 Name:	
# of items:		# of items:	
1.		1.	
2.		2.	
3.		3.	
4.		4.	
5.		5.	
6.		6.	
7.		7.	
8.		8.	
9.		9.	
10.		10.	
11.		11.	
12.		12.	
13.		13.	
14.		14.	
15.		15.	
16.		16.	
17.		17.	
18.		18.	
Pile #3 Name:		**Pile #4 Name:**	
# of items:		# of items:	
1.		1.	
2.		2.	
3.		3.	
4.		4.	
5.		5.	
6.		6.	
7.		7.	
8.		8.	
9.		9.	
10.		10.	
11.		11.	
12.		12.	
13.		13.	
14.		14.	
15.		15.	
16.		16.	
17.		17.	
18.		18.	
19.		19.	

Materials:
        Survey packet, Pen or pencil

Administration:
For each survey, please read the instructions out loud to the participant and then ask them if they have any questions before allowing them to proceed with each one. At the end, please check each survey to make sure that all questions were answered, and that only one answer was give for each question

Surveys:

MMBEQ Directions:
        In this survey, each question will tell you a feeling and ask you how often people feel that way when they drink alcohol: never, sometimes, usually, or always. The four boxes next to each question are the same as never, which is like the empty box, sometimes, which is like the next box that is filled a little bit, usually, which is like the next box that is mostly filled, and always, which is like the last box that is filled all the way up. There are spaces under the boxes to mark your answer. Tell me if there are any words you would like me to explain. Remember, this is not a test, there is no right or wrong answers and this won't be graded.

SSSC Directions:
        Each of the items in this booklet has two choices, A and B. Please circle the letter that best describes what you like or how you feel. In some cases you may find it hard to decide between the two choices. Please circle the one that is most like you are. Do not circle both choices or leave any items blank.

        We are interested in what you like or how you feel, not in how others feel or how one is supposed to feel. There is no right or wrong answer, so please be honest.

DDQ Directions:
        Read the questions below and check or circle the option that best describes you.

        After they complete the first 6 questions, then read:
        For the following questions, "drinking alcohol" means drinking any drink with alcohol in it such as beer, wine, wine coolers, whiskey, rum, vodka, gin, and alcoholic mixed drinks. A drink is one beer, a glass of wine, a shot of alcohol, or one mixed drink. Remember, your answers will be kept confidential.

Appendix H: Memory Model-Based Expectancy Questionnaire

1) How often do people feel **LESS NERVOUS** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

2) How often do people feel **ACTIVE** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

3) How often do people feel **COCKY** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

4) How often do people feel **CONTENT** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

5) How often do people feel **DANGEROUS** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

6) How often do people feel **DIZZY** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

7) How often do people feel **DUMB** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

8) How often do people feel **FRIENDLY** when they drink alcohol?
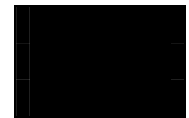
Never	Sometimes	Usually	Always
☐	☐	☐	☐

9) How often do people feel **FUNNY** when they drink alcohol?
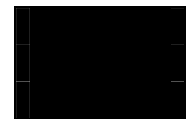
Never	Sometimes	Usually	Always
☐	☐	☐	☐

10) How often do people feel **HAPPY** when they drink alcohol?
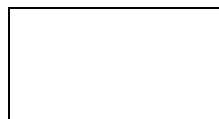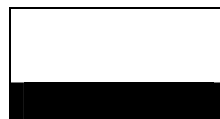
Never	Sometimes	Usually	Always
☐	☐	☐	☐

11) How often do people feel **LOUD** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

12) How often do people feel **MAD** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

13) How often do people feel **NASTY** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

14) How often do people feel **PRETTY** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

15) How often do people feel **RELAXED** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

16) How often do people feel **RUDE** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

17) How often do people feel **SAD** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

18) How often do people feel **SCARED** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

19) How often do people feel **SLEEPY** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

20) How often do people feel **SLOW** when they drink alcohol?

