DEVELOPMENT AND VALIDATION OF AN OBSERVATIONAL MEASURE OF ALCOHOL-SPECIFIC COMMUNICATION

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ABSTRACT

Alison Reimuller Burns: Development and Validation of an Observational Measure of Alcohol-Specific Communication
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The current study tested a novel, theoretical model and associated observational measure of alcohol-specific communication and is the first to examine a broad range of content and communication strategies that caregivers and adolescents use when discussing alcohol. Sixty-three caregiver-adolescent dyads completed computerized questionnaires and a videotaped interaction task that was coded using a macrolevel observational coding system developed for the current study. Overall, findings provided evidence of adequate psychometrics, including adequate to high reliability, preliminary evidence of convergent and divergent validity of caregiver communication, and evidence of divergent validity of adolescent communication. Although superordinate constructs were identified across caregiver content, caregiver process, and adolescent process indicators, more complexity was discovered in the structure of alcohol-specific communication than initially hypothesized. Lastly, several communication processes predicted adolescent alcohol use cognitions. Interestingly, content alone did not predict drinking outcomes but rather, the effect of communication content depended upon the way in which messages were delivered. This highlights the importance of considering the process of alcohol-specific communication in addition to the content in order to better predict youth drinking outcomes. Prevention efforts that involve parents in reducing adolescent alcohol use should be well informed regarding what messages are most beneficial and how parents should deliver such messages. Better measurement of alcohol-specific communication is an imperative first step in that line of research. Results of the current study provide preliminary evidence for the

benefit of this comprehensive model and associated observational coding system of alcohol-specific communication.

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LIST OF ABBREVIATIONS AND SYMBOLS

α	Cronbach's alpha
B	Unstandardized regression coefficient
β	Standardized regression coefficient
EFA	Exploratory Factor Analysis
m	Mean
n	Number of subjects
p	p-value
r	Pearson's correlation coefficient
sd	Standard deviation
t	t-statistic
z	z-score or standard score

CHAPTER 1: INTRODUCTION

Alcohol is the primary substance used by youth with 72% of 12th grade students reporting that they have tried alcohol in their lifetime (Johnston, O'Malley, Bachman, & Schulenberg, 2009). As widely acknowledged, adolescent alcohol use is a significant public health issue because it is associated with negative consequences such as decreased academic performance and educational attainment as well as increased delinquency and risky sexual behavior (U.S. Department of Health and Human Services, 2007). Importantly, those who begin drinking prior to age 15 are five times more likely to have alcohol-related problems later in life (U.S. Department of Health and Human Services, 2007). Even with empirically-supported treatments, the course of recovery from such alcohol-related problems is often marked by chronic relapse and multiple treatment attempts (Chung & Maisto, 2006; Winters, Stinchfield, Latimer, & Stone, 2008). Preventing or at least delaying adolescent alcohol use, prior to the need for intervention when problems arise, is thus a strategy with significant public health impact.

A frontline context for preventing early adolescent alcohol use is the family. Examining family-based influences, like positive parenting, that deter adolescent alcohol use is a promising avenue given the continued importance of family during adolescence (Bauman et al., 2002; De Goede, Branje, Delsing, & Meeus, 2009; Wood, Read, Mitchell, & Brand, 2004) and the effectiveness of preventions that include the family (Lochman & van den Steenhoven, 2002; Montoya, Atkinson, & McFaden, 2003). The current study focuses on a unique aspect of parenting posited to influence adolescent alcohol use, namely alcohol-specific communication or how parents and teens communicate about alcohol.

Parenting and Alcohol Use

Parenting has been posited to occur on three levels (McKee, Jones, Forehand, & Cuellar, 2013). The first and most global of these levels is *parenting style*, a term attributed to Baumrind (1966), which refers to a constellation of parenting behaviors. Parenting style captures unique combinations of parenting behaviors such as warmth and limit setting (e.g., high warmth and high limit setting characterizes an authoritative parenting style). Parenting style is thought to be a general approach to parenting used across multiple contexts. The second level of parenting consists of individual *parenting behaviors,* such as warmth or limit setting measured as separate constructs rather than being combined to capture parenting style (Schaefer, 1965**)**. Parenting behaviors capture a single dimension of parenting and are conceptually narrower than parenting style. The third and most narrow level of parenting is *specific parenting,* which includes parenting behaviors specific to a certain topic or concern such as adolescent alcohol use.

An abundance of research delineates the relationship between parenting styles and many parenting behaviors with adolescent alcohol use. For example, an authoritative parenting style is associated with lower adolescent alcohol use whereas authoritarian and permissive parenting styles are associated with greater adolescent alcohol use (Baumrind, 1991). Moreover, lower parental warmth and monitoring are associated with greater alcohol use (Barnes, Farrell, & Cairns, 1986; Ryan, Jorm, & Lubman, 2010) whereas greater parental involvement predicts lower alcohol use and fewer alcohol-related consequences (Goncy & van Dulmen, 2010). Furthermore, high levels of parental support and open communication predict lower levels of alcohol use (Ryan et al., 2010). Although evidence demonstrates that general parenting styles and parenting behaviors are associated with adolescent alcohol use, fewer studies consider the impact of alcohol-specific communication, a *specific parenting* behavior, on adolescent drinking.

Even though the concept of specific parenting is relatively new, many researchers have identified dimensions of alcohol-specific parenting, including monitoring for alcohol use (e.g., smelling an adolescent's breath upon returning home from a party), parental modeling of alcohol use, and talking with adolescents about alcohol directly. The current study examines parent-adolescent communication about alcohol use as one particular aspect of specific parenting around the issue of adolescent alcohol use. *Alcohol-specific communication* is conceptualized here as the behaviors that occur within the direct communication between an adult and an adolescent regarding alcohol use. Jaccard, Dodge and Dittus (2002) provide a similar description, applied to discussions regarding sexual behavior, and characterize such conversations as a "dyadic interaction between one parent and one child where the parent consciously attempts to communicate information about sex or birth control to the child" (p.11). As evident in both definitions, this form of specific parenting includes overt communication in which parents and adolescents actively discuss a particular topic. It is posited that alcohol-specific communication is an important specific parenting behavior because it affords an opportunity for parents to provide information about alcohol to the adolescent, express explicit disapproval of use, and help the adolescent negotiate this developmentally normative experience.

Alcohol-specific Communication

Studies vary in the percentage of adolescents who report having had a discussion with a parent about alcohol. As expected, with increasing age, more parents have reportedly spoken to their adolescent about substance use (43% in a sample with mean age=13, Miller-Day, 2002; 71% in a sample with mean age=14, Reimuller, Hussong, & Ennett, 2011; 93% in a sample with mean age=18.5 Miller-Day, 2008). Findings regarding the impact of more frequent communication on adolescent alcohol use, however, suggests that having more discussions with a parent about alcohol inconsistently predicts drinking risk. For example, the more frequently conversations regarding alcohol use occur, the more likely adolescents are to use

safe drinking practices (Booth-Butterfield & Sidelinger, 1998) and the less alcohol use and alcohol-related problems are reported (Mares, van der Vorst, Engels, & Lichtwarck-Aschoff, 2011). Similarly, parents who less frequently caution their young adolescents about alcohol use have adolescents who are more likely to initiate drinking one year later (Andrews, Hops, Ary, Tildesley, & Harris, 1993). On the other hand, Ennett and colleagues (2001) found that the frequency of parent-adolescent communication about substance use was not associated with risk of alcohol initiation. Examining what occurs during these discussions may help to explain such discrepant findings.

A small, but growing, body of literature has also produced mixed results regarding the association between the content of alcohol-specific communication and adolescents' drinking behavior. Generally, these studies suggest that alcohol use has a negative association with rule-based messages (e.g., the adolescent will be disciplined for use; Mares, Lichtwarck-Aschoff, Burk, van der Vorst, & Engels, 2012; Schelleman-Offermans, Knibbe, & Kuntsche, 2012; Spijkerman, van den Eijnden, & Huiberts, 2008; van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005) and health consequence messages (e.g., resulting health problems associated with alcohol use; Andrews et al., 1993), and a modest, positive association with permissive messages (e.g., parents allow the adolescent to drink alcohol at home; Freire, 2008; Jackson, Henriksen, & Dickinson, 1999; Reimuller et al., 2011; Wood et al., 2004). However, other studies have found no association or even a positive association between rule-based messages and adolescent drinking and no association between consequence messages and drinking outcomes (Ennett et al., 2001; Reimuller et al., 2011). Therefore, studies that have examined the content of parent-adolescent discussions have returned mixed findings regarding the influence of a particular message on adolescent alcohol use, suggesting that delivering a particular message to an adolescent also does not robustly predict alcohol use.

Existing research on alcohol-specific communication's impact on adolescent drinking behavior has primarily focused on the *frequency* of conversations containing alcohol-specific

communication and the *content* of such discussions. However, Jaccard, Dittus, and Gordon (1998) posited that frequency and content are only two qualities that characterize parent-adolescent communication. Another quality is the *process* of communication, or the manner or style in which communication occurs. Regardless of how ideal the content may be, alcohol-specific communication may not have a positive effect on adolescent behavior if delivered poorly. Not accounting for how parents and adolescents talk about alcohol may in part explain the mixed findings characterizing the impact of alcohol-specific communication frequency and content on adolescents' alcohol use.

Unfortunately, research on the way in which alcohol-related messages are delivered is even more limited than that on frequency or content of communication. One study examined the relation between subjective reports of quality of communication during alcohol-specific discussions (defined as constructive and respectful communication) and adolescent drinking behavior in a sample of 12-17 year old Dutch adolescents who drank in the past year (Spijkerman et al., 2008). Results showed that when adolescents perceived communication about alcohol to be high in quality, they drank less alcohol, engaged in binge drinking less frequently, and reported fewer alcohol-related problems. A second study found that although adolescent's perceptions of quality of communication did not directly influence alcohol use, quality of communication indirectly influenced alcohol use through increased self-efficacy to refuse alcohol (Mares, Lichtwarck-Aschoff, & Engels, 2013). Furthermore, high quality communication about smoking has been associated with lower pro-smoking attitudes and higher self-efficacy to refuse cigarettes (Hiemstra, Otten, van Schayck, & Engels, 2012). Mixed findings have been reported on the association between quality of smoking-specific communication and smoking onset with one study demonstrating reduced risk of smoking onset (Ringlever, Otten, de Leeuw, & Engels, 2011) and another demonstrating no association (Hiemstra, Otten, & Engels, 2012). Lastly, greater targeted parent-child communication against alcohol, a measure which includes both content and quality of communication (Miller-Day & Kam, 2010), is

associated with increased anti-alcohol beliefs (Kam & Middleton 2013; Kam, Potocki, & Hecht, 2012), greater consideration of the risks associated with alcohol (Kam et al., 2012), and reduced substance use (Shin & Hecht, 2013).

Thus, preliminary work demonstrates that the manner in which such conversations occur influences substance use outcomes. Moreover, research on the effects of parent-adolescent communication about sexuality supports the importance of the quality or process of communication as both what parents say and how they say it impacts youth outcomes (Dutra, Miller, & Forehand, 1999). Taking into consideration the process of communication as well as the content is posited to better predict future drinking behavior than content alone.

However, identifying the impact of "constructive and respectful communication" does not provide parents with specific behavioral suggestions regarding how to discuss alcohol with teens in order to reduce the risk of teen drinking. Quality of communication is a global measure of the overall tone of alcohol-specific communication. In contrast, parents are typically more concerned with what they should do in their interactions with teens, how to express their views, and how to respond to their teen (Beatty & Cross, 2006). A strategy responsive to this need, intervention curriculums that aim to teach parents how to approach a specific conversation about alcohol focus on the process of a particular conversation. Additional research is needed to identify specific communication processes that occur within the context of a particular alcohol-specific conversation and prevent or delay teen drinking.

Despite limited research and inconsistent findings, this body of research has been used to provide an empirical basis for media campaigns (Office of National Drug Control Policy, n.d) as well as family-based interventions (Bauman et al., 2002; Brody et al., 2004; Mares, van der Vorst, et al., 2012; Strandberg & Bodin, 2011; Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001) that encourage parents to talk to adolescents about drinking. The empirical base supporting recommendations regarding what to say (content) or how to say it (process) is severely limited. In addition, those interventions that do provide recommendations to parents are only moderately

effective (Bauman et al., 2002; Strandberg & Bodin, 2011; Turrisi et al., 2001). This limited effectiveness may reflect a failure to consider neglected content and process factors. Other interventions do not test whether alcohol-specific communication is the active ingredient in a larger intervention (Brody, Chen, Kogan, Murry, & Brown, 2010) and even those that do have yet to isolate specific content and process factors that occur during these conversations. This prevents identification of specific content and processes that are effective, ineffective, and detrimental in preventing adolescent substance use. Additional research that identifies specific content and process factors that prevent teen drinking is needed to guide such public health initiatives.

A Comprehensive Model of Alcohol-specific Communication

Most of the literature to date has examined parental content in alcohol-specific communication as it predicts adolescent behavior. This emphasis on the parent's role is consistent with potential prevention and intervention implications of teaching parents how best to communicate with adolescents about alcohol. However, communication is a dyadic process that involves interaction between two individuals to create a broader context for the discussion and shape the flow of the conversation (Wilmot, 1987). Reciprocal influences occur such that one dyad member influences another dyad member's behavior or reactions (Walsh, Baucom, Tyler, & Sayers, 1993). This indicates that the adolescent's content and communication process may guide the parent's content (e.g., does the adolescent's positive view on alcohol influence the parent to include more alcohol-related consequence messages?) and behavior (e.g., does adolescent avoidance result in more questions asked by the parent?). Thus, the proposed model seeks to understand not only the parent's role in alcohol-specific communication (i.e., parental content and process) but also the adolescent's role (i.e., adolescent content and process).

Prior work on the content of alcohol-specific communication has relied primarily on self-report measures that assess perceptions of alcohol-specific communication, which can often be

very different from the individual's actual behavior and makes translation into prevention efforts difficult. Observational methodology, on the other hand, provides an objective measure of dyadic interactions while reducing the potential for reporter biases (Aspland & Gardner, 2003). In addition, reliable observational measures define a construct of interest exactly the same way across participants (Aspland & Gardner, 2003). Although observational tasks within a laboratory setting do not always provide an accurate picture of what naturally occurs, such as when observers are present or cameras are noticeable (see Gardner, 2000 for a review), the current study does not aim to identify what naturally occurs but rather to identify specific elements of communication that when they occur are associated with positive adolescent outcomes.

Such observational methods are extensively used in the literature on parent-adolescent communication about sexuality to assess the process of communication. However, validity of the observational coding systems has not been tested. Although Wakschlag and colleagues (2011) demonstrated the reliability and validity of an observational coding system assessing smoking-specific communication, only four codes were included and implicit and explicit messages as well as content and process were confounded within codes. Moreover, dyads were provided with prompts that "pressed" for particular responses which is thought to alter the task such that validity is interpreted differently. Observational coding has only been used to assess either one or a few process behaviors in a given study, and to date, no observational coding system has been proposed to assess the pure content of communication (without confounding content codes with process). Although many valid observational coding systems exist in the marital communication literature (see Kerig & Baucom, 2004 for an overview), the clear hierarchy of power in the parent-child relationship makes for poor translation of couples-based observational coding systems to this context. In addition, established observational coding systems of parent-adolescent communication primarily focus on conflict and conflict resolution. A comprehensive observational coding system of alcohol-specific communication in parent-adolescent dyads that demonstrates reliability and validity would provide better

measurement of this construct than is currently available. The current study proposes a comprehensive model and assessment paradigm of alcohol-specific communication, including a broad range of content and process indicators needed to inform future research and public health initiatives (e.g., media campaigns, universal prevention curriculums, and family-based interventions).

Content of Alcohol-Specific Communication

Parental content is defined by specific messages used during alcohol-specific communication. Parental messages are posited to be an important intervention target, resulting in the need for a more nuanced understanding of messages that parents use as well as the impact of specific messages on adolescent outcomes. Of the seven specific messages investigated in the current study, permissive messages, contingency messages, and rules about drinking are defined similarly to previous work. Consequence, peer pressure, and explicit family/parent disapproval messages are based upon the literature but are extended to define the constructs more broadly. And context messages have been developed for the purpose of the current study.

Permissive messages relay an open and approving attitude about alcohol or actively encourage adolescent alcohol use. As discussed above, prior work has consistently demonstrated detrimental effects of permissive messages as teen drinking increases with more permissive messages from parents (Freire, 2008; Jackson et al., 1999; Reimuller et al., 2011; Wood et al., 2004). In addition to purely permissive messages, parents may also indicate to the adolescent what he or she should do in the event that they do drink (e.g., “call me for a ride home” or “stay with friends and don’t go off by yourself”), referred to in the current study as contingency messages (Bourdeau, Miller, Vanya, Duke, & Ames, 2012; Freire, 2008). Although this may suggest a harm reduction approach in which the parent’s worry or concern is for the adolescent’s safety rather than a focus on abstinence, contingency messages may still be somewhat permissive in that they not only remove hurdles to drinking (e.g., not being able to

drive home), but they may also implicitly condone drinking. In fact, contingency messages have been found to be positively associated with adolescent alcohol misuse (Freire, 2008). Although conceptually similar in their underlying approval of alcohol use and empirically similar in their association with increased alcohol use, a study of alcohol-specific communication content found contingency messages to be distinct from permissive messages within a confirmatory factor analysis model (Freire, 2008). Additionally, the function of the message is slightly different with one actively encouraging use (permissive messages) and another implicitly doing so in an effort to decrease consequences of teen drinking (contingency messages).

Parents often discuss the rules related to alcohol or punishments associated with alcohol use with their adolescents. As indicated above, the relation between rule-based messages and drinking outcomes have been inconsistent with some studies finding a negative association, others finding a positive association, and some demonstrating no association. Similar to Ennett and colleagues' (2001) definition, rule-based messages include both explicit statements of the family rules regarding alcohol use (e.g., you cannot have even one drink) and punishments associated with use (e.g., you will be grounded if you come home drunk).

Consequences that occur from alcohol use extend beyond those impacting health, which have been the primary focus of previous studies (Andrews et al., 1993). The current study expands upon previous work examining health-related consequences to include content related to legal consequences, social or relationship consequences, and academic consequences, all of which are noted in the DSM-IV-TR (American Psychiatric Association, 2000), as well as information about the effects of alcohol (e.g., blacking out or vomiting). This expanded definition of consequence messages may capture a broader net of information parents provide to their adolescents about alcohol.

Parents may also discuss peer pressure with the adolescent, such as explaining to the adolescent what peer pressure is and the difficulty some feel refusing offers to drink, providing suggestions of ways to cope with or avoid peer pressure (Ennett et al., 2001), or discussing

ways to refuse alcohol offers. Given the extent of peer pressure that occurs in regards to drinking in adolescence (Kaplan, 1996), this content may be especially beneficial in preventing or delaying alcohol use. School-based curriculums that focus on teaching adolescents to resist peer pressure (Life Skills Training; Botvin, Baker, Renick, Filazzola, & Botvin, 1984; Alcohol Misuse Prevention Study; Dielman, Shope, Butchart, & Campanelli, 1986) have demonstrated significant reductions in alcohol use and misuse (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Shope, Copeland, Maharg, & Dielman, 1996). Moreover, although currently untested, the National Institute on Alcohol Abuse and Alcoholism developed an online interactive version of the Alcohol Misuse Prevention Study curriculum in an effort to deliver such peer pressure resistance messages to teens more broadly (thecoolspot.gov). Incorporating peer pressure messages within the context of parent-adolescent communication about alcohol is posited to result in similar reductions in alcohol use.

Parents may also explicitly express their disapproval of drinking or indicate that they or the family would be disappointed if the adolescent began drinking. Other content areas implicitly convey disapproval of adolescent alcohol use, whereas explicit statements of disapproval may be an alternative approach that requires the adolescent to make fewer interpretations. Explicit disapproval is conceptually distinct from rules about drinking in that disapproval emphasizes the parent's or family's preference or beliefs, rather than articulating a rule or punishment for drinking. Evidence suggests that *perceived* parental disapproval reduces adolescent alcohol use and, although findings are inconsistent, delays onset of alcohol use (Ryan et al., 2010). Although no studies to date have examined explicit statements of disapproval, it is posited that stating disapproval clearly would result in similar beneficial outcomes.

Lastly, parents may also discuss contexts that increase the likelihood of drinking or increase the adolescent's exposure to alcohol. For example, parents may discuss parties that have alcohol present, the adolescent's friends who drink alcohol, or friend's houses where parents drink alcohol. These types of messages could simply include a discussion of such

environments or state a rule about the adolescent's association with such individuals or presence in such environments. Parents may use these types of messages to reduce exposure to alcohol or set limits about drinking but they do so through the environmental context rather than discussing the child's drinking specifically. No studies to date have assessed these messages as they relate to alcohol-specific communication or examined the impact they have on adolescent drinking behavior.

For younger adolescents, the content of alcohol-specific communication may not yet be very differentiated, but may simply reflect two dimensions, namely the extent to which drinking was discussed in a positive or negative light. This simplistic categorization allows for a broad understanding of the adolescent's content that is hypothesized to be appropriate for this development period. In addition, given the long-term intervention goal of teaching parents to effectively communicate with their teens about alcohol, the current study's focus is not on the specific nature of the adolescent's content but rather, gaining a general understanding of the valence of the adolescent's statements and opinions about alcohol.

Process of Alcohol-Specific Communication

Although no research to date has investigated the relation between specific communication processes and adolescent drinking behavior, with the exception of self-disclosure, many studies have described communication processes that occur in parent-adolescent communication about other risky behavior. The majority of this work has identified communication processes that occur during conversations about sexuality with only a small number of studies examining discussions of tobacco and substance use. The current study draws from this extant literature and posits that similar communication processes occur during alcohol-specific communication and are predictive of adolescent alcohol use. Thirteen communication processes were examined in the current study. All processes were assessed in both adolescents and parents. However, it was hypothesized that adolescents would more

commonly engage in some processes whereas parents would more commonly engage in other processes.

First, conversational dominance is the extent to which an individual dominates the conversation, or attempts to control and influence what is discussed during the interaction or how the conversation proceeds. Conversational dominance may be perceived by others as an indication that their opinion is not important or respected, and in turn, may elicit responses such as shutting down, not listening, or resentment towards what is being said. The general parent-adolescent communication literature has found that taking turns and listening to one another is more effective than a conversation dominated by one individual (Foster & Robin, 1989). Communication about risky behavior appears to be similar to general communication with more dominance predicting worse outcomes. Specifically, maternal conversational dominance when discussing sexuality was negatively associated with the adolescent's knowledge about AIDS (Lefkowitz, Romo, Corona, Au, & Sigman, 2000) even after accounting for maternal AIDS knowledge (Lefkowitz, Kahlbaugh, & Sigman, 1996), as well as both high and low levels of adolescent worry about AIDS (as compared to medium levels of worry; Lefkowitz et al., 1996). Similar to findings in both the general parent-adolescent communication and communication about sexuality literatures, conversational dominance by either the parent or adolescent is hypothesized to be associated with higher levels of adolescent alcohol risk.

Parent-adolescent communication can also be characterized by the extent to which questions are posed to the other individual. Engaging questions can communicate interest in another person's perspective (Allen, Hauser, Bell, & O'Connor, 1994; Boone & Lefkowitz, 2007), keep others attentive (Jaccard et al., 2002), and facilitate dialogue rather than unidirectional messages (Casparian, 2009). Asking engaging questions may be especially important during conversations about alcohol as adolescents may be less forthcoming with their opinions and may be less engaged in the conversation due to the sensitive nature of the topic. However, a study of parent-adolescent communication about dating and sexuality found no association

between questions that ask about the adolescent's opinions and levels of engagement during the conversation (Romo, Nadeem, Au, & Sigman, 2004). Adolescents who ask engaging questions may obtain more information about alcohol and may elicit the parent's views on alcohol that helps shape their views. Interestingly, when male adolescents ask questions during discussions about sexuality, mothers were observed to ask fewer questions of the son (Lefkowitz, Boone, Sigman, & Au, 2002), suggesting that when adolescents ask questions, parents do more talking during the conversation. On the other hand, disclosure questions may be posed in an effort to elicit particular information of interest. Disclosure questions may elicit a defensive response, deterring, rather than facilitating, further beneficial communication. In fact, asking questions about personal experiences with dating and sexuality was associated with greater negative affect and engagement, suggesting greater conflict during the conversation (Romo et al., 2004). Although engaging questions are hypothesized to be beneficial and disclosure questions detrimental in parent-adolescent communication about alcohol, no research to date has examined the impact of either type of question on drinking behavior. More work is needed to understand the impact that engaging questions and disclosure questions during alcohol-specific communication have on adolescent behavior.

Parents and adolescents may also engage one another during a discussion by posing scenarios or 'what if' situations. Such questions may be posed in an effort to help the other individual think through or plan ahead for given situations, to test whether the other individual knows what to do, or in the adolescent's case, to seek the parent's advice on what to do. Although no research to date has examined the relationship between posing scenarios and adolescent alcohol use, Tara Chaplin and colleagues (personal communication, April 19, 2013) described the frequent use of scenarios in alcohol-specific communication. Further research is needed to examine the hypothesis that scenarios are associated with decreased risk of negative alcohol-related outcomes given the increased level of thought about alcohol that scenarios encourage.

An extant literature has found that avoidance is related to adolescent psychological functioning. Adolescent avoidance as a conflict resolution strategy is associated with greater adolescent internalizing problems (Rubenstein & Feldman, 1993). It is posited that avoidance occurs frequently when discussing sensitive topics such as alcohol use as parents and adolescents begin to feel uncomfortable or disagree with the others' statements. Similar to the conflict resolution literature, negative outcomes, including increased drinking, are posited to result from avoidance during alcohol-specific communication. No studies to date have explored avoidance within alcohol-specific communication. However, in a study that assessed demand/withdrawal as a dyadic interaction style, parent demand/adolescent withdrawal while discussing substance use (i.e., alcohol and other drugs) was associated with increased adolescent substance use whereas adolescent demand/parent withdrawal was negatively associated with adolescent substance use (above and beyond the adolescent's report of parent-adolescent conflict; Caughlin & Malis, 2004). Moreover, when communicating about sexuality, parental withdrawal was not associated with adolescent risky sexual behavior (Wilson & Donenberg, 2004). More research is needed before conclusions may be drawn regarding the effect of avoidance during alcohol-specific communication. However, preliminary evidence suggests that adolescent avoidance, but not parental avoidance, may be associated with increased adolescent alcohol use.

Parents and youth may express discomfort when discussing alcohol. Parents may feel uncomfortable providing information because they do not want to seem as though they are encouraging negative behavior whereas adolescents may feel uncomfortable when they want information or guidance from a parent but do not want to disclose their personal experience (Fox & Inazu, 1980). Although adolescents receive cues that the conversation is uncomfortable or embarrassing from parents (O'Sullivan, Meyer-Bahlburg, & Watkins, 2001), adolescents report and are observed as being more embarrassed than parents (Kahlbaugh, Lefkowitz, Valdez, & Sigman, 1997; Pluhar & Kuriloff, 2004). Unfortunately, discomfort negatively

influences a discussion and results in avoidance of future communication (Afifi, Joseph, & Aldeis, 2008). Mother-daughter pairs who reported being uncomfortable during a conversation about sex displayed poorer eye contact, used fewer gestures, and spoke more softly than pairs who reported being comfortable (Pluhar & Kuriloff, 2004). Although more work is needed to understand the direct impact of discomfort on adolescent drinking outcomes, feeling uncomfortable reduces engagement in the conversation, which is posited to reduce the effectiveness of the conversation on later alcohol use.

Connection is the extent to which an individual demonstrates warmth or concern, or appears to have rapport with the other person. However, it is important to distinguish connection from support or approval of behavior (Walters & Walters, 1983) as indiscriminate nurturing or support is posited to be positively associated with negative outcomes. Presence of connection does not indicate agreement with another's opinions or behaviors but rather demonstrates caring and concern and sets a positive tone for the conversation. Connection during alcohol-specific communication is posited to be an important predictor of alcohol use as dyads that communicate in a caring (or concerned) and positive way may be more invested in the conversation, less defensive, and more willing to entertain the other's ideas. However, no empirical evidence is available to confirm this hypothesized relationship. Descriptive studies have shown that the level of connection displayed by mothers is positively correlated with connection displayed by the adolescent suggesting that parents and adolescents mutually impact one another and the tone of the environment (Kahlbaugh et al., 1997; Lefkowitz et al., 2002). Although Caucasian parents demonstrate more connection than Latino parents above and beyond the effect of socioeconomic status (Lefkowitz et al., 2000), the impact of differences across ethnic group on youth behavior has yet to be tested.

Hostility has been discussed in the broader literature as detrimental to parent-adolescent communication. Greater levels of hostility were reported among distressed parent-adolescent dyads as compared to nondistressed dyads (Prinz, Rosenblum, & O'Leary, 1978), and are

associated with higher adolescent delinquency (van Doorn, Branje, & Meeus, 2008). This demonstrates that hostility not only impacts the interpersonal relationship between parents and adolescents, but that it also has an effect on adolescent behavior. Although no studies have examined the impact that hostility during alcohol-specific communication has on adolescent behavior, it is hypothesized that it functions similarly to the broader literature. Thus, with greater hostility displayed by either parents or adolescents when discussing alcohol, adolescents are posited to be more at risk for alcohol-related outcomes. Hostility creates a negative environment that may result in defensiveness or rejection of the message being relayed. Not surprisingly, adolescents more commonly engaged in hostile behavior during conversations about sexuality than did parents (Kahlbaugh et al., 1997).

Reactions during the context of a conversation can either facilitate communication or shut down communication, such as in cases where exaggerated emotional responses occur. Parents and adolescents may demonstrate extreme levels of emotion (e.g., shock, sadness, fright, or anger) that are out of proportion to the situation and are a response to their own distress. For example, 8 out of 15 adolescents reported that their mother cried or yelled at them when discussing smoking (Levy et al., 2010). These reactions may shut down communication in the moment and may prevent future communication (Walters & Walters, 1983). Additionally, adolescents report feeling angry if parents overreact to something that was said during a conversation about sex (Pluhar & Kuriloff, 2004). High emotional intensity during parent-adolescent conversations may make it more difficult to effectively communicate with one another (Foster & Robin, 1998).

Parents and adolescents may also magnify their statements about alcohol, such as when scare tactics are used. For example, some parents may exaggerate the dangers of alcohol in an effort to provoke fear as they believe it will reduce adolescent risky behavior (Afifi et al., 2008). On the other hand, adolescents may make statements that are exaggerated such as “I’ll have no friends if I don’t drink alcohol!” However, information that is magnified may seem

unrealistic and so counter to an individual's current knowledge that it is not taken seriously or rejected completely. In addition, parents may lose credibility as a source of information when they appear to blow things out of proportion. Although no prior research has investigated the impact of exaggerated statements on adolescent drinking outcomes, scare tactics are hypothesized to be associated with increased risk.

Humor serves many interpersonal functions that may occur in conversations about alcohol. Graham, Papa, and Brooks (1992) suggest 24 different functions of humor in interpersonal communication, two of which include tension reduction and disclosure of something that may be difficult to discuss. Humor that attempts to reduce tension in the moment may make it easier for both the parent and adolescent to engage in the discussion but could also inadvertently reduce the seriousness of the conversation. In fact, when discussing sexuality, male adolescents seemed to use sarcasm in an effort to reduce the tension and seriousness of the discussion (Afifi et al., 2008). Humor may also be a more comfortable way for an adolescent to acknowledge that they have initiated alcohol use or for a parent to disclose their alcohol use history. The desire to reduce tension through the use of humor is posited to be present in alcohol-specific communication given that such discussions can be uncomfortable for both parents and adolescents. Although no prior work has assessed the impact of humor during alcohol-specific communication on adolescent drinking outcomes, it is posited that humor may be negatively associated with teen drinking outcomes as it may reduce the tension and thereby facilitate the discussion.

Parents often wonder whether they should disclose their personal alcohol use to their adolescent and often adolescents will ask about parents' experiences. Consistent with the hope of many parents (Hogan, 2003), current advice to parents suggests that self-disclosure will deter youth from alcohol use (Hazelden, 2012; Partnership for a Drug Free America, 2012). However, a growing body of evidence is unclear as to whether parental self-disclosure is beneficial or harmful in deterring teen drinking. Although the extant literature suggests that self-disclosure

from parents (content other than alcohol use) results in higher quality of communication between individuals (Noller & Callan, 1990), parental disclosure of stressful information is associated with increased psychological distress (Lehman & Koerner, 2002). Recent studies have found that parental self-disclosure of alcohol use is associated with onset of drinking (Handley & Chassin, 2013) and reduced anti-substance use beliefs (Kam & Middleton, 2013). On the other hand, parental self-disclosure has also been indirectly associated with reduced alcohol use by increasing adolescent self-efficacy to refuse alcohol, although direct effects were nonsignificant (Mares et al., 2013). These mixed findings suggest that the process of parental self-disclosure may be inextricably linked with content. For example, a parent who discloses their past alcohol use may intend for their adolescent to learn from their mistakes but may unintentionally reinforce use by providing information that conveys that alcohol use is normative (Kam & Middleton, 2013). In addition, the impact of parental self-disclosure may also depend upon the rationale for or the function of the disclosure. For example, disclosing personal information in an effort to relate on a peer level rather than a parent level (Afifi et al., 2008), or to provide entertainment (Thorne, McLean, & Dasbach, 2004) may encourage alcohol use as it provides positive reinforcement and support for engaging in such behavior, similar to the concept of deviancy training (Dishion, Spracklen, Andrews, & Patterson, 1996). Parents may also disclose their use history with the hope that their adolescent will learn from their mistakes (Miller-Day & Dodd, 2004; Nwoga, 2000; Pluhar & Kuriloff, 2004), and thereby deter the adolescent from engaging in risky behavior. This body of work highlights the importance of assessing the content of a discussion along with the disclosure behavior to best understand the impact of self-disclosure on adolescent alcohol risk.