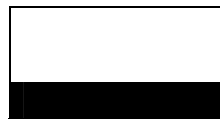| **Never**	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

Appendix H: (Continued)

21) How often do people feel **SMART** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

22) How often do people feel **TALKATIVE** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

23) How often do people feel **WILD** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

24) How often do people feel **CALM** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

25) How often do people feel **FUN** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

26) How often do people feel **JOLLY** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

27) How often do people feel **OUTGOING** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

28) How often do people feel **QUIET** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

29) How often do people feel **COOL** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

30) How often do people feel **GOOFY** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

31) How often do people feel **LESS UPSET** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

32) How often do people feel **MEAN** when they drink alcohol?

Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

33) How often do people feel **NICE** when they drink alcohol?
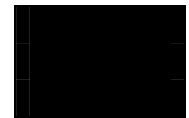
Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

34) How often do people feel **SICK** when they drink alcohol?
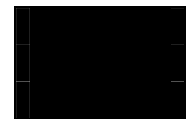
Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

35) How often do people **HURT OTHERS** when they drink alcohol?
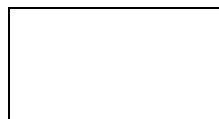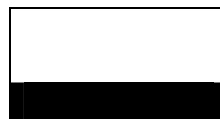
Never	**Sometimes**	**Usually**	**Always**
☐	☐	☐	☐

36) How often do people feel **FORGETFUL** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

37) How often do people feel **CRAZY** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

38) How often do people feel **GOOD** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

39) How often do people feel **STUPID** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

40) How often do people feel **CAREFREE** when they drink alcohol?

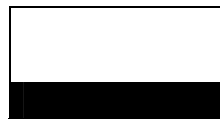| Never	Sometimes	Usually	Always
☐	☐	☐	☐

41) How often do people feel **HYPER** when they drink alcohol?

Never	Sometimes	Usually	Always
☐	☐	☐	☐

Appendix H: (Continued)

<u>Scoring Directions</u>: Factor scores are obtained by simply summing responses to items. Two items need to be reversed coded as indicated below.

Positive-Social		Negative Arousal	
Items	*Score*	*Items*	*Score*
1. Less Nervous		3. Cocky	
2. Active		5. Dangerous	
4. Content		12. Mad	
8. Friendly		13. Nasty	
9. Funny		16. Rude	
10. Happy		18. Scared	
15. Relaxed		32. Mean	
22. Talkative		35. Hurt Others	
25. Fun		17. Sad	
26. Jolly		**Total**	
27. Outgoing			
31. Less Upset			
33. Nice			
38. Good			
40. Carefree			
29. Cool			
21. Smart			
14. Pretty			
Total			

Sedated/Impaired		Wild and Crazy	
Items	*Score*	*Items*	*Score*
6. Dizzy		11. Loud	
7. Dumb		23. Wild	
19. Sleepy		30. Goofy	
20. Slow		37. Crazy	
34. Sick		41. Hyper	
36. Forgetful		24. Calm (reverse coded)	
39. Stupid		28. Quiet (reverse coded)	
Total		**Total**	

Positive-Social	
Negative Arousal	
Sedated/Impaired	
Wild and Crazy	
Total Score	

106

Appendix I: Sensation Seeking Scale for Children

Directions: Each of the items in this booklet has two choices, A and B. Please circle the letter that best describes what you like or how you feel. In some cases you may find it hard to decide between the two choices. Please circle the one that is most like you are. **Do not circle both choices or leave any items blank.**
It is important that you answer all items with only one choice, A or B. We are interested in what you like or how you feel, not in how others feel or how one is supposed to feel. There is no right or wrong answer, so please be honest.

1. A. I'd like to try mountain climbing.
   B. I think people who do dangerous things like mountain climbing are foolish.

2. A. Too many movies show people falling in love and kissing
   B. I enjoy watching movies which show people kissing each other

3. A. I would like to try smoking marijuana
   B. I would never smoke marijuana

4. A. It's more exciting to be around kids older than myself
   B. I like to be with kids my own age or younger

5. A. I'd never do anything that's dangerous
   B. I sometimes like to do things that are a little scary

6. A. I think riding fast on a skateboard is fun
   B. Some of the daring acts of skateboard riders seem very scary to me

7. A. I like to be with large groups of kids with something exciting happening
   B. I like quiet times with only 1 or 2 friends

8. A. I would not like to learn to fly an airplane
   B. I think it would be fun to learn to fly an airplane

9. A. I don't like to swim in water that is over my head
   B. I like to swim in deep water

10. A. I would like to try jumping from a plane with a parachute
    B. I would never try jumping from a plane with a parachute

11. A. People probably feel good after drinking alcoholic drinks
    B. Something must be wrong with people who need a few drinks to feel good

12. A. I like kids who make jokes even if they sometimes hurt other kids' feelings
    B. I don't like kids who think its fun to hurt other kids' feelings

13. A. I don't like it when people get drunk, talk loud and act silly
    B. When people get drunk, it seems like they are having fun

14. A. Sailing on the ocean in a small boat would be dangerous and foolish
    B. I think it would be fun to sail on the ocean in a small boat

15. A. I think skiing fast down a snowy mountain would be dangerous
    B. I think skiing fast down a snowy mountain would be exciting and fun

16. A. I'd never touch a bug or snake
    B. Bugs or snakes are fun to hold and play with

17. A. I think it would be exciting to go on a date
    B. I'm not interested in dating yet

18. A. I enjoy the feeling of riding my bike fast down a big hill
    B. Riding a bike fast down a big hill is too scary for me

19. A. I think its too dangerous for people to take drugs
    B. I sometimes wonder what it would feel like to be high on drugs, even though I
       know it would be dangerous

20. A. I don't like being around kids who act wild and crazy
    B. I enjoy being around kids who sometimes act wild and crazy

21. A. I don't think I'd like the feeling of getting drunk
    B. I think I might like to find out what it feels like to get drunk

22. A. I don't do anything I think I might get in trouble for
    B. I like to do new and exciting things, even if I think I might get in trouble for doing
       them

23. A. Riding dirt-bikes or motorcycles seems like a lot of fun
    B. It seems scary and dangerous to ride dirt-bikes or motorcycles

24. A. I like to do "wheelies" on my bike
    B. Kids who do "wheelies" on their bikes will probably get hurt sometimes

25. A. The worst thing a kid can do is be rude to his/her friends
    B. The worst think a kid can do is be boring around his/her friends

26. A. If I could, I'd see a movie with an "R" rating
    B. I'm not interested in movies made for older people

Child's Interest and Preference Test (SSSC) - Scoring

Scoring Directions: Add 1 for each response that matches the coded responses listed below. Sum responses for each subscale score; sum subscale scores for total SSC score.

Thrill & Adventure Seeking (TAS)			Drug & Alcohol Attitudes (DAA)			Social Disinhibition (SD)		
Key	*Response*	*Score*	*Key*	*Response*	*Score*	*Key*	*Response*	*Score*
1. (A)			3. (A)			2. (B)		
5. (B)			11. (A)			4. (A)		
6. (A)			12 (A)			7. (A)		
8. (B)			13. (B)			17. (A)		
9. (B)			19. (B)			20. (B)		
10. (A)			21. (B)			22. (B)		
14. (B)			25. (B)			26. (A)		
15. (B)			**DAA**			**SD**		
16. (B)								
18. (A)								
23. (A)								
24. (A)								
TAS								

SSSC Score	
TAS	
DAA	
SD	
Total	

Appendix J: Demographics and Drinking Questionnaire

<u>Directions</u>: Read the questions below and check or circle the option that best describes you.