Adolescent disclosure about activities and friends more broadly is negatively associated with norm-breaking and delinquent behavior above and beyond parental solicitation of disclosure (Stattin & Kerr, 2000). The current study hypothesized that self-disclosure of alcohol use or alcohol-exposure during alcohol-specific communication will similarly be associated with

reduced drinking risk. Stattin and Kerr's (2000) work on parental monitoring highlighted that parental behavior (e.g., asking disclosure questions) may not be effective in preventing negative outcomes if adolescents do not share information with their parent.

Although no prior work has examined the construct of other-disclosure, parents and adolescents are posited to disclose information about other individuals' use of alcohol during alcohol-related discussions. For example, parents and adolescents may discuss the drinking habits of a family member, friend, celebrity, or neighbor. The current study hypothesizes that discussing other's alcohol use is positively related to adolescent drinking risk when used by parents, but negatively related to drinking risk when used by adolescents for reasons similar to those discussed for self-disclosure.

The Interaction of Content and Process

Although the content and process of alcohol-specific communication are each posited to be uniquely associated with teen drinking outcomes, interaction effects among content and process may occur. As discussed above, the effect of a particular message on adolescent alcohol use may depend upon the way in which that message is delivered. Content that is typically associated with increased alcohol use, such as permissive messages, may not be as detrimental to youth if delivered well. On the other hand, content that is typically associated with reduced risk, such as rules about drinking, may be ineffective, or even iatrogenic, if delivered poorly. However, due to the dearth of research on the process of communication, this has yet to be examined.

The Current Study

The current study tests a novel theoretical model and associated observational measure of alcohol-specific communication that considers the content of communication as well as the context in which such messages are delivered (i.e., process). The current study aimed to demonstrate reliability (Aim 1) as well as construct (Aim 2), convergent (Aim 3), divergent (Aim 4), and predictive (Aim 5) validities of this novel measure of alcohol-specific communication (see

table 1 for specific hypotheses). First, it was hypothesized that adequate to high reliability would be established at the level of the tape.

Second, although it was anticipated that codes would be somewhat independent, it was also expected that content and process codes would have underlying structures, or superordinate dimensions. More specifically, it was hypothesized that parents would tend to use content that discusses alcohol in either an approving (i.e., permissive messages and contingency messages) or a disapproving way (i.e., rules about drinking messages, context messages, consequence messages, peer pressure messages, explicit family/parent disapproval messages). It was also hypothesized that individuals would tend to engage in communication processes that either foster or encourage communication (i.e., engaging questions, scenarios, connection, humor, self-disclosure, and other-disclosure) or discourage or inhibit communication (i.e., conversational dominance, disclosure questions, avoidance, discomfort, hostility, exaggerated emotional response, and exaggerated statements/scare tactics).

Third, it was hypothesized that this measure of alcohol-specific communication would be highly associated with self-reported content and process during the interaction task as well as self-reported communication during alcohol-related discussions more broadly. This would suggest that the observational coding system measures alcohol-specific communication similarly to an individual's perception of the content and process of the specific interaction as well as alcohol-specific communication more globally. Additionally, although it is posited that alcohol-specific communication is a narrower construct than general family communication (i.e., in contexts outside of discussing alcohol), communication processes that occur while discussing alcohol were expected to be related to general family communication processes. Relationship quality (i.e., affection and self-disclosure) reported to exist between dyad members was also hypothesized to be associated with the process of alcohol-specific communication.

Fourth, the process of communication was hypothesized to be less associated to specific personality characteristics of each dyad member than to measures of convergent

validity (i.e., general family communication, relationship quality, and self-reports of alcohol specific communication). Alcohol-specific communication is conceptualized as communication that occurs between parents and adolescents within a specific context. Therefore, it is expected that the process of communication reflects characteristics of a dyadic interaction rather than aspects of an individual's personality. In addition, the content and process of alcohol-specific communication was hypothesized to be unrelated to social desirability.

Fifth, it was posited that alcohol-specific communication would predict alcohol use and other alcohol-related outcomes (i.e. intentions to drink, alcohol expectancies, and perceptions of parental disapproval) above and beyond the effect of general parenting behavior. In addition to main effects of communication scales, it is posited that content and process of communication will interact to predict alcohol use outcomes (e.g., disapproving content x discouraging processes may be associated with risky outcomes). Intentions to drink and adolescent cognitions (i.e., alcohol expectancies and perceptions of parental disapproval) are not only posited to be related to alcohol-specific communication but may also be proximal indicators of future drinking behavior. Intentions to drink and alcohol expectancies are early risk markers of alcohol use initiation (Andrews, Tildesley, Hops, Duncan, & Severson, 2003; Smith & Goldman, 1994) and perceived parental disapproval is associated with reduced alcohol risk (Ryan et al., 2010). Proximal indicators and early risk markers for alcohol use are outcomes of interest for prevention efforts and predictors of such outcomes, targets of interest. Thus, examining such outcomes may provide information about the mechanism through which parental communication impacts teen drinking. Specifically, alcohol-specific communication is posited to influence teen drinking by altering alcohol expectancies, intentions to drink, and perceptions of parental disapproval.

In sum, the current study is the first to validate a comprehensive model and associated assessment paradigm that captures a broad range of alcohol-specific communication content and processes. Capturing specific elements of communication that are found to be associated

with positive adolescent outcomes allows for clear translation into prevention targets in programs that provide behavioral strategies for parents. In addition, discussions about alcohol occur within an established family dynamic and a broader context of parenting styles and parenting behaviors. Although alcohol-specific communication is thought to be associated with parenting more broadly (Ennett et al., 2001), the unique influence of communicating about alcohol would provide empirical support for the importance of talking with one's adolescent about alcohol beyond the way one generally parents.

CHAPTER 2: METHODS

Participants

Participants were 63 adolescent-caregiver dyads enrolled in the 6th, 7th, or 8th grade. Caregivers were at least 18 years old and the adolescent's legal guardian to ensure they played a significant role in the adolescent's care and they could give consent for the adolescent to participate. Only one caregiver-adolescent dyad per family was allowed to participate to prevent dependence of observations due to nesting within family.

Of the 63 participating caregivers, 58 (or 94%) were biological parents, 2 (or 3%) were adoptive parents, 1 (or 2%) was a stepparent, and 1 (or 2%) was an older sibling (see table 2). Caregivers were predominately female (n=58, 92%) and spanned from 25 to 61 years of age (M=45.46, SD=6.19). Because race/ethnicity was not an exclusion criteria (though lack of conversant English was), the current sample of caregivers (65% Caucasian, 19% African American, 14% Asian, 3% Hispanic/Latino, and 2% Other) was approximately representative of the school district and community. However, the mean ($60,000-$70,000) and median ($90,000 or more) household income of the current sample was significantly above the average of the school district and national averages (US Census Bureau, 2010). The sample was highly educated with 60% (n=38) of caregivers with graduate or professional training.

Participating adolescents ranged in age from 11- to 14-years-old (M=12.35, SD=0.92) with 40% enrolled in the 6th grade, 37% in the 7th grade, and 24% in the 8th grade (M=6.84, SD=0.79). Fifty-two percent of adolescents were female and the majority of adolescents (76%) lived with more than one adult (M=1.86, SD=0.56) and at least one other child (M=0.92, SD=0.79). The sample was somewhat representative (59% Caucasian, 22% African American, 13% Asian, 6% Multiracial, and 5% Hispanic, totaling approximately 41% ethnic/racial minority)

of the race/ethnicity distribution of the school district and community (57% Caucasian, 10% Hispanic or Latino, 14% Asian, 12% African American, and 7% Multiracial, totaling approximately 43% ethnic/racial minority). One adolescent reported being 'not at all honest' on computerized questionnaires and therefore was dropped from analyses involving questionnaire data (but videotaped interactions were retained). Moreover, a second family spoke in their native language, Chinese, during the interaction task and therefore the interaction could not be coded. This resulted in a final sample size of 62 for both videotaped interactions and questionnaire data.

Procedures

Caregiver-adolescent dyads were recruited through several avenues. First, flyers were sent home in report cards within a public school district on two occasions and once via an electronic database for students and caregivers in a private school. Second, flyers were sent out to a major southeastern university's staff and employee listserv and the affiliated hospital's listserv. Third, flyers were distributed to YMCA afterschool programs that serve middle school students. Lastly, flyers were posted throughout the community (e.g., UNC clothing stores, ice cream shops, ballet studios, etc.). Interested dyads completed a brief phone screening (i.e., to confirm adolescent age and grade in school, guardianship, and English proficiency) and were scheduled for a 90-minute testing session.

Caregivers consented for their own participation as well as for the adolescent's participation, and adolescents provided written assent. Caregivers and adolescents began the study by completing questionnaires. To ensure privacy and more accurate data, questionnaires were computerized using a computer assisted self-interview (CASI) procedure (Dawson, 2003; Jones, 2003) and caregivers and adolescents completed measures in separate rooms. Dyads were then reunited to participate in three videotaped interaction tasks. All dyads began the observational component with a warm up task in which they were asked to plan a family vacation for 3 minutes. Dyads then discussed adolescent drinking for 10 minutes and a source

of stress for the adolescent for 7 minutes, counterbalanced to prevent order effects. Study staff was not present in the room during the observational tasks but waited outside the door in case any questions or concerns arose. Study staff provided instructions for each of the three observational tasks, asked the family to start the conversation when they left the room, and returned after the allotted time to end the task. After completing all three videotaped interactions, caregivers and adolescents were separated again to answer more computerized measures.

The assessment took approximately 90 minutes and was conducted at the Center for Developmental Science. The laboratory space includes a one-way mirror through which observational tasks were taped so as not to interfere with the conversations. Moreover, the lab space is only accessible with a key card, providing additional privacy for the dyad during the assessment. Each participant was given $20 for their participation and entered into a drawing for a Kindle Fire.

Observational Coding

Undergraduate research assistants were recruited and trained to assist with observational coding. Training began with an introduction to observational coding in general before being trained on the observational coding system developed for the current study. Reliability coders evaluated either the caregiver or the adolescent across all tapes assigned. The principal investigator served as the lead coder, coding all tapes with the order of coding (i.e., adolescent or caregiver coded first) counterbalanced. Reliability coders practiced on two training tapes and discussed codes assigned with the principal investigator to refine understanding. After the initial training phase, reliability coders and the principal investigator independently coded tapes until they reached adequate reliability, an intra-class coefficient (ICC) of 0.70 (Shrout & Fleiss, 1979). Reliability coders then coded every fourth tape so that 25% of tapes were double coded. Reliability of each double coded tape was calculated along the way to determine whether adequate reliability was obtained. If reliability was inadequate,

reliability coders returned to the training process by coding training tapes until they reached an ICC of 0.70 at which point they would return to coding reliability tapes.

It should be noted that the coding manual was revised after approximately 20 tapes were coded. Coders had difficulty differentiating between several codes and more description was needed to differentiate levels within particular codes. The principal investigator recoded all tapes and different tapes were selected to be double coded by reliability coders. The training and reliability process outlined above was completed with the new coding manual.

Measures

*Alcohol-specific communication***.** Caregivers and adolescents were asked to discuss alcohol for 10 minutes. Study staff provided the following directions: "*Caregivers are often told that they should talk with their adolescents about alcohol. We would like for you to talk about alcohol as if you were talking about this at home. I'll stop you in 10 minutes. Do you have any questions before we begin? Please begin when I leave the room."*

Videotaped discussions about alcohol were coded for content as well as process of communication using a macrolevel coding system developed for the current study. A 5-point likert response scale ranging from (0) 'not at all' to (4) 'very much' was used for each code. The draft of the final coding manual is included in Appendix A.

Seven content codes were used to capture the extent to which a caregiver delivered a particular message during the 10-minute interaction. These included **permissive messages** (i.e., permissiveness of alcohol use such as indicating that the adolescent is allowed to drink alcohol at home), **contingency messages (**i.e., what the adolescent should do if they do drink such as call home for a ride), **rule-based messages** (i.e., rules regarding alcohol use or punishment associated with use), **context messages** (i.e., discussing the people and places that increase the adolescent's exposure to alcohol), **consequence messages** (i.e., information regarding the negative consequences that result from alcohol use), **peer pressure messages** (i.e., information about peer influence to drink alcohol or ways to cope with peer pressure), and

parent/family disapproval messages (i.e., explicit statements that alcohol use would disappoint the caregiver or is inconsistent with the family's values). The adolescent's content was simply assessed as the extent to which alcohol was discussed **negatively** (i.e., how frequently or strongly the adolescent's comments demonstrated a negative view towards alcohol) or **positively** (i.e., how frequently or strongly the adolescent's comments demonstrated a positive view towards alcohol) throughout the 10-minute interaction.

Thirteen process codes drew upon previous observational studies of caregiver-adolescent communication about sexuality (e.g., Lefkowitz et al., 2002; Pluhar & Kuriloff, 2004) and substance use (Wakschlag et al., 2011; T. Chaplin, personal communication, April 19, 2013). Processes of interest included **conversational dominance** (i.e., the extent to which an individual attempts to control or influence the conversation), **engaging questions** (i.e., the extent to which questions were posed that sought the other's opinion or attempted to engage the other individual), **disclosure questions** (i.e., the extent to which questions were posed that elicited information about the other's experience with alcohol), **scenarios** (i.e., the extent to which scenarios were posed as a 'what if' or role play), **avoidance** (i.e., the extent to which an individual pulls back from the conversation so as to avoid discussion of the issue), **discomfort** (i.e., the extent to which the individual demonstrates distress or uneasiness), **connection** (i.e., the extent to which an individual demonstrates warmth or appears to have rapport with the other person), **hostility** (i.e., the extent to which an individual is hostile, critical, or harshly rejecting of the other's opinions, behaviors, and/or personal characteristics), **exaggerated emotional response** (i.e., the extent to which an individual's emotional reaction is out of proportion to the context), **exaggerated statements/scare tactics** (i.e., the extent to which an individual's statements are unrealistic or out of proportion to the situation), **humor** (i.e., the extent to which joking or light teasing is used), **self-disclosure** (i.e., the extent to which an individual discusses their own alcohol use or, in the adolescent's case, their exposure to alcohol), and **other-disclosure** (i.e., the extent to which an individual discusses another's alcohol use or, in the

adolescent's case, another's exposure to alcohol). These codes assess both the frequency and the extent to which an individual engages in such behavior during the 10-minute interaction. Descriptive information for each content and process code is provided in table 3. Descriptives for all other measures described below are reported in table 4.

Convergent Validity Measures.

Family Communication. The Parent-Adolescent Communication scale (PAC; Olson et al., 1985) was computer-administered to both adolescents and caregivers. Participants responded to 20 items on a 5-point likert scale (1='strongly disagree' to 5='strongly agree'). 10 items were averaged to create an Open Communication scale and another 10 items were averaged to create a Problem Communication scale for each respondent. High internal consistency was demonstrated across scales and reporter with cronbach's alpha ranging from 0.71 to 0.90.

Quality of Alcohol-Specific Communication. A self-report scale currently being used in the literature to measure quality of communication about substances was computer administered to establish convergent validity of the observational coding system process codes. The measure was developed by Harakeh and colleagues (2005) to assess the quality of smoking-specific communication globally (rather than as it pertains to a particular conversation) and includes 6 items rated on a 5-point scale (ranging from 1='completely not true' to 5='completely true'). Example items include 'My mother/father/child and I are interested in each other's opinion on smoking' and 'My mother/father/child and I can easily communicate about my views on smoking'. Items were adapted such that 'drinking' was substituted for 'smoking' as has been done in prior work (Spijkerman et al., 2008). Internal consistency was adequate for both reporters in the current study ($\alpha = 0.71$ for caregiver report; $\alpha = 0.78$ for adolescent report).

Targeted Parent-Child Communication About Alcohol Scale. A self-report scale developed by Miller-Day and Kam (2010) to measure alcohol-specific communication was administered to both caregivers and adolescents. 1 item assesses whether or not direct

communication about alcohol has occurred (e.g., 'at least one of my parents…has not directly talked with me about alcohol use, but has given hints that I should not use'), 3 items assess content of communication (e.g., 'at least one of my parents…has warned me about the dangers of drinking alcohol'), and 6 items assess the process of communication (e.g., 'at least one of my parents…has lectured me or given me a speech about drinking alcohol'). Although others have created a composite communication score by averaging across all 10 items, the current study used data on an item level to establish convergent validity as assessing content and process separately was a key goal.

Self-Report of Alcohol-Specific Communication Content and Process. To establish validity of the alcohol-specific communication observational coding system, self-report items assessing content and process of communication were developed based upon the coding system (see Appendix B for items). Immediately after the observational tasks, both dyad members rated the extent to which they used each type of content and engaged in each process level behavior on a 5-point scale. Self-report indices allow for an assessment of the consistency of the observational coding system with the participant's perceptions of the conversation.

Relationship Quality. Relationship quality was assessed through two scales of the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) including affection and self-disclosure. One additional item, suggested by Barrera, Chassin, and Rogosh (1993), was included to capture reciprocity in the affection subscale (i.e., 'How much do you really both like each other?'). This resulted in three items measuring self-disclosure and four items measuring affection. Response options ranged from (1) 'little or none' to (5) 'the most possible'. The current study demonstrated adequate to high reliability across scales and dyad members ($\alpha = 0.71$ and $\alpha = 0.88$ for adolescent and caregiver report of affection, respectively, and $\alpha = 0.86$ and $\alpha = 0.89$ for adolescent and caregiver report of self-disclosure, respectively).