1. You are a: ☐ Girl   ☐ Boy

2. Birthday   Month:_____ Day: _____ Year:_____

3. Circle your grade: 1   2   3   4   5   6   7   8

4. Circle your age: 6   7   8   9   10   11   12   13

5. Your school is: _____

6. Check the item that best describes your family:

   ☐ American Indian   ☐ Asian

   ☐ Black/African American   ☐ Hispanic/Latino(a)

   ☐ White/Caucasian   ☐ Other: _____

Directions: For the following questions, "drinking alcohol" means drinking any drink with alcohol in it such as beer, wine, wine coolers, whiskey, rum, vodka, gin, and alcoholic mixed drinks. A drink is one beer, a glass of wine, a shot of alcohol, or one mixed drink. **Remember, your answers will be kept confidential**.

1) How often do you drink alcohol?
   - A. I do not drink alcohol
   - B. Less than 4 drinks in life
   - C. Drink 1 or 2 times a year
   - D. Drink 3 to 8 times a year
   - E. Drink 1 or 2 times a month
   - F. Drink 3 or 4 times a month
   - G. Drink 1 or 2 times a week
   - H. Drink 3 or 4 times a week
   - I. Drink almost every day

2) How much alcohol did you have the last few times you drank?
   - A. I do not drink alcohol
   - B. A few sips of a drink
   - C. Usually 1 drink or less
   - D. Usually 2 drinks
   - E. Usually 3 drinks
   - F. Usually 4 drinks
   - G. Usually 5 drinks
   - H. Usually 6 drinks
   - I. Usually 7 drinks or more

3) How old were you when you had your very first whole drink, more than a few sips?

   ☐ Age: _____   ☐   I do not drink alcohol

4) The last few times that you drank alcohol, were you:
   - A. I do not drink alcohol
   - B. At a religious event
   - C. Celebrating a holiday or special occasion
   - D. At home
   - E. At a friend's house
   - F. At a party
   - G. Other _____

5) When you drink alcohol, do you have permission from your parents or guardians?
   - A. I do not drink alcohol
   - B. Yes   C. No

6) When you are an adult (21 or older), how often do you think you will drink?
    A. I will not drink alcohol
    B. Less than 4 drinks in life
    C. Drink 1 or 2 times a year
    D. Drink 3 to 8 times a year
    E. Drink 1 or 2 times a month
    F. Drink 3 or 4 times a month
    G. Drink 1 or 2 times a week
    H. Drink 3 or 4 times a week
    I. Drink almost every day

7) When you are an adult (21 or older), how much alcohol do you think you will have when you drink?
    A. I will not drink alcohol
    B. A few sips of a drink
    C. Usually 1 drink or less
    D. Usually 2 drinks
    E. Usually 3 drinks
    F. Usually 4 drinks
    G. Usually 5 drinks
    H. Usually 6 drinks
    I. Usually 7 drinks or more

8) How many of the students in your grade at school would you say have tried to drink alcoholic beverages?
    A. None of them
    B. A few of them
    C. Half of them
    D. Most of them
    E. All of them

9) How many of the students in your grade at school would you say have gotten drunk?
    A. None of them
    B. A few of them
    C. Half of them
    D. Most of them
    E. All of them

Appendix J: (Continued)

10) How do you feel about someone your age having one or two drinks of alcohol?
   A. Very unhappy
   B. Somewhat unhappy
   C. Neither happy nor unhappy
   D. Somewhat happy
   E. Very happy

11) How often do you think your close friends have had a drink of alcohol in the past year?
   A. Not at all
   B. Once or twice this year
   C. About once a month
   D. A few times a month
   E. Once or twice a week
   F. Almost every day

12) How often do you think your best friend has had a drink of alcohol in the past year?
   A. Not at all
   B. Once or twice this year
   C. About once a month
   D. A few times a month
   E. Once or twice a week
   F. Almost every day

13) How do you think your close friends would feel about **you** having one or two drinks of an alcoholic beverage?
   A. Very unhappy
   B. Somewhat unhappy
   C. Neither happy nor unhappy
   D. Somewhat happy
   E. Very happy

14) How do you think your best friend would feel about **you** having one or two drinks of an alcoholic beverage?
   A. Very unhappy
   B. Somewhat unhappy
   C. Neither happy nor unhappy
   D. Somewhat happy
   E. Very happy

Appendix J: (Continued)

The next questions ask about your parents. By **parents**, we mean your biological parents, adoptive parents, stepparents, or adult guardians who live in your household.

15) How do you think your parents would feel about **you** having one or two drinks of an alcoholic beverage?
    A. Very unhappy
    B. Somewhat unhappy
    C. Neither happy nor unhappy
    D. Somewhat happy
    E. Very happy

16) How often do you think your parents have had a drink of alcohol in the past year?
    A. Not at all
    B. Once or twice this year
    C. About once a month
    D. A few times a month
    E. Once or twice a week
    F. Almost every day
    G. Don't know

17) **During the past 6 months**, have you talked with either of your parents about the dangers of tobacco, alcohol, or drug use?
    A. Yes   B. No

18) Who do you most want to be like?
    A. My best friend
    B. Some other friend
    C. My brother or sister
    D. An older kid, or older kids at school
    E. My mother or father or guardian
    F. A famous person (actor, singer, athlete): _____
    G. Some other adult: _____
    H. Some other person or persons: _____

19) Who understands you better than anyone else?
    A. My best friend
    B. Some other friend
    C. My brother or sister
    D. An older kid, or older kids at school
    E. My mother or father or guardian
    F. A famous person (actor, singer, athlete): _____
    G. Some other adult: _____
    H. Some other person or persons: _____

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20) Whose opinion do you respect the most?
      A. My best friend
      B. Some other friend
      C. My brother or sister
      D. An older kid, or older kids at school
      E. My mother or father or guardian
      F. A famous person (actor, singer, athlete): _____
      G. Some other adult: _____
      H. Some other person or persons: _____

21) If you wanted to talk to someone about a problem, which of the following people would you turn to?
      A. My best friend
      B. Some other friend
      C. My brother or sister
      D. An older kid, or older kids at school
      E. My mother or father or guardian
      F. A famous person (actor, singer, athlete): _____
      G. Some other adult: _____
      H. Some other person or persons: _____

22) Who best understands kids your age?
      A. My best friend
      B. Some other friend
      C. My brother or sister
      D. An older kid, or older kids at school
      E. My mother or father or guardian
      F. A famous person (actor, singer, athlete): _____
      G. Some other adult: _____
      H. Some other person or persons: _____