Divergent Validity Measures.

Personality. The Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) assesses Extroversion, Agreeableness, Neuroticism, Openness, and Conscientiousness by having individuals respond to 44 statements on a 5-point likert scale from (1) 'strongly disagree' to (5) 'strongly agree'. Dyad members completed the appropriate form (adult and adolescent forms are available). Neuroticism, Extroversion, and Agreeableness scales were used to establish divergent validity of the observational coding system due to theoretical associations with process codes. Adequate reliability was demonstrated across scales for both dyad members (cronbach's alpha ranged from 0.66 to 0.82).

Social Desirability. The Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) includes 33 true/false items that assess desirable responding (e.g., "I never hesitate to go out of my way to help someone in trouble"). Adequate reliability was demonstrated for both adolescents and caregivers ($\alpha = 0.82$ for both dyad members).

Predictive Validity Measures.

Adolescent Alcohol Use. Alcohol use was assessed using items selected from the NIH Phenx Toolkit (Hamilton et al., 2011). Adolescents reported whether or not they have ever used alcohol, and if so, the frequency and quantity of consumption over the past year (Grant et al., 2003). Given the younger age range of the sample and the goal of early prevention, a binary indicator of lifetime sipping behavior (child has sipped alcohol vs. child has never sipped) was also obtained and was used to establish predictive validity of the observational coding system. 41% (n=25) of the sample reported having a sip of beer, wine, or hard liquor at some point in their lifetime with only 14% (n=5) reporting that they drank more than a few sips of alcohol at some point in their lives.

Intentions to Drink. Adolescents were asked if they think they will be using alcohol one month from now, three months from now, a year from now, and 5 years from now on a 4-point scale (ranging from 0='definitely not' to 3='definitely will'). These items were adapted from

Monitoring the Future (Johnston, O'Malley, & Bachman, 2003) and previous research on intentions to drink (Andrews et al., 2003; Sawyer & Stevenson, 2008). These items were averaged to create a composite scale, which demonstrated adequate reliability in the current sample (α = 0.83).

Alcohol Expectancies. Adolescents completed an adapted version of the Alcohol Expectancies Questionnaire- Adolescent Form (AEQ-A; Brown, Christiansen, & Goldman, 1987) which includes 34 items that loaded most highly from the original scale (Mann, Chassin, & Sher, 1987). These items assess an individual's perceptions regarding the effects of alcohol on a 4-point scale from (0) 'strongly disagree' to (3) 'strongly agree'. 4 items were averaged to create a positive expectancies scale and 30 items were averaged to create a negative expectancies scale, both of which demonstrated high reliability in the current study (α = 0.95 and α = 0.81, respectively).

Perceptions of Caregiver Disapproval. Adolescents were asked how they think their caregiver would feel if they were to drink alcohol, drink occasionally, drink regularly, or have 5 or more drinks at a time using a 5-point scale from (0) 'strongly approve' to (4) 'strongly disapprove'. These items are adapted from Monitoring the Future (Johnston, O' Malley, Bachman, & Schulenberg, 2005) and Trucco and colleagues (2011). In addition, two items were written for the purpose of this study that assess disapproval of drinking at home if the caregiver were home and disapproval of drinking if there was other adult supervision (i.e., at a friend's house). All six items were averaged to create a composite scale, which demonstrated high internal consistency (α = 0.84).

Control Variables.

Demographics. Caregivers reported on personal information (gender, age, race, ethnicity, and education level attained), adolescent demographics (gender, age, race, ethnicity, and last grade completed), and family household income. In addition, family structure was

assessed by asking caregivers to describe the relationship of the adolescent to all adults (e.g., biological mother, step-father) and other children (e.g., full sibling, cousin) living in the home.

Parenting Behaviors. Caregiver and adolescent reports of parenting behavior were assessed with 4 subscales of the Alabama Parenting Questionnaire (APQ; Frick, 1991) including Parental Involvement, Positive Reinforcement, Poor Monitoring and Supervision, and Inconsistent Discipline. Participants responded to 39 items using a 5-point response scale (1= 'Never' to 5='Always') and items were summed in order to create composite scales. Three scales (Parental Involvement, Positive Reinforcement, Poor Monitoring and Supervision) demonstrated adequate internal consistency (cronbach's alpha ranged from 0.73-0.82 across scale and reporter). However, the Inconsistent Discipline scale demonstrated poor reliability for both reporters and, therefore, was not used in further analyses.

Caregiver Alcohol Use. Caregiver alcohol use was assessed using items selected from the NIH Phenx Toolkit (Hamilton et al., 2011). Caregivers reported whether they have ever used alcohol, and if so, the frequency and quantity of consumption over the past year (Grant et al., 2003). Caregiver alcohol use, as indicated by a frequency-quantity product, was controlled for in predictive validity analyses. On average, caregivers drank about 2 to 3 days a month and typically consumed, on average, 1.35 drinks on a drinking occasion.

CHAPTER 3: RESULTS

Preliminary Analyses

Adolescent and Caregiver Substance Use. Adolescent and caregiver substance use was also assessed using items selected from the NIH Phenx Toolkit (Hamilton et al., 2011) to provide additional information about the sample. One adolescent reported trying cigarettes or other tobacco-related products at the age of 8 years old but had not smoked or used cigarettes in the past year. In addition, another adolescent reported using marijuana 'once or twice' in the past year (beginning at age 13). No other illicit drug use was reported by the current sample of adolescents.

Twenty-four caregivers reported having tried tobacco over their lifetime with the age of onset spanning ages 10 to 32 (m=17.04, sd=4.67). Two caregivers smoked daily in the past month and 1 caregiver smoked once or twice in the past month. Thirty-five caregivers endorsed marijuana use in their lifetime, with age of onset spanning ages 11 to 23 (m=16.74, sd=3.26). Over the past month, two caregivers reported using marijuana 'once or twice', one caregiver reported using once a week, and one caregiver reported using 2-3 times a week. Lastly, 14 caregivers endorsed other illicit drug use over their lifetime, with an age of onset spanning 13 to 25 years of age (m=18.00, sd=3.40), but zero caregivers reported use in the past month or year. Drugs used include amphetamines/speed (n=4), cocaine/crack (n=8), LSD/Hallucinogens (n=4), and 'you name it besides cocaine' (n=1).

Honesty. At the end of the assessment, adolescents and caregivers were asked how honest on a scale of (0) 'not at all honest' to (3) 'very honest' they were while completing computerized questionnaires. As reported above, one adolescent endorsed being 'not at all honest' and therefore, his or her questionnaire data was not used in analyses. 18% (n=11) of

adolescents and 3% (n=2) of caregivers reported being 'somewhat honest' and 82% (n=49) of adolescents and 97% (n=60) of caregivers reported being 'very honest'. T-tests indicated no significant differences in adolescent or caregiver alcohol use based upon self-reported honesty.

Generalizability. Each dyad member rated how similar the conversation about alcohol was to a typical conversation using a 4-point likert scale from (0) 'not at all typical' to (3) 'very typical'. 4 adolescents and 5 caregivers reported that the alcohol conversation was 'not at all typical' or 'not very typical' whereas 57 adolescents and 57 caregivers reported that the conversation about alcohol was 'somewhat typical' or 'very typical' of conversations they've had at home.

Descriptive Analyses

Descriptive analyses were conducted to explore patterns of alcohol-specific communication in the current sample. Of note, no variability was present with observer ratings of adolescent exaggerated emotional response and exaggerated statements/scare tactics and therefore, analysis of either indicator was not possible.

First, observer ratings of content and process of communication were tested for order effects. Two sample t-tests showed no significant differences in what parents and adolescents say or how they say it across counterbalanced conditions (out of 20 caregiver comparisons, Bonferroni adjusted alpha- $p<0.009$; out of 13 adolescent comparisons, adjusted alpha- $p<0.005$). (Of note, all alpha adjustments conducted in the current study used the Bonferroni correction method).

Second, t-tests were run to examine differences in the use of specific content and conversational processes by demographic group (adolescent gender, adolescent race/ethnicity, parent education, one-parent households, and for process codes, dyad member) in order to provide a richer understanding of the characteristics of those who use certain content and ways of interacting when discussing alcohol. Most content and process codes were not significantly different across members of demographic groups after accounting for alpha inflation (20

caregiver comparisons for each demographic group, adjusted alpha-$p<0.005$; 13 adolescent comparisons for each demographic group, adjusted alpha- $p<0.008$; 11 comparisons for dyad member, adjusted alpha-$p<0.009$). However, several significant differences were noted in the current sample. Caregivers who completed college or graduate/professional school were less likely to use parent/family disapproval messages than those with less education ($t=3.13$, $p=0.003$). Moreover, caregivers were more likely to ask engaging questions ($t=9.20$, $p<0.0001$) and disclosure questions ($t=8.16$, $p<0.0001$), pose scenarios ($t=5.32$, $p<0.0001$), and display connection ($t=2.92$, $p=0.004$) than adolescents. Adolescents, on the other hand, were more likely than their caregivers to display discomfort ($t= -3.79$, $p=0.002$) and to use humor during the conversation ($t= -3.04$, $p=0.003$).

Third, correlations of content codes and process codes were examined to identify communication factors that occur in combination frequently. Correlations amongst observer rated content codes are displayed in table 5. Caregiver messages that aim to deter use were found to be highly correlated with one another. Specifically, peer pressure messages were positively correlated with the use of context messages ($r=0.35$), consequence messages ($r=0.22$), and parent/family disapproval messages ($r=0.42$). Moreover, caregivers who discussed parent/family disapproval were also likely to discuss alcohol-related consequences ($r=0.24$). However, after controlling for alpha inflation ($p<0.005$), only 1 out of 21 caregiver content correlations, namely the association between peer pressure messages and parent/family disapproval messages ($r=0.42$), remained significant. Adolescent content codes were negatively correlated such that adolescents who discussed alcohol in a positive light were less likely to discuss alcohol in a negative light ($r= -0.24$).

Examination of correlations amongst caregiver process codes revealed that those hypothesized to be ‘discouraging communication processes’ were highly correlated (see table 6). Specifically, conversational dominance was correlated with avoidance ($r=0.31$), hostility ($r=0.37$), and exaggerated statements/scare tactics ($r=0.23$) but surprisingly, was negatively

correlated with discomfort (r= -0.22). Avoidance was also highly correlated with hostility (r=0.49). On the other hand, 'encouraging communication processes' were also highly correlated with one another, including engaging questions and scenarios (r=0.29), engaging questions and connection (r=0.31), and self-disclosure and other-disclosure (r=0.59). Furthermore, several encouraging communication processes were negatively correlated with discouraging communication processes. Hostility was found to be negatively associated with engaging questions (r= -0.25), and connection was negatively correlated with conversational dominance (r= -0.35), avoidance (r= -0.33), and hostility (r= -0.38). Caregiver disclosure questions and humor were not significantly correlated with other process indicators. After controlling for alpha inflation ($p<0.001$), however, only 2 of 78 correlations remained significant including the correlations between avoidance and hostility (r=0.49) as well as self-disclosure and other disclosure (r=0.59).

As expected, adolescent use of strategies hypothesized to be 'encouraging' were highly correlated (see table 6). Specifically, displays of connection were positively correlated with humor (r=0.36), self-disclosure (r=0.25), and other-disclosure (r=0.29). In addition, adolescents who used engaging questions also frequently used scenarios (r=0.21) and those who self-disclosed were likely to discuss others' alcohol use as well (r=0.29). Furthermore, use of humor was highly correlated with self-disclosure (r=0.22) and other-disclosure (r=0.26). On the other hand, communication factors posited to be 'discouraging' were not significantly correlated with the exception of hostility and avoidance (r=0.23). Surprisingly, several discouraging processes were positively associated with encouraging processes. Conversational dominance was positively correlated with connection (r=0.22) and other-disclosure (r=0.22), use of disclosure questions was associated with use of engaging questions (r=0.41), hostility was associated with the use of scenarios (r=0.42), and avoidance was correlated with humor (r=0.22). In contrast, consistent with hypotheses, several encouraging and discouraging process indicators were negatively correlated, including engaging questions and avoidance (r= -0.24) and connection

and hostility (r= -0.40). After controlling for alpha inflation ($p<0.002$), 3 out of 55 correlations remained significant, namely the relation between engaging questions and disclosure questions (r=0.41), scenarios and hostility (r=0.42), and connection and hostility (r= -0.40). Interestingly, these three correlations include one process hypothesized to be encouraging and one process hypothesized to be discouraging.

Correlations amongst content and process indicators were examined to identify patterns of communication used during the observational task. After correcting for alpha inflation, 4 significant correlations (out of 91, $p<0.001$) were found for caregivers and 2 (out of 26; $p<0.004$) were found for adolescents. Caregivers who used permissive messages were more likely to use self-disclosure during the conversation (r=0.43), and context messages were frequently used in combination with scenarios (r=0.52). Caregivers who used exaggerated statements/scare tactics were likely to discuss consequences and peer pressure with their adolescents (r=0.59 and r=0.44, respectively). Adolescents who were positive about alcohol were rated as more conversationally dominant (r=0.36) and those who discussed alcohol negatively were rated as more connected to their caregiver (r=0.41).

Fourth, self-report of content and process during the alcohol-specific communication task were correlated with observer ratings at the individual code level to assess for consistency between reporters. After correcting for alpha inflation (18 caregiver correlations, $p<0.006$; 11 adolescent correlations, $p<0.009$), results indicate that self-report and observer report of most caregiver content messages, but not adolescent content, were significantly correlated (see table 7). Specifically, observer ratings were highly consistent with self-reports of contingency messages (r=0.63), rules about drinking messages (r=0.37), consequence messages (r=0.42), peer pressure messages (r=0.52), and parent/family disapproval messages (r=0.40). Correlations between self-reported and observer rated process of communication showed consistency across raters on caregiver hostility (r=0.61), caregiver humor (r=0.53), and caregiver self-disclosure (r=0.55). Moreover, observer ratings were similar to adolescent ratings

on measures of hostility (r=0.37). (Because scenarios and other-disclosure codes were developed after the study was initially designed, questions were not included to assess self-report of these constructs. Lastly, no variability was present with observer ratings of adolescent exaggerated emotional response and exaggerated statements/scare tactics and therefore, correlations with self-report were not possible.)

Aim 1: Reliability

A range of reliability indicators were calculated for the alcohol-specific communication observational measure including intra-class correlations (Shrout & Fleiss, 1979) and percent agreement (Tinsley & Weiss, 1975). These reliability estimates were calculated separately for each dyad member on each of the 25% of tapes that were double coded. Intraclass correlations of double coded tapes ranged from 0.50 to 0.90 (m=0.76, sd=0.11) for caregivers and from 0.70 to 0.94 (m=0.84, sd=0.09) for adolescents, demonstrating high internal consistency (i.e., average ICC above 0.70).

The percentage of codes that showed absolute agreements between coders on a given tape was calculated as a conservative estimate of reliability. In addition, the percentage of codes that agreed within one point in either direction across coders on a given tape was calculated. Coding of caregivers agreed perfectly, on average, across 61% of codes (sd=6%, range=50%-70%) and within one point on average, across 94% of codes (sd=6%, range=85%-100%). Adolescent codes agreed perfectly, on average, 76% of the time (sd=10%, range=47%-87%) and within one point, on average, 98% of the time (sd=4%, range=87%-100%). In sum, across all indicators of reliability, acceptable to high reliability was observed.

Aim 2: Construct Validity

One purpose of the current study was to elucidate the content and process that caregivers and adolescents use during an alcohol-related discussion. Construct validity was examined using exploratory factor analysis (EFA) to determine whether codes reflect meaningfully distinct aspects of communication process and content or whether they can be

organized into superordinate factors to simplify the structure of the measure (Gorsuch, 2003; Schmid & Leiman, 1957). Three models were examined, one assessing the structure of caregiver content codes, one assessing the structure of caregiver process codes, and one assessing the structure of adolescent process codes. Solutions with the minimum and maximum number of factors possible were extracted to determine the best solution based upon eigenvalues, fit indices, rules of parsimony, and theoretical interpretability.

Caregiver Content. A maximum likelihood EFA with categorical indicators and quartimin rotation was run in M*plus* version 6 (Muthén & Muthén, 2010) to explore the factor structure of caregiver content codes. The model was first run with all seven content codes. Eigenvalues and fit indices suggested that a 2-factor model fit the data best, reflecting permissive and negative alcohol messages. However, upon examination of factor loadings, contingency messages and context messages cross-loaded onto both factors. The cross-loading for contingency messages is consistent with a harm reduction interpretation in which parents subtly approve of alcohol use (i.e., permissive messages) with the goal of ensuring the child is safe if or when he/she drinks (i.e., through negative messages). The cross-loading for context messages is less clearly interpretable and this code was also less clearly defined and consistently applied in the coding process. Both items were dropped and the EFA was re-estimated. Examination of eigenvalues indicated a 2-factor solution fit the data best with permissive messages and rules about drinking factoring together (rules was reversed) and consequence messages, peer pressure messages, and parent/family disapproval factoring together (see table 8). For subsequent analyses, three scales were examined: 'permissiveness' which includes a mean of permissive messages and rules about drinking messages (reversed), 'negative alcohol messages' which includes a mean of consequence messages, peer pressure messages, and parent/family disapproval messages, and the single item scale 'contingency messages'. (Context messages will not be further explored due to concerns with the definition and execution of the code.)

Caregiver and Adolescent Process. Maximum likelihood EFAs with categorical indicators and quartimin rotation were run separately in M*Plus* version 6 (Muthén & Muthén, 2010) to explore the factor structure of caregiver process codes and adolescent process codes. Exaggerated emotional response and exaggerated statements were dropped due to concern that constructs were not well captured with the coding system. Eigenvalues suggested that a 4-factor solution fit the data best for both adolescents and caregivers. However, examination of factor loadings showed cross loadings and single item factors throughout each solution. Use of an empirically driven data-reduction approach resulted in unstable estimates and model misspecification. Therefore, a theoretically driven approach was used to explore a priori hypotheses regarding the structure of the data. Two separate EFAs were estimated for caregivers and two EFAs estimated for adolescents for a total of four analyses. Items hypothesized to be 'encouraging' were included within one EFA for each dyad member and items hypothesized to be 'discouraging' were included within a separate EFA for each dyad member.

For caregivers, an EFA of encouraging items (i.e., engaging questions, scenarios, connection, humor, self-disclosure, and other-disclosure) suggested a two-factor solution fit the data best. However, caregiver's use of humor did not load onto either factor. A final EFA, dropping humor, was re-estimated and similarly identified a 2-factor solution with one factor indicating engagement within the conversation and a second factor indicating the use of disclosure within the conversation (see table 8). For subsequent analyses, three scales were examined: 'engagement' which includes a mean of the use of engaging questions, scenarios, and displays of connection, 'disclosure' which includes a mean of the caregiver's use of self-disclosure and other-disclosure, and a single item scale 'humor'.

Next, items hypothesized to discourage communication (i.e., conversational dominance, disclosure questions, discomfort, avoidance, and hostility) were examined. Discomfort was dropped from the EFA because of zero cells in the bivariate distribution with hostility, and the

conceptual similarity to avoidance. An EFA of discouraging process items revealed a one-factor solution in which disclosure questions were not correlated with conversational dominance, avoidance, and hostility. Disclosure questions were dropped and a final one-factor solution was identified (see table 8). For subsequent analyses, three scales were examined: 'discouraging' which includes a mean of conversational dominance, avoidance, and hostility, and single item scales of 'disclosure questions' and 'discomfort'.

For the adolescent EFA of encouraging communication processes, two items with highly skewed distributions (use of scenarios and the conceptually similar code of engaging questions) were combined by obtaining the max score across the two items. The resulting solution of the five items (engaging questions/scenarios, connection, humor, self-disclosure, and other-disclosure) identified a single factor solution with all items significantly loading except engaging questions/scenarios which factored alone on a second factor[1]. A final EFA was then estimated dropping the combined engaging questions/scenarios item and provided a clean factor solution with all items loading significantly (see table 8). For subsequent analyses, two scales were examined: 'engagement' which includes a mean composite of connection, humor, self-disclosure, and other-disclosure, and 'questions' which includes a max score of engaging questions and scenarios.

Next, items hypothesized to discourage communication (i.e., conversational dominance, disclosure questions, discomfort, avoidance, and hostility) were examined. Hostility was dropped due to extremely poor distribution. Results identified a single factor solution upon which discomfort and avoidance significantly loaded but conversational dominance and disclosure questions did not. For subsequent analyses, three scales were examined: 'disengaged' which includes a mean of discomfort and avoidance, and single item scales 'conversational dominance' and 'disclosure questions'.

[1]An EFA estimated with engaging questions and scenarios separately within the model indicated a similar solution in which all other items factored with one another and scenarios and engaging questions factored separately.

In sum, subsequent analyses will include three caregiver content scales ('permissiveness', 'negative alcohol messages' and 'contingency messages'), two adolescent content scales ('positivity towards alcohol' and 'negativity towards alcohol'), six caregiver process scales ('engagement', 'disclosure', 'discouraging', 'disclosure questions', 'discomfort', and 'humor'), and five adolescent process scales ('engagement', 'questions', 'disengaged', 'conversational dominance', and 'disclosure questions'). Scale descriptives for each process and content factor are displayed in table 8. T-tests were estimated to test differences in the use of content and conversational processes by demographic group (adolescent gender, adolescent race/ethnicity, parent education, one-parent households). After adjusting for alpha inflation ($p<0.011$ for caregivers and $p<0.014$ for adolescents), content and process scales were not significantly different across members of demographic groups.

Aims 3 and 4: Convergent and Divergent Validity

Convergent and divergent validity of the alcohol-specific communication measure was tested with a series of OLS regression analyses, estimated separately for caregivers and adolescents, in which observer-rated content and process scales were regressed on convergent and divergent validity measures. Specifically, for each observer-rated content and process scale, relevant measures of convergent validity (ranging from 1 to 5 hypothesized measures) were each entered in separate models. A second set of OLS regression analyses included relevant measures of divergent validity (ranging from 1 to 4 hypothesized measures). Posited associations are reflected in table 9. Conservative alphas were used to control for alpha inflation due to the number of convergent regression analyses ($p<0.005$ for 22 caregiver convergent analyses estimated; $p< 0.006$ for 18 adolescent convergent analyses estimated) and divergent regression analyses ($p<0.005$ for 22 caregiver divergent analyses estimated; $p<0.006$ for 18 adolescent divergent analyses estimated). To determine whether observer ratings were more strongly associated with measures of convergent validity than measures of divergent validity, Steiger's method (1980) was used to compare the strongest measure of convergent validity to

the strongest measure of divergent validity for each content and process scale examined (see table 9). Dependent correlations were tested using Lee and Preacher's (2013) online calculator.

Caregiver Scales. Twenty-two OLS regression models assessed convergent validity of observer-rated content and process of communication (at the scale level; see table 9). After correcting for alpha inflation, self-reported use of alcohol-specific content and process during the current study was significantly associated with observer-ratings across three content scales, namely permissiveness (β=0.32, p=0.0002), negative alcohol messages (β=0.38, p<0.0001), and contingency messages (β=0.55, p<0.0001), and two process scales, namely disclosure (β=0.42, p<0.0001) and humor (β=0.35, p<0.0001). No other measures of convergent validity were significantly associated with observer-rated process of communication after adjusting for alpha inflation. Twenty-two additional OLS regression models assessed divergent validity of observer-rated caregiver content and process of communication (at the scale level; see table 9). After accounting for alpha inflation, no significant associations were found. Four out of nine tests of dependent correlations were found to be significant suggesting that convergent associations with observer ratings were stronger than divergent associations (humor: z=2.11, p=0.03; disclosure: z=2.53, p=0.01; permissiveness: z=2.41, p=0.02; contingency messages: z=3.11, p=0.002). Thus, observational measures of parents' alcohol-specific communication showed acceptable levels of validity for many of the subscales.

Adolescent Scales. Eighteen OLS regression models assessed convergent validity of observer-rated adolescent content and process of communication (at the scale level; see table 10). Unexpectedly, after adjusting for alpha inflation, observer ratings of adolescent content and process of communication were not significantly associated with any measure of convergent validity. Of eighteen additional regression models assessing divergent validity of observer-rated adolescent content and process of communication (at the scale level; see table 10), only one significant association was discovered. Observer rated use of questions was negatively

associated with self-reported neuroticism (β= -0.28, p=0.0026). Zero tests of dependent correlations (out of 7) were found to be significant suggesting that convergent associations with observer ratings were not significantly stronger than divergent associations. Thus, observational measures of adolescents' alcohol-specific communication showed low levels of convergent validity though divergent validity patterns were mostly as anticipated.

Item level Convergent Validity. As an additional exploratory analysis of convergent validity, observer-rated caregiver content and process codes *(at the item level)* were regressed on related *items* from the Targeted Parent-Child Communication about Alcohol Scale (which assesses the content and process of previous alcohol-specific discussions). This was a particularly interesting comparison because the content of self-report and observational measures were highly similar. Twenty OLS regressions were estimated (adjusted alpha of $p<0.005$). (Adolescents and caregivers were both asked to report on the *caregiver's* communication with 10 regressions exploring the caregiver's self-report and 10 regressions exploring the adolescent's self-report). After correcting for alpha inflation, three significant associations were found, suggesting convergent validity at the item level. Specifically, caregiver ratings of the extent to which they warned their adolescent about the dangers of drinking in the past were significantly associated with observer-rated use of consequence messages during the current study (β=0.40, p=0.003). Moreover, a significant positive association was found between caregiver ratings of the extent to which they had previously told their adolescent they would be disappointed if the adolescent used alcohol and observer ratings of parental/family disapproval messages (β=0.47, p=0.0003). Lastly, observer rated other-disclosure was significantly associated with caregiver reported past discussions about people who drink or have been drunk (β=0.34, p=0.004). *Adolescent* reports of *caregiver* content and process during previous alcohol-specific conversations did not significantly predict observer ratings of caregiver communication during the current study.

Aim 5: Predictive Validity

Regression analyses were conducted in which control variables (i.e., adolescent gender, age, and race, parent's educational attainment, family household income, general parenting scales, and parental alcohol use) were entered and trimmed iteratively to retain power in the covariate model. Next, content and process scales (centered to create interaction terms), as well as interactions of content and process scales, were added. Non-significant interactions were trimmed iteratively, resulting in a final regression model. For each outcome, one regression analysis included caregiver report of parenting behaviors as control variables and caregiver content and process scales as predictors, and a second regression analysis included the adolescent's report of parenting behaviors and adolescent content and process. Outcomes of interest in OLS regression models included lifetime alcohol use (i.e., sipping behavior), intentions to drink, negative and positive alcohol expectancies, and perceptions of caregiver disapproval, resulting in 10 regression models (5 models that included caregiver report and 5 models that include adolescent report). Logistic regression was used to predict lifetime alcohol use due to the binary nature of the outcome variable (i.e., sipped during lifetime vs. not). A conservative alpha cut-off ($p<0.01$) was used to control for alpha-inflation due to the ten predictive validity regression analyses conducted.

Caregiver Report Models. Four significant effects were found, including two main effects and two interactions (see table 11). First, the use of humor by caregivers was associated with lower negative alcohol expectancies (B= -0.59, p=0.0007). Second, caregiver disclosure moderated the relation between contingency messages and intentions to drink alcohol (B= -0.14, p=0.004). Plotting of this interaction showed that greater contingency messages was significantly associated with greater intentions to drink alcohol at low levels of caregiver disclosure (i.e., below ratings of -0.70 where the simple slope equals 0.07, p=0.05) and significantly associated with lower intentions to drink when caregivers disclosed more during the

conversation (i.e., above ratings of 0.55 where the simple slope equals -0.10, p=0.05; see figure 1; Preacher, Curran, & Bauer, 2006).

Third, caregiver disclosure was significantly associated with lower perceptions of caregiver disapproval (B= -0.34, p=0.0003). Fourth, the effect of contingency messages on perceptions of caregiver disapproval depended upon caregiver engagement during the conversation (B= -0.40, p=0.003) such that contingency messages were negatively related to perceived disapproval when caregivers were more engaged (i.e., above ratings of 0.95 where the simple slope equals -0.31, p=0.05) and positively related when caregivers were less engaged (i.e., below ratings of -0.22 where the simple slope equals 0.16, p=0.05; see figure 2; Preacher et al., 2006). Caregiver content and process of communication did not significantly predict lifetime sipping behavior or positive alcohol expectancies.

Adolescent Report Models. Four terms tested predicted outcomes, including one main effect and three interactions (see table 12). The more adolescents asked questions during the alcohol-specific conversation, the greater their self-reported intentions to drink (B= 0.11, p=0.007). Moreover, the relation between positivity towards alcohol and intentions to drink was moderated by adolescents' conversational dominance (B=0.20, p=0.007; see figure 3). Specifically, positivity towards alcohol use was significantly associated with greater intentions to drink for adolescents who displayed more conversational dominance (i.e., ratings above 0.77 where the simple slope equals 0.12, p=0.05; Preacher et al., 2006). At lower levels of conversational dominance, no significant association was found between positivity towards alcohol and intentions to drink (lower bound of the region of significance far exceeded the range of values in the current study). Finally, the effect of negativity towards alcohol on perceived caregiver disapproval was significantly moderated by the use of questions (B= 0.26, p=0.006; see figure 4) and engagement (B= 0.35, p=0.007; see figure 5). Probing of simple slopes found a significantly positive association between negativity towards alcohol and perceptions of caregiver disapproval when adolescents asked more questions (i.e., ratings above 0.04 where

the simple slope equals 0.15, p=0.05; Preacher et al., 2006) and displayed more engagement (i.e., ratings above 0.02 where the simple slope equals 0.14, p=0.05; Preacher et al., 2006). Non-significant associations were found at lower levels of questions and engagement (lower bound of the region of significance far exceeded the range of values in the current study). Unexpectedly, adolescent content and process of communication did not significantly predict lifetime sipping behavior or alcohol expectancies.

CHAPTER 4: DISCUSSION

The current study tested a novel, theoretical model and associated observational measure of alcohol-specific communication and is the first to examine a broad range of content and communication strategies that caregivers and adolescents use when discussing alcohol. Overall, findings provided evidence of adequate psychometrics, including adequate to high reliability, preliminary evidence of convergent and divergent validity of caregiver communication, and evidence of divergent validity of adolescent communication. Although superordinate constructs were identified across caregiver content, caregiver process, and adolescent process indicators, more complexity was discovered in the structure of alcohol-specific communication than initially hypothesized. Lastly, several communication processes predicted adolescent alcohol use cognitions. Interestingly, content alone did not predict drinking outcomes but rather, the effect of communication content depended upon the way in which messages were delivered.

What Occurs During Alcohol-Specific Conversations?

Alcohol-specific conversations were examined using seven caregiver and two adolescent content codes and thirteen caregiver and eleven adolescent process codes to capture what happens in these interactions. As found in previous literature, caregivers used a variety of messages when discussing alcohol with their adolescents, with some messages being more common than others. Caregivers most frequently discussed the negative effects that can occur when drinking (i.e., consequence messages). Caregivers also commonly discussed their disapproval of adolescent alcohol use and how to deal with peer pressure to use alcohol. These findings are consistent with previous literature which found that parents most often report having discussed consequences with their adolescents followed by the use of peer pressure messages (disapproval was not assessed in Ennett et al., 2001). Also consistent with previous studies

(Jackson et al., 1999, Reimuller et al., 2010), parents used permissive messages to a lesser extent than other messages that aim to deter use (e.g., rule-based messages).

Unlike previous studies, the current study differentiated caregiver disapproval from rules about alcohol. Although often a subtle distinction, the use of clear limits and expectations appeared to differ from discussions about disapproval or disappointment about adolescent drinking and caregivers were more often rated as expressing disapproval than as discussing rules about drinking. This is an important distinction because caregivers may intend to set clear rules about drinking but instead express vague disapproval without a clear, explicit statement of rules. As supported by research of behavioral management approaches to parenting of other forms of conduct problems, the clear explication of rules is expected to be a better deterrent of subsequent alcohol use than are more vague statements of disapproval (Wierson & Forehand, 1994). On the other hand, caregivers may simply assume that adolescent internalization of disapproval messages will result in reduced alcohol use risk (i.e., “my caregiver disapproves of drinking, therefore I shouldn’t drink”). Neither rules about drinking nor caregiver/family disapproval was significantly correlated with adolescent alcohol use outcomes in the current study. However, future studies should consider differentiating rule-based messages and disapproval messages in order to further examine the impact of each message on adolescent alcohol use to better guide caregivers on what to say to their adolescent about alcohol.

Context messages, which have not been examined in previous literature, were used frequently by caregivers in the current sample. However, this content code may require further refinement in future adaptations of the observational coding system. This construct captured caregiver messages regarding alcohol in the adolescent’s environment (e.g., teenage parties that have alcohol present, being at a friend’s house where parents drink alcohol, or being around friends that drink). However, caregiver discussion of contexts in which adolescents may be exposed to alcohol typically occurred with the purpose of conveying another message such as rules about drinking, parent/family disapproval, or peer pressure. Thus, context messages

were not fully differentiated from other caregiver content codes within the current coding manual and appeared to set the stage for other messages being delivered by caregivers.

These findings pertain to the messages that *caregivers* use in alcohol-specific conversations. No prior studies have examined what *adolescents* say in these conversations. However, communication is dyadic in nature and caregiver communication is undoubtedly impacted by the way in which an adolescent discusses alcohol. To capture this dynamic, adolescent content was coded as the extent to which drinking was discussed in a positive or negative manner. Not surprisingly, middle school-aged adolescents tended to discuss alcohol negatively during conversations with their caregivers. This mirrors widely replicated findings that positive expectancies about alcohol use increases with adolescent age (Christiansen, Goldman, & Brown, 1985; Schell, Martino, Ellickson, Collins, & McCaffrey, 2005). If alcohol-specific conversation patterns mirror those of adolescent's expectancies, adolescents are likely to discuss alcohol more positively as they mature through high school and into young adulthood.