Table 14

Descriptive statistics for all measures of interest

Measure	N	Min	Max	Mean	SD	Skewness	Kurtosis
Cognitive							
Slosson's Oral Reading Test	294	59	120	108.26	11.51	-1.811	3.629
COWAT: Letter	300	6	43	22.96	7.46	0.242	-0.297
COWAT: Category	300	8	42	22.25	6.01	0.421	0.273
CST-Animal: # of Piles	292	2	19	5.28	3.35	1.650	3.260
CST-Animal: Sort Quality	291	1.5	5	4.69	0.53	-2.709	9.970
DKEFS: Correct Sorts	294	2	14	8.23	2.37	-0.450	0.015
DKEFS: Free Sorting	294	0	51	29.17	8.98	-0.547	0.148
DKEFS: Sort Recognition	289	0	49	23.46	10.79	0.086	-0.694
Personality							
SSSC: TAS	299	0	12	6.32	3.31	-0.113	-1.027
SSSC: DAA	299	0	4	0.42	0.79	2.131	4.422
SSSC: SD	299	0	7	2.24	1.77	0.482	-0.519
SSSC: Total (No DAA)	299	0	18	8.56	4.70	0.028	-0.903
Social							
Perceived Social Norms	298	0	6	0.93	1.32	1.642	2.607
Perceived Alcohol Beliefs	297	0	15	0.99	2.14	2.764	9.037
Perceived Peer Drinking	298	0	8	0.42	1.06	3.975	19.934
Perceived Parental Drinking	243	0	5	1.41	1.49	1.071	0.236
Overall Alcohol Awareness	241	0	25	3.32	3.78	2.235	7.577
Social Influence: Adult	298	0	5	2.81	1.56	-0.307	-0.971
Social Influence: Peer	298	0	5	1.88	1.59	0.467	-0.896
Social Influence: Media	209	0	3	0.31	0.50	1.382	1.936
Social Influence: Total	209	0	5	2.11	1.66	0.310	-1.073
Alcohol Expectancies							
FA: # of Free Associates	298	0	15	6.00	2.79	0.387	-0.036
CST-Alcohol: # of Piles	292	0	22	5.99	4.40	1.37	1.39
CST-Alcohol: Sort Quality	288	1.5	5	4.22	0.66	-0.847	0.984
CST-Alcohol: Use of Alcohol	290	0	1	0.35	0.48	0.640	-1.601
MMBEQ: Positive Social	299	0	18	10.47	4.42	-0.042	-0.961
MMBEQ: Negative Arousal	299	0	9	7.35	1.85	-1.372	1.776
MMBEQ: Wild & Crazy	299	0	7	6.43	1.10	-2.701	8.732
MMBEQ: Sedated/Impaired	299	0	7	6.41	1.13	-2.694	9.033
MMBEQ: Total	299	6	41	30.66	5.73	-0.681	0.935
Alcohol Use							
Future Drinking Frequency	299	0	8	1.10	1.88	1.855	2.756
Future Drinking Quantity	299	0	6	0.80	1.20	1.487	1.768

Table 15

Descriptive statistics of the transformed variables

Measure	N	Min	Max	Mean	SD	Skewness	Kurtosis
Cognitive							
Ln (CST-An: # of Piles)	292	0.69	2.94	1.49	0.58	0.272	-0.650
Personality							
Sq Rt (SSSC: TAS)	299	1.00	3.61	2.62	0.67	-0.551	-0.562
Ln (SSSC: DAA)	299	0.00	1.61	0.24	0.42	1.446	0.834
Social							
Log (Perceived Social Norms)	298	0.00	0.85	0.21	0.25	0.747	-0.759
Inv (Perceived Alcohol Beliefs)	297	0.06	1.00	0.86	0.28	-1.608	0.822
Inv (Perceived Peer Drinking)	298	-1.00	-0.11	-0.87	0.25	1.581	0.824
Sq Rt (Perceived Parental Drinking)	243	1.00	2.45	1.48	0.45	0.646	-0.568
Log (Overall Alcohol Awareness)	241	0.00	1.41	0.49	0.35	0.072	-0.863
Log (Social Influence: Media)	298	0.00	0.60	0.09	0.14	1.004	-0.652
Ln (Social Influence: Total)	209	0.00	1.79	0.97	0.62	-0.391	-1.110
Alcohol Expectancies							
Log (CST-Alc: # of Piles)	292	0.00	1.28	0.31	0.28	0.649	-0.040
Alcohol Use							
Ln (Future Drinking Frequency)	299	0.00	2.20	0.47	0.68	1.077	-0.308
Log (Future Drinking Quantity)	299	0.00	0.85	0.18	0.24	0.850	-0.807

About the Author

Nicole Bekman was born in Queens, NY. After receiving an outstanding science-based education at Stuyvesant High School in Manhattan, she continued on to obtain her bachelor's degree in Human Development at Cornell University's College of Human Ecology. Although her interest in clinical psychology began early on, it was during her undergraduate years that she began to focus her interests on developmental psychopathology and risk-taking behaviors during adolescence. Under the mentorship of Dr. Mark Goldman at the University of South Florida, she explored the influences of a constellation of developmental processes and risk factors on the growth of a conceptual understanding of alcohol during late childhood, which serves as a predictor of later drinking behavior. She is currently living in San Diego, California and will continue to pursue this research interest through an NIAAA Postdoctoral Fellowship under the guidance of Dr. Sandra A. Brown at University of California, San Diego.