A unique contribution of the current study was the assessment of not just the messages that caregivers and adolescents convey in alcohol-specific communications but also the way in which they convey them. Examining the process of communication during an alcohol-related discussion is posited to be a critical direction for this line of research. The way in which a caregiver delivers alcohol-related messages is believed to impact the effect of the message on adolescent outcomes. Furthermore, the way in which adolescents interact with their caregiver during a conversation in combination with what they say may better predict adolescent alcohol use outcomes than content alone. Many communication processes were examined in the current study as it is currently unknown how caregivers and adolescents interact during alcohol-related conversations and significant variability may exist across caregivers and adolescents in how they communicate about alcohol. Four interesting trends emerged in the processes observed in these conversations.

First, caregivers and adolescents were rated as highly connected to one another with low levels of hostility displayed during the alcohol-specific discussion. Findings are consistent with previous literature on the general quality of parent-teen interactions which suggests that parents and adolescents maintain good relationship quality even in face of increased "storm and stress" during adolescence (e.g., see Arnett, 1999 for a review). This is also not unexpected given the study's convenience sample of individuals willing to be videotaped interacting with one another around alcohol. Second, somewhat unexpected is the extent to which caregivers and adolescents discussed others' alcohol use. Available literature to date has begun to examine caregiver self-disclosure, but the current study suggests caregivers and adolescents may more frequently discuss others' alcohol use, including individuals they know (e.g., an uncle, friend) as well as celebrities (e.g., Lindsay Lohan). This may be an effective way of communicating about alcohol as the external nature of the discussion may be less threatening to discuss while simultaneously providing the opportunity for a rich discussion. Third, caregivers were observed frequently asking engaging and disclosure questions and posing scenarios, which suggests that caregivers in this sample attempted to engage their adolescents, rather than lecture at their adolescents.

A fourth trend concerns what was unlikely to happen in these conversations. Adolescents were never rated as using exaggerated emotional responses or exaggerated statements/scare tactics and limited variability in caregiver use of these constructs was found. This limited variability indicates either poor construct definition/capture or a low base rate behavior that would require a large sample size to obtain greater variability in a middle school aged population. Exaggerated emotional expression may increase with adolescent age such that high-school aged adolescents may demonstrate greater emotionality as hormones change (Susman, Dorn, & Chrousos, 1991), and caregivers may react more strongly as adolescent alcohol use and risky behavior increases. For this reason, it would be informative to further

study the extent to which this process is present in samples of parents and older adolescents or in samples in which adolescents are already experiencing alcohol-related problems.

Consistent with hypotheses, content and process indicators (for both caregivers and adolescents) were not significantly different across members of demographic groups with one exception. Caregivers who completed college or graduate/professional school were less likely to use parent/family disapproval messages than those with less education. This is similar to a previous study which found that more educated parents were less likely to use rule-based messages (Ennett et al., 2001). The absence of differences across groups suggests that caregivers do not provide different messages or interact in different ways with males and females or in ethnic minority and Caucasian families and that messages do not depend upon the number of parents in the home or parental education. However, these findings should be interpreted within the context of the current study's sample characteristics.

Another novel contribution of the current study was the examination of whether caregivers commonly deliver particular messages with specific communication strategies. Correlation analysis showed that most caregiver messages about alcohol were not delivered with a given communication strategy, suggesting that approaches to communicating messages is varied. However, caregivers who used permissive messages were more likely to use self-disclosure during the conversation. This highlights the importance of examining the content of a given self-disclosure. If caregivers discuss their own alcohol use while simultaneously delivering permissive message, caregivers may be providing reinforcement and support for engaging in alcohol use, similar to the concept of deviancy training (Dishion, Spracklen, Andrews, & Patterson, 1996).

Understanding how adolescents deliver particular content is also integral to understanding the impact of these conversations given their role in the dyadic interaction of alcohol-specific communication. Adolescents who were dominant during the conversation were rated as more positive about alcohol. In other words, adolescents who were willing to discuss

alcohol positively in front of their caregiver were more confident taking charge of the conversation about alcohol. On the other hand, adolescents who discussed alcohol negatively were rated as displaying greater connection towards their caregiver.

In sum, observations of alcohol-specific communication in the current study demonstrated similar patterns of caregiver messages to those found in previous studies. Examination of adolescent content revealed that middle-school aged adolescents frequently discuss alcohol in a negative light, consistent with hypotheses and extant literature. However, a primary goal of the current study was to explore the way in which caregiver messages and adolescent content are delivered. Caregivers and adolescents were rated as highly connected with one another and often discussed others' alcohol use (e.g., an uncle, neighbor, celebrity). Caregivers also tended to engage adolescents in the conversation through the use of questions and scenarios rather than providing a unidirectional lecture. Lastly, content and process of communication did not significantly differ across demographic groups and were not frequently used together in particular combinations suggesting that alcohol-specific communication varies across individuals.

The Structure of Content and Process of Communication

The current study examined construct validity of the observational coding system including caregiver content, caregiver process, and adolescent process components. It was posited that caregiver content would consist of messages that encourage use and those that discourage use. Similarly, it was posited that caregiver and adolescent communication processes could be characterized as strategies that encourage or discourage communication. Overall, the structure of caregiver-adolescent communication in the current study was more complex than the "good" and "bad" factor structures hypothesized.

For caregiver content codes, it was hypothesized that parental messages that encourage or do not discourage alcohol use (permissive messages and contingency messages) would factor together and separately from those that actively discourage use (rule-based

messages, consequence messages, peer pressure messages, and parent/family disapproval messages). Indeed two factors emerged in analysis, reflecting negative alcohol messages and permissiveness. As expected, parents in this sample tended to discourage alcohol use through several types of messages that were used together (i.e., consequences, peer pressure, and disapproval messages). However, rules about drinking and permissive messages comprised a second superordinate factor (negatively associated with one another), suggesting a continuum in which alcohol use is either permitted or actively forbidden. The association of contingency messages with both factors is consistent with an overall harm reduction message in which parents subtly approve of alcohol use (i.e., permissiveness) with the goal of ensuring the child is safe if or when he/she drinks (i.e., through negative alcohol messages).

Findings are consistent with previous literature that has found rule-based messages and consequence messages to be part of separate factors (Ennett et al., 2001), and permissive messages and negative alcohol messages to factor separately (Reimuller et al., 2010). Although one prior study found that rule-based messages were more associated with consequences than permissive messages, rule-based messages were narrowly defined and included rules that are related to health consequences (e.g., driving while drinking; Reimuller et al., 2010). Moreover, contingency messages have been shown to be distinct from permissive messages within a confirmatory factor analysis model (Freire, 2008).

Examination of the structure of caregiver process revealed much greater complexity than hypothesized. First, caregivers demonstrated *engagement* by displaying connection, asking questions, and posing scenarios throughout the conversation. Second, *disclosure* techniques were a separate factor that included the use of self-disclosure as well as disclosure of others' alcohol use. Although engagement and disclosure were posited to be part of the same construct, they may indeed be used quite independently (and thus form different factors) as disclosure may be delivered differently depending upon the content of communication and can occur in a variety of contexts including engaging/warm communication or matter-of-fact

communication. Third, *disengaging* communication was characterized by hostility, conversational dominance, and avoidance as expected. Finally, some indicators of process were independent of these three conversational styles. Disclosure questions (i.e., asking questions to elicit particular information), discomfort, and humor were not found to be characteristic of any superordinate constructs, but rather unique communication processes that should be investigated separately. Overall, it appears that caregivers use a variety of styles to convey alcohol-specific messages and that these styles are more highly differentiated and thus may play a more complex function than simply engaging or disengaging adolescents in the conversation.

Similarly, adolescent communication process indicators showed evidence of three superordinate constructs and two unique constructs. First, adolescent *engagement* included displays of connection, use of humor, disclosure about one's own drinking, and disclosure about other's drinking. This suggests that for adolescents, unlike caregivers, disclosure may be an indicator of warm interactions. Second, adolescent *questions* during alcohol-related conversations was found to be a separate construct from engagement. This may suggest that asking questions is less indicative of relational indicators of communication. Third, adolescents were observed to be *disengaged* when they displayed discomfort and avoidance during the conversation. Conversational dominance and disclosure questions (i.e., asking questions to elicit particular information) were found to be unique constructs as they were not associated with a disengaged communication style. Conversational dominance by adolescents may actually be indicative of comfort in talking about alcohol rather than an indicator of disengaged communication.

In sum, alcohol-specific communication was found to be more complex than the "good" and "bad" factors initially hypothesized, particularly when communication processes were examined. Results suggested that caregivers use a variety of styles to convey a variety of

alcohol-specific messages. Differentiated messages and styles may point to further nuances in the way in which alcohol-specific communication may impact adolescent alcohol use.

Psychometric Properties of the Observational Coding System

Psychometric properties of the observational coding system were examined, including reliability and convergent and divergent validities. As expected, reliability was found to be adequate to high (i.e., intraclass correlations, Shrout & Fleiss, 1979; percent agreement, Tinsley & Weiss, 1975) for both caregivers and adolescents. However, support for validity was more variable. Overall, validity of caregiver content and communication processes, but not adolescent content and process, was acceptable compared to other observational coding systems.

The current study provided preliminary evidence of convergent and divergent validity for caregiver communication. Our most direct test of validity, caregiver-reported communication during these conversations was associated with observer rated content and process of communication across five of nine scales (i.e., permissiveness, negative alcohol messages, contingency messages, disclosure, and humor). Furthermore, caregivers' reports regarding previous alcohol-specific communication content and process (on the Targeted Parent-Child Communication about Alcohol scale) was associated with observer ratings on the observational task across three items, namely consequence messages, disapproval messages, and other-disclosure. Taken together, this suggests that observer ratings of alcohol-specific communication are consistent with how caregivers perceive their communication within a given conversation and in previous conversations. Divergent validity of alcohol-specific communication was also established as observer ratings of caregiver content and process were not associated with social desirability or personality characteristics.

Although caregiver reports of *specific* messages and communication strategies previously used when discussing alcohol (i.e., Targeted Parent-Child Communication about Alcohol scale) were associated with observer ratings during the current study, self-reported *quality of communication* during previous alcohol-specific conversations was not. Self-reported

quality of communication assesses global perceptions of how such interactions go whereas the observational coding system assesses constructs in a more concrete, objective way. Self-perceptions of behavior and actual behavior often do not match, highlighting one advantage of using observational methodology to capture behavior. Furthermore, the quality of communication scale assesses the dyadic interaction (e.g., "my child and I are interested in each other's opinion on drinking") rather than an individual's communication as assessed by observer ratings of communication. These nuanced differences in methodology may have impacted findings in the current study, and may point to the benefits of observational methodology in assessing alcohol-specific communication.

Convergent validity of the process of communication in these alcohol-specific conversations, as examined in correlations with the general pattern of parent-child communication in the dyad, was not well supported. Although unexpected, these findings are not entirely counterintuitive and are supported by the parenting literature which differentiates specific parenting from general parenting (McKee et al., 2013). The way in which caregivers and adolescents communicate about alcohol may be different than the way in which they communicate about other topics such as activities from their day, stressors, or conflict topics (e.g., curfew). Similarly, broad feelings of affection towards the other dyad member may not be displayed when discussing a serious topic such as alcohol, and comparing *feelings* of affection to *displays* of connection may not be an appropriate comparison. Moreover, caregivers who generally tend to disclose information about themselves to their adolescents may refrain from discussing their experience with alcohol due to concerns about the disclosure's impact on adolescent drinking behavior. Thus, caregivers may use different parenting styles and strategies in different contexts, such that their approach to parenting around alcohol may be significantly different than their typical parenting style.

Although modest evidence of validity was discovered for caregiver communication, limited evidence was found for adolescent alcohol-specific communication. Divergent validity

was established as only one significant association was discovered between alcohol-specific communication indicators and social desirability or personality characteristics (i.e., adolescents who asked more questions reported less neuroticism). However, no evidence of convergent validity was discovered. Moreover, convergent associations were not found to be stronger than divergent associations, suggesting limited validity of the observational measure for adolescents.

Similar to methodological and theoretical explanations for caregiver communication, adolescents may have limited insight into their behavior and may also interact with their caregiver differently during alcohol-related discussions than during day-to-day interactions. Adolescent perceptions of what they say during alcohol-related conversations and how they say it may not be an accurate representation of actual behavior, resulting in lower than expected correlations between self-reported and observer-rated alcohol-specific communication. Thus, across validity measures of alcohol-specific communication, method variance may be present as adolescent self-reports are compared to observational methodology. Secondly, adolescents may alter their communication patterns and displays of relationship quality when discussing sensitive topics, such as alcohol use, with caregivers. For example, adolescents who typically self-disclose about other content areas (e.g., conflicts with friends, interests/hobbies) may not wish to self-disclose about alcohol use for fear of the caregiver's reaction or worries about disappointing their caregiver.

In sum, findings provided evidence of adequate to high reliability, preliminary evidence of convergent and divergent validity of caregiver communication, and evidence of divergent validity of adolescent communication. The use of observational methodology to assess alcohol-specific communication provides a concrete, objective measure that may be especially beneficial in characterizing adolescent communication patterns. In addition, interaction styles used when engaging in specific parenting contexts may be more unique from general parenting styles or parenting behaviors than originally posited.

How do Content and Process of Communication Predict Outcomes of Interest?

Alcohol-specific content has been associated with adolescent alcohol use in the extant literature. Interestingly, the current study found that content alone did not predict adolescent alcohol use outcomes. In fact, the impact of content on alcohol use outcomes depended upon the way in which such communication occurred. Moreover, the way in which dyad members communicated when discussing alcohol was directly associated with adolescent alcohol use outcomes above and beyond the impact of alcohol-specific content. This supports the notion proposed in the current study that the process of communication is a critical component of alcohol-specific communication. Four caregiver and four adolescent effects of alcohol-specific communication were found to predict alcohol use outcomes in the current study.

First, as expected, caregiver disclosure was associated with lower perceptions of caregiver disapproval about alcohol use. This is consistent with a recent study that found parental self-disclosure to be associated with low anti-substance use beliefs and suggested that parents may be unintentionally reinforcing use by providing information that conveys alcohol use as normative (Kam & Middleton, 2013). Although preliminary, parents should be cautioned against disclosing their alcohol use to their middle-school aged adolescents rather than encouraged to do so (Hazelden, 2012; Partnership for a Drug Free America, 2012). Caregivers should be informed that self-disclosure may be harmful as it reduces perceptions of disapproval, an early risk factor for alcohol use.

Second, counter to prediction, caregiver humor predicted reduced negative alcohol expectancies. Previous research has indicated that humor may reduce tension, thereby facilitating communication about sensitive topics (e.g., sexuality, Afifi et al., 2008). Although humor may in fact encourage communication, reducing tension during an alcohol-related discussion may inadvertently indicate that the topic should be taken lightly or that caregiver statements about alcohol use are not to be taken seriously. Thus, caregiver humor may dilute

messages about alcohol, and result in reduced development of or internalization of negative beliefs about alcohol.

Third, contingency messages predicted lower perceptions of disapproval when caregivers were engaged in the conversation (i.e., asking questions, posing scenarios, and displaying connection). As contingencies provide a mix of approval and disapproval, caregiver questions and warmth may indicate more trust in the adolescent's choices and therefore, less perceived disapproval by the caregiver. Fourth, contingency messages predicted lower intentions to drink when parents used more disclosure. This finding is somewhat counterintuitive as intentions to drink were posited to increase with contingency messages and disclosure. This further highlights the need to examine the content of *specific* disclosures in future studies to better explore the effect that discussing one's own and others' alcohol use has on adolescent drinking outcomes. However, it is possible that caregiver disclosure serves a protective function when parents use mixed messages (i.e., contingency messages) such that adolescents learn from others' mistakes (Miller-Day & Dodd, 2004; Nwoga, 2000; Pluhar & Kuriloff, 2004), deterring interest in alcohol use. Thus, across these two findings, the impact of contingency messages on adolescent drinking cognitions depended upon the way in which parents delivered the message.

Adolescent alcohol-specific communication also predicted alcohol use cognitions. First, adolescents who asked more questions reported greater intentions to drink. Although it was hypothesized that more questions would predict better alcohol use outcomes (i.e., reduced intentions to drink) due to a demonstration of involvement in the conversation, this finding suggests that adolescents may use questions to obtain more information on their caregiver's thoughts and feelings, which then impact intentions to drink in the future.

Second and third, adolescents who discussed alcohol negatively reported greater caregiver disapproval when they were more engaged and asked more questions. Adolescents who asked more questions and were more engaged may have elicited more information from

caregivers that clearly indicate caregiver disapproval. Fourth, adolescents who discuss alcohol positively reported higher intentions to drink if they were more dominant during the conversation. This may suggest that adolescents who have positive beliefs about alcohol are more willing to clearly state these views and to take the lead during discussions about alcohol, further solidifying their intentions to drink.

In sum, alcohol-specific communication processes were found to predict adolescent cognitions about alcohol, and the effect of alcohol-specific messages on drinking outcomes depended upon the way in which messages were delivered. This highlights the importance of considering the process of communication during alcohol-related discussions, in addition to the frequently investigated content of communication. However, it should be noted that fewer constructs were found to significantly predict alcohol use outcomes than expected. Many constructs showed trends towards significance, suggesting that with a larger sample size, and therefore greater power, other constructs may be found to be beneficial in predicting teen drinking outcomes. Moreover, the overall amount of variance explained by each model suggests that together, the content and process of communication explains a substantial proportion of the variability in adolescent alcohol use outcomes. Evidence from the current study suggests that observational methodology, and in particular a comprehensive observational coding system such as the one developed here, may be beneficial in predicting adolescent alcohol use. Although outside the scope of the current study (due to power constraints), future studies should examine the added benefit of observer rated communication beyond caregiver and adolescent self-reported communication.

Strengths, Limitations, and Future Directions

The current study expanded the range of parental messages currently being explored in the literature, accounting for the role of adolescents in the conversation, and highlighted the importance of communication processes in this field of research. Moreover, the interaction of what parents say and how they say it is a critical research question that should be further

investigated in future studies. Use of observational methodology allowed for the direct viewing of what caregivers and adolescents say when discussing alcohol and how they say it, which resulted in development and refinement of alcohol-specific communication constructs. Furthermore, observational methodology may provide for a more objective measure of alcohol-specific communication, particularly when investigating adolescent alcohol-specific communication. Another strength of the current study was the inclusion of adolescent content and communication strategies as communication is dyadic and transactional in nature with caregiver content and process undoubtedly influenced by adolescent content and process.

Although the current study contributes to this small but growing literature, findings should be interpreted within the following limitations. First, the current study is cross-sectional. Throughout adolescence, both alcohol-specific communication and alcohol use outcomes are posited to change over time. This makes interpretation of predictive validity analyses difficult, as it is not possible to test whether alcohol-specific communication is in response to alcohol use already occurring or if alcohol cognitions were already present before the study assessment. Longitudinal studies are necessary to test the prospective influence of alcohol-specific communication on alcohol use cognitions and behavior as well as the transactional relation between alcohol-specific communication and adolescent alcohol use outcomes. It is posited that not only does caregiver-adolescent communication about alcohol influence future alcohol use (which tends to be the question of interest for most researchers), but also that adolescent drinking behavior and cognitions impacts alcohol-specific communication. The way in which this mechanism unfolds over time is a critical direction for future research.

Second, only one assessment was completed, providing only a snapshot of caregiver-adolescent communication about alcohol. Furthermore, the snapshot occurred within a laboratory setting rather than in a natural environment, which may reduce the accuracy of the assessment (Gardner, 2000). Although findings showed high correlations between observer ratings and self-reports of previous alcohol-specific communication by caregivers as well as

high ratings by caregivers and adolescents of the similarity of the observational task to typical communication about alcohol, future studies should consider obtaining multiple communication samples and other methodology to capture conversations within the natural environment.

Third, social desirability and demand characteristics may have resulted in selection effects. The convenience sample of subjects willing to participate in the current study likely limited the range of content and communication strategies used during the observational tasks. For example, individuals that typically display high levels of hostility during alcohol-specific communication or caregivers that use highly permissive messages were presumably less likely to participate in this study. Future studies should obtain larger samples and recruit individuals from high-risk populations in order to increase the range and variance across content and process indicators.

Lastly, observer ratings of alcohol-specific communication were compared to self-report measures for all convergent validity analyses, possibly confounding method effects and trait effects. Use of observational methodology was a strength of the current study as it provides an objective measure of dyadic interactions, reduces the potential for reporter bias, and defines a construct exactly the same way across participants (Aspland & Gardner, 2003). However, without observational measures of other constructs investigated, method variance cannot be explored. Future studies should include observer ratings of convergent validity measures, such as communication patterns outside of the context of alcohol-specific communication, in order to complete multi-method, multi-trait validity analyses.

Although results provided preliminary evidence of the reliability and validity of the observational coding system developed for the current study, additional development and adaptation of the coding manual is warranted. First, context messages should be dropped from future versions of the coding system. Although caregivers do discuss environments in which the adolescent is exposed to alcohol, there is no clear message that caregivers instill when doing so. Rather discussing the context in which adolescents are exposed to alcohol appears to

prepare the stage for other messages (e.g., consequences, peer pressure). Second, adolescent content may be slightly more nuanced than initially hypothesized and may continue to become more specific as adolescents age. Adolescents were observed stating their intentions (both negatively and positively; e.g., “I will not drink in the future” or “I really want to try a beer”), discussing the negative consequences of drinking or stating reasons why not to drink (e.g., “Drinking would make it harder to play football”), providing information about alcohol to demonstrate knowledge (e.g., “A shot of liquor has the same amount of alcohol as a can of beer”), and using vague, nondescript statements about alcohol (both negatively and positively). Third, all process codes should be tailored to each dyad member, similar to self-disclosure and other-disclosure codes. For example, conversational dominance should be refined for use with adolescents to differentiate true dominance (i.e., the deliberate attempt to control and dominate) from impulsive, extroverted behavior that could manifest as dominance. Often, when adolescents were observed interrupting, changing the subject, interjecting their thoughts/opinions, the intention did not appear to be dominance but rather could be interpreted as engagement within the conversation. The current coding manual appears to have captured caregiver dominance as intended, however. This additional tailoring would strengthen the observational measure of alcohol-specific communication processes.

Conclusions and Implications

The current study collected data from a diverse group of adolescents and caregivers to validate a novel, comprehensive observational coding system. Findings provide preliminary evidence of reliability, and construct, convergent, divergent, and predictive validities, although additional research is needed to further develop and adapt the observational coding manual. The current study highlighted the potential benefit of an observational coding system as a measure of alcohol-specific communication. Better measurement of alcohol-specific communication is an imperative first step in this line of research that has significant public health implications.

The current study also highlights the importance of examining a range of communication content and processes in future research. Results suggested that the way in which communication occurs predicts adolescent alcohol use outcomes beyond what is said during such conversations. Furthermore, the impact of content on outcomes depends upon how messages are delivered. Therefore, examining the process of alcohol-specific communication is a critical next step in this line of research in order to better predict youth drinking outcomes and guide caregivers regarding how to have alcohol-related discussions with their adolescents.

Preventing or delaying the onset of adolescent alcohol use would have significant public health implications. Alcohol-specific communication is one proposed mechanism through which caregivers may be able to influence adolescents' choices about alcohol use. Prevention and intervention efforts should be well informed regarding what messages are most beneficial and how parents should deliver such messages. However, significantly more research is required before such recommendations can be made with solid empirical support. Research should be two-fold. First, longitudinal studies that capture the influence of alcohol-specific communication on drinking outcomes are imperative. Second, prevention and intervention programs that encourage alcohol-specific communication should begin to isolate effects of alcohol-specific communication from other intervention components and identify particular content and processes of communication within such communication effects. Capturing specific elements of communication that are found to be associated with positive adolescent outcomes allows for clear translation into prevention targets in programs that provide behavioral strategies for caregivers.

Table 1: Specific study hypotheses

Aim 1	Hypothesis 1	The proposed measure will demonstrate adequate to high reliability, as indicated by internal consistency (ICC) and percent agreement.
Aim 2	Hypothesis 2	Content codes will consist of two underlying dimensions reflecting "Approving" and "Disapproving" content.
	Hypothesis 3	Process codes will consist of two underlying dimensions, namely those that encourage communication or an "Encouraging" factor and those that discourage communication or a "Discouraging" factor.
Aim 3	Hypothesis 4	Caregiver and adolescent self-reports of content and communication processes used throughout the interaction task will be positively associated with respective observer-ratings.
	Hypothesis 5	Self-reported alcohol-specific communication (i.e., 'quality of communication' and 'Targeted Parent-Adolescent Communication about Alcohol scale') will be associated with respective observer ratings of communication.
	Hypothesis 6	Encouraging communication processes will be positively associated with open family communication and discouraging communication processes will be positively associated with problematic family communication.
	Hypothesis 7	Self-reported relationship quality (i.e., affection and self-disclosure) will be associated with encouraging communication processes.
Aim 4	Hypothesis 8	Encouraging and discouraging communication processes will be less associated with personality characteristics and social desirability than with indicators of communication (convergent validity measures noted above).
Aim 5	Hypothesis 9	Greater approving messages and discouraging communication processes are hypothesized to predict more risky outcomes (i.e., more drinking, more intentions to use, more positive and less negative alcohol expectancies, and lower perceptions of parental disapproval) whereas greater disapproving content and encouraging communication processes are expected to be associated with less risky outcomes.
	Hypothesis 10	Interactions amongst content and process scales are hypothesized to predict adolescent alcohol use outcomes.

Table 2: Sample descriptives

	Percentages	Mean	SD	Range
CAREGIVER DESCRIPTIVES				
Caregiver Relation	94% biological parent (n=58) 2% step parent (n=1) 3% adoptive parent (n=2) 2% older sibling (n=1) (n=1 missing)	---	---	---
Caregiver Age	---	45.46	6.19	25-61
Caregiver Gender	92% female (n=58) 8% male (n=5)	---	---	---
Caregiver Education	5% Did not graduate HS (n=3) 2% High school graduate (n=1) 13% Some college or technical school (n=8) 21% college graduate (n=13) 60% Graduate or professional school (n=38)	3.30	1.07	0-4
Caregiver Race	65% Caucasian (n=41) 19% Black or African American (n=12) 14% Asian (n=9) 2% Other (n=1)	---	---	---
Caregiver Ethnicity	3% Hispanic/Latino (n=2) 97% Non-Hispanic/Latino (n=61)	---	---	---
ADOLESCENT DESCRIPTIVES				
Adolescent Age	19% 11-year-olds (n=12) 38% 12-year-olds (n=24) 32% 13-year-olds (n=20) 11% 14-year-olds (n=7)	12.35	0.92	11-14
Adolescent Gender	52% female (n=33) 48% male (n=30)	---	---	---
Adolescent Education	40% 6^{th} grade (n=25) 37% 7^{th} grade (n=23) 24% 8^{th} grade (n=15)	6.84	0.79	6-8
Adolescent Race	59% Caucasian (n=37) 22% Black or African American (n=14) 13% Asian (n=8) 6% Multiracial (n=4)	---	---	---
Adolescent Ethnicity	5% Hispanic/Latino (n=3) 95% Non-Hispanic/Latino (n=60)	---	---	---
FAMILY LEVEL DESCRIPTIVES				
Income	---	9.66	3.25	0-12
Number of children in the home (other than the participating adolescent)	30% none (n=19) 52% 1 child (n=33) 13% 2 children (n=8) 5% 3 children (n=3)	0.92	0.79	0-3
Number of adults in the home (including the respondent)	24% 1 adult (n=15) 67% 2 adults (n=42) 10% 3 adults (n=6)	1.86	0.56	1-3
Family Structure	24% live with one adult 76% live with more than one adult	---	---	---

Table 3: Descriptive information for observational coding variables

	PARENT			ADOLESCENT		
Measure	Mean	SD	Range	Mean	SD	Range
CONTENT CODES						
Permissive Messages	0.42	0.78	0-3	---	---	---
Contingency Messages	0.47	0.86	0-4	---	---	---
Rules about Drinking Messages	0.52	0.97	0-4	---	---	---
Context Messages	1.06	0.90	0-3	---	---	---
Consequence Messages	1.77	1.12	0-4	---	---	---
Peer Pressure Messages	0.98	1.00	0-4	---	---	---
Parent/Family Disapproval Messages	1.03	1.06	0-4	---	---	---
Positivity Towards Alcohol	---	---	---	0.26	0.54	0-2
Negativity Towards Alcohol	---	---	---	2.27	1.06	0-4
PROCESS CODES						
Conversational Dominance	0.42	0.74	0-3	0.26	0.57	0-2
Engaging Questions	2.02	1.03	0-4	0.53	0.74	0-3
Disclosure Questions	1.24	0.95	0-4	0.18	0.39	0-1
Scenarios	0.82	1.00	0-4	0.10	0.39	0-2
Avoidance	0.06	0.31	0-2	0.26	0.60	0-2
Discomfort	0.39	0.61	0-2	0.87	0.80	0-3
Connection	3.02	0.67	1-4	2.65	0.75	0-4
Hostility	0.10	0.39	0-2	0.03	0.18	0-1
Exaggerated Emotional Response	0.05	0.28	0-2	0.00	0.00	0
Exaggerated Statements/Scare Tactics	0.34	0.79	0-4	0.00	0.00	0
Humor	0.40	0.66	0-3	0.82	0.86	0-3
Self-Disclosure	0.97	0.83	0-3	0.63	0.68	0-3
Other-Disclosure	1.21	0.93	0-4	1.23	0.84	0-3

*Note: possible scores range from of 0 ‘not at all’ to 4 ‘very much’ across all content and process codes

Table 4: Descriptive statistics for survey measures

	PARENT				ADOLESCENT			
Measure	**Mean**	**SD**	**Range**	**α**	**Mean**	**SD**	**Range**	**α**
CONVERGENT VALIDITY MEASURES								
PAC- Open Communication	4.06	0.42	3.0-5.0	0.73	4.01	0.69	1.8-5	0.90
PAC- Problem Communication	2.51	0.54	1.1-3.5	0.71	2.45	0.88	1-4.5	0.85
Quality of Alcohol-Specific Communication	4.51	0.51	3.0-5.0	0.71	4.49	0.56	2.5-5	0.78
NRI- Affection	4.28	0.70	2.8-5.0	0.88	4.56	0.62	2.0-5.0	0.71
NRI- Self-Disclosure	2.15	0.95	1.0-5.0	0.89	2.83	1.04	1.0-5.0	0.86
DIVERGENT VALIDITY MEASURES								
Big Five Inventory-Extraversion	3.55	0.74	2.0-4.9	0.80	3.66	0.74	1.8-5	0.80
Big Five Inventory-Agreeableness	4.28	0.48	3.1-5.0	0.71	3.85	0.60	2.4-4.9	0.71
Big Five Inventory-Neuroticism	2.37	0.76	1.0-4.3	0.82	2.73	0.64	1.5-4	0.66
Marlowe-Crowne Social Desirability Scale	18.53	5.74	2-31	0.82	17.07	6.09	6-30	0.82
PREDICTIVE VALIDITY MEASURES								
Intentions to Drink	---	---	---	---	0.13	0.24	0-1.3	0.83
AEQ-A: Positive Expectancies	---	---	---	---	0.51	0.49	0-2	0.95
AEQ-A: Negative Expectancies	---	---	---	---	1.88	0.99	0-3	0.81
Perceptions of Caregiver Disapproval	---	---	---	---	3.61	0.54	2-4	0.84
CONTROL VARIABLES								
APQ- Involvement (Sum)	40.51	3.82	30-50	0.75	38.76	5.22	26-50	0.80
APQ- Positive Reinforcement (Sum)	25.16	2.87	18-30	0.73	23.75	4.18	12-30	0.82
APQ- Poor Monitoring and Supervision (Sum)	15.00	3.56	10-26	0.73	18.53	5.05	10-30	0.76
APQ- Inconsistent Discipline (Sum)	12.52	2.77	8-18	0.62	12.95	3.10	6-20	0.44
Caregiver Alcohol Use-Frequency*Quantity	4.89	5.34	0-25	---	---	---	---	---

Table 5: Correlations of observer-rated content codes

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Permissive Messages	1.00								
2. Contingency Messages	0.09	1.00							
3. Rules about Drinking Messages	-0.16	-0.16	1.00						
4. Context Messages	-0.18	0.07	0.07	1.00					
5. Consequence Messages	-0.08	-0.04	0.14	0.01	1.00				
6. Peer Pressure Messages	-0.18	-0.05	0.04	**0.35**	**0.22**	1.00			
7. Parent/Family Disapproval Messages	-0.10	0.15	0.05	0.20	**0.24**	**0.42***	1.00		
8. Positivity Towards Alcohol	---	---	---	---	---	---	---	1.00	
9. Negativity Towards Alcohol	---	---	---	---	---	---	---	**-0.24**	1.00

Note: Bold values indicate that p<0.10; * indicates p<0.005 (p-value adjusted for alpha inflation of caregiver correlations); Caregiver content is not shaded, adolescent content is shaded in gray.

Table 6: Correlations of observer rated process of communication

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Conversational Dominance	1.00	0.06	0.16	0.18	-0.006	0.18	**0.22**	-0.08	---	---	0.03	-0.003	**0.22**
2. Engaging Questions	-0.16	1.00	**0.41***	**0.21**	**-0.24**	-0.16	0.14	-0.008	---	---	-0.13	-0.02	-0.09
3. Disclosure Questions	0.13	0.11	1.00	0.10	-0.06	0.02	0.05	-0.08	---	---	-0.10	0.07	0.13
4. Scenarios	0.01	**0.29**	0.05	1.00	-0.11	-0.17	-0.16	**0.42***	---	---	-0.14	-0.05	-0.07
5. Avoidance	**0.31**	-0.21	-0.11	-0.12	1.00	0.21	-0.01	**0.23**	---	---	**0.22**	-0.08	0.08
6. Discomfort	**-0.22**	-0.01	0.09	-0.10	0.04	1.00	-0.08	-0.20	---	---	0.06	0.001	-0.005
7. Connection	**-0.35**	**0.31**	0.10	0.13	**-0.33**	-0.06	1.00	**-0.40***	---	---	**0.36**	**0.25**	**0.29**
8. Hostility	**0.37**	**-0.25**	-0.06	-0.12	**0.49***	-0.16	**-0.38**	1.00	---	---	-0.07	-0.03	-0.05
9. Exaggerated Emotional Response	-0.02	-0.12	0.02	-0.09	-0.04	0.18	-0.004	-0.04	1.00	---	---	---	---
10. Exaggerated Statements/Scare Tactics	**0.23**	-0.17	-0.20	-0.19	0.04	-0.14	-0.10	-0.002	-0.07	1.00	---	---	---
11. Humor	0.08	-0.15	0.15	-0.06	-0.05	0.17	0.21	-0.15	0.16	-0.20	1.00	**0.22**	**0.26**
12. Self-Disclosure	0.02	-0.11	0.01	-0.13	0.008	0.06	0.18	0.16	0.15	0.07	0.11	1.00	**0.29**
13. Other-Disclosure	0.18	-0.12	-0.003	**-0.28**	0.07	0.09	0.05	0.12	0.15	0.08	0.13	**0.59***	1.00

Note: values below the diagonal are caregiver processes, values above the diagonal are adolescent processes; Bold values indicate that $p<0.10$; * indicates significant p-value after adjusting for alpha inflation ($p<0.001$ for caregiver correlations; $p<0.002$ for adolescent correlations); Zero variability in observer ratings of exaggerated emotional response and exaggerated statements/scare tactics in adolescents resulted in no further analysis of both indicators.

Table 7: Correlations between observer ratings and self-report of content and process of communication during the observational task

	CAREGIVER	ADOLESCENT
CONTENT CODES		
Permissive Messages	**0.32**	---
Contingency Messages	**0.63***	---
Rules about Drinking Messages	**0.37***	---
Context Messages	0.18	---
Consequence Messages	**0.42***	---
Peer Pressure Messages	**0.52***	---
Parent/Family Disapproval Messages	**0.40***	---
Positivity Towards Alcohol	---	0.16
Negativity Towards Alcohol	---	**0.30**
PROCESS CODES		
Conversational Dominance	**0.22**	**0.28**
Engaging Questions	0.07	**0.28**
Disclosure Questions	**0.23**	**0.26**
Scenarios	---	---
Avoidance	0.13	**0.31**
Discomfort	**0.33**	0.08
Connection	**0.22**	-0.06
Hostility	**0.61***	**0.37***
Exaggerated Emotional Response	-0.02	---
Exaggerated Statements/Scare Tactics	0.007	---
Humor	**0.53***	**0.24**
Self-Disclosure	**0.55***	0.23
Other-Disclosure	---	---

Note: Bold values indicate that $p<0.10$; * indicates significant correlations after correcting for alpha inflation ($p<0.006$ for caregivers and $p<0.009$ for adolescents).

Table 8: Exploratory factor analyses

	Caregiver Content		Caregiver Process			Adolescent Process	
			Encouraging		Discouraging	Encouraging	Discouraging
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 1	Factor 1
Permissive Messages	**0.934**	0.006					
Contingency Messages[a]	---	---					
Rules about Drinking Messages	**-0.373**	0.101					
Consequence Messages	-0.034	**0.320**					
Peer Pressure Messages	-0.111	**0.479**					
Parent/Family Disapproval Messages	0.018	**0.893**					
Engaging Questions[b]			**0.631**	-0.070		---	
Scenarios[b]			**0.521**	-0.134			
Connection			**0.548**	0.251		**0.618**	
Humor[a]			---	---		**0.624**	
Self-Disclosure			0.061	**0.989**		**0.524**	
Other-Disclosure			-0.195	**0.699**		**0.598**	
Conversational Dominance[c]					**0.490**		0.227
Disclosure Questions[ac]					---		0.038
Avoidance					**0.772**		**0.354**
Hostility					**0.870**		
Discomfort[a]							**0.920**
Factor Correlation	-0.216		-0.01		---	---	---
Mean	1.95	1.26	1.95	1.09	0.19	1.33	0.56
Standard Deviation	0.67	0.77	0.64	0.78	0.37	0.53	0.55
Range	0–3.5	0–3.67	0.33–3.33	0–3	0–2.33	0.25–2.75	0–2

[a] homeless caregiver content and process codes will be carried separately into subsequent analyses (contingency messages: m=0.47, sd=0.86, range=0–4; humor: m=0.40, sd=0.66, range=0-3; disclosure questions: m=1.24, sd=0.95, range=0-4; discomfort: m=0.39, sd=0.61, range=0-2)

[b] adolescent engaging questions and scenarios were combined to create a composite variable (m=0.56, sd=0.76, range=0-3)

[c] homeless adolescent process codes will be carried separately into subsequent analyses (conversational dominance: m=0.26, sd=0.57, range=0-2; disclosure questions: m=0.18, sd=0.39, range=0-1)

Table 9: Caregiver convergent and divergent validity analyses

		PROCESS						**CONTENT**		
		ENGAGING SCALES			DISENGAGING SCALES					
		Engagement β (SE)	Humor β (SE)	Disclosure β (SE)	Discouraging β (SE)	Discomfort β (SE)	Disclosure Qs β (SE)	Permissiveness β (SE)	Negative Alcohol Messages β (SE)	Contingency Messages β (SE)
CONVERGENT VALIDITY										
ENGAGING SCALES	Open Communication	-0.06 (0.08)	-0.05 (0.08)	-0.04 (0.10)						
	Relationship Quality- Affection	0.06 (0.08)	0.04 (0.08)							
	Relationship Quality- Self-Disclosure			0.04 (0.10)						
DISENGAGING SCALE	Problem Communication				0.008 (0.05)	-0.03 (0.08)	-0.05 (0.12)			
ENGAGING/ DISENGAGING SCALES	Self-reported quality of communication	0.08 (0.08)	-0.002 (0.09)		-0.09 (0.05)*	0.02 (0.08)				
	Self-report of alcohol-specific communication	0.02 (0.08)	**0.35 (0.07)*** **	**0.42 (0.09)*** **	0.12 (0.05)***	0.20 (0.08)***	0.22 (0.12)*	**0.32 (0.08)*** **	**0.38 (0.08)*** **	**0.55 (0.09)*** **
DIVERGENT VALIDITY										
Social Desirability	Social Desirability	-0.13 (0.08)	0.07 (0.09)	-0.08 (0.10)	0.10 (0.05)**	-0.03 (0.08)	0.05 (0.12)	-0.07 (0.09)	0.20 (0.09)**	-0.16 (0.11)
Personality	Extraversion	0.15 (0.08)*	-0.06 (0.09)	-0.16 (0.10)	-0.05 (0.05)	-0.18 (0.08)**	-0.18 (0.12)			
	Agreeableness	-0.07 (0.08)	-0.15 (0.08)*		0.06 (0.05)					
	Neuroticism	0.08 (0.08)			-0.003 (0.05)	-0.06 (0.08)	-0.05 (0.12)			
CONVERGENT VS. DIVERGENT VALIDITY TESTS										
	Test of dependent correlations comparing largest convergent validity scale with largest divergent validity scale (z-score)	-0.73	2.11**	2.53**	0.37	0.29	0.21	2.41***	1.59	3.11***

***p<0.01, **p<0.05, *p<0.10; bolded value indicate significance after correcting for alpha inflation (p<0.005 for 22 convergent validity regression analyses estimated; p<0.005 for 22 divergent validity regression analyses estimated).

Table 10: Adolescent convergent and divergent validity analyses

		PROCESS					CONTENT	
		ENGAGING SCALES		DISENGAGING SCALES				
		Engagement β (SE)	Questions β (SE)	Disengaged β (SE)	Conversational Dominance β (SE)	Disclosure Qs β (SE)	Positivity Towards Alcohol β (SE)	Negativity Towards Alcohol β (SE)
CONVERGENT VALIDITY								
ENGAGING SCALES	Open Communication	0.10 (0.07)	0.06 (0.10)					
	Relationship Quality-Affection	0.06 (0.07)						
	Relationship Quality-Self-Disclosure	-0.007 (0.07)						
DISENGAGING SCALE	Problem Communication			-0.06 (0.07)	-0.04 (0.07)	-0.006 (0.05)		
ENGAGING/DISENGAGING SCALES	Self-reported quality of communication	0.11 (0.07)	-0.10 (0.10)	0.02 (0.07)	0.11 (0.07)			
	Self-report of alcohol-specific communication	0.12 (0.07)*	0.21 (0.09)**	0.04 (0.07)	0.16 (0.07)**	0.10 (0.05)**	0.10 (0.08)	0.34 (0.14)**
DIVERGENT VALIDITY								
Social Desirability	Social Desirability	-0.05 (0.07)	0.10 (0.10)	0.08 (0.07)	-0.03 (0.08)	0.03 (0.05)	-0.08 (0.07)	-0.06 (0.14)
Personality	Extraversion	0.06 (0.07)	-0.09 (0.10)	0.009 (0.07)	0.08 (0.07)	0.01 (0.05)		
	Agreeableness	0.02 (0.07)			0.03 (0.07)			
	Neuroticism		**-0.28 (0.09)*** **	-0.02 (0.07)	-0.05 (0.07)	-0.03 (0.05)		
CONVERGENT VS. DIVERGENT VALIDITY TESTS								
	Test of dependent correlations comparing largest convergent validity scale with largest divergent validity scale (z-score)	0.66	-0.56	-0.22	0.82	1.03	0.06	1.29

***p<0.01, **p<0.05, *p<0.10; bolded values indicate significance after correcting for alpha inflation (p<0.006 for 18 convergent validity regression analyses estimated; p<0.006 for 18 divergent validity regression analyses estimated).

Table 11: Predictive validity analyses: Caregiver-report models

	Lifetime Sipping (Logistic) B (SE)	Intentions to Drink B (SE)	Negative Alcohol Expectancies B (SE)	Positive Alcohol Expectancies B (SE)	Perceptions of Caregiver Disapproval B (SE)
Adolescent Gender			**-0.86 (0.22)*** **		
Adolescent Age			**0.42 (0.12)*** **		
Caregiver's education				**-0.20 (0.06)*** **	
General Parenting- Involvement			0.06 (0.03)*		
General Parenting- Monitoring/Supervision	0.30 (0.12)**			**0.05 (0.02)*** **	
Parent Content- Permissiveness	-0.34 (0.52)	0.05 (0.05)	0.26 (0.19)	-0.05 (0.10)	0.005 (0.11)
Parent Content- Negative Alcohol Messages	-1.02 (0.55)*	0.04 (0.05)	0.16 (0.17)	0.08 (0.09)	0.12 (0.10)
Parent Content- Contingency Messages	-0.28 (0.40)	-0.02 (0.03)	0.16 (0.13)	0.003 (0.06)	0.07 (0.08)
Parent Process- Engagement	0.75 (0.58)	-0.05 (0.04)	-0.26 (0.18)	-0.13 (0.09)	-0.13 (0.11)
Parent Process- Disclosure	0.69 (0.44)	**0.12 (0.03)*** **	-0.33 (0.14)**	-0.13 (0.07)*	**-0.34 (0.09)*** **
Parent Process- Discouraging	1.86 (1.39)	-0.04 (0.11)	0.68 (0.45)	0.21 (0.25)	-0.17 (0.27)
Parent Process- Disclosure Questions	-0.76 (0.40)*	-0.06 (0.03)**	0.25 (0.11)**	0.15 (0.06)**	0.16 (0.07)**
Parent Process- Discomfort	0.29 (0.57)	-0.07 (0.05)	-0.09 (0.18)	-0.03 (0.09)	0.05 (0.11)
Parent Process- Humor	0.11 (0.50)	0.04 (0.04)	**-0.59 (0.16)*** **	-0.10 (0.09)	0.04 (0.10)
Permissiveness * Discomfort	-2.07 (1.11)*				
Permissiveness * Disclosure		0.09 (0.05)*	0.34 (0.20)*	0.21 (0.10)**	
Contingency Messages * Disclosure		**-0.14 (0.04)*** **			
Contingency Messages * Engagement			-0.47 (0.20)**		**-0.40 (0.13)*** **
Negative Alcohol Messages * Disclosure				-0.28 (0.11)**	
Negative Alcohol Messages * Discouraging				-0.51 (0.29)*	
Permissiveness * Engagement					0.41 (0.17)**
R-SQUARED	---[a]	0.50	0.57	0.55	0.40

***p<0.01, **p<0.05, *p<0.10; bolded values indicate significant values after adjusting for alpha inflation (p<0.01)

[a] R-squared value is not available within logistic regression because of the non-linear estimation

Table 12: Predictive validity analyses: Adolescent-report models

	Lifetime Sipping (Logistic) B (SE)	Intentions to Drink B (SE)	Negative Alcohol Expectancies B (SE)	Positive Alcohol Expectancies B (SE)	Perceptions of Caregiver Disapproval B (SE)
Caregiver's education				-0.13 (0.06)**	
General Parenting- Involvement	-0.26 (0.12)**			0.04 (0.02)**	
General Parenting- Monitoring/Supervision	0.28 (0.13)**			**0.05 (0.02)*** **	
Caregiver Alcohol Use	0.15 (0.08)*				
Adolescent Content- Positivity towards alcohol	1.36 (0.79)*	-0.04 (0.07)	-0.14 (0.28)	0.13 (0.13)	-0.04 (0.14)
Adolescent Content- Negativity towards alcohol	-0.98 (0.56)*	-0.07 (0.03)**	0.01 (0.15)	-0.13 (0.06)**	0.14 (0.07)*
Adolescent Process- Engagement	-0.94 (0.94)	0.02 (0.05)	-0.54 (0.26)**	0.004 (0.11)	-0.12 (0.12)
Adolescent Process- Questions	-0.06 (0.63)	**0.11 (0.04)*** **	-0.21 (0.19)	0.01 (0.08)	**-0.28 (0.10)*** **
Adolescent Process- Disengaged	-2.48 (1.21)**	-0.005 (0.05)	0.31 (0.26)	0.01 (0.11)	0.15 (0.12)
Adolescent Process- Conversational Dominance	0.22 (0.95)	-0.17 (0.09)*	0.27 (0.28)	0.006 (0.13)	-0.15 (0.14)
Adolescent Process- Disclosure Questions	-0.53 (1.20)	0.08 (0.08)	-0.01 (0.37)	-0.03 (0.17)	0.19 (0.20)
Negativity towards alcohol * Engagement	-2.24 (1.09)**				**0.35 (0.13)*** **
Positivity towards alcohol * Conversational Dominance		**0.20 (0.07)*** **		-0.25 (0.13)*	
Negativity towards alcohol * Questions		-0.07 (0.04)*			**0.26 (0.09)*** **
Negativity towards alcohol * Conversational Dominance		0.15 (0.06)**			
Negativity towards alcohol * Disclosure Questions		-0.17 (0.08)**			
Positivity towards alcohol * Disengaged				0.60 (0.27)**	
R-SQUARED	---[a]	0.47	0.14	0.48	0.38

***p<0.01, **p<0.05, *p<0.10; bolded values indicate significant values after adjusting for alpha inflation (p<0.01)

[a] R-squared value is not available within logistic regression because of the non-linear estimation

Figure 1: Caregiver disclosure significantly moderated the relation between contingency messages and intentions to drink alcohol

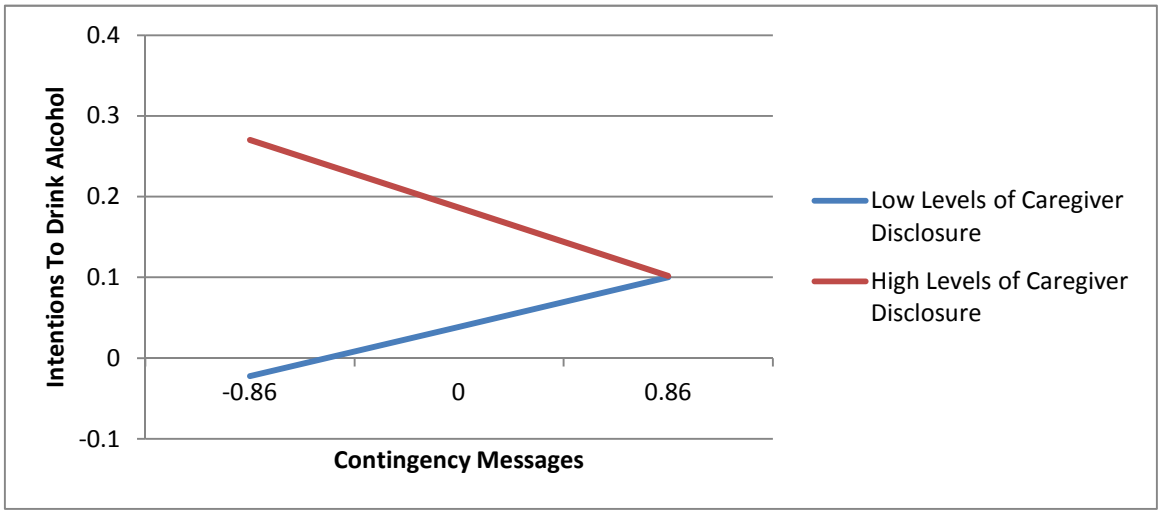


Figure 2: Caregiver engagement significantly moderated the relation between contingency messages and perceptions of caregiver disapproval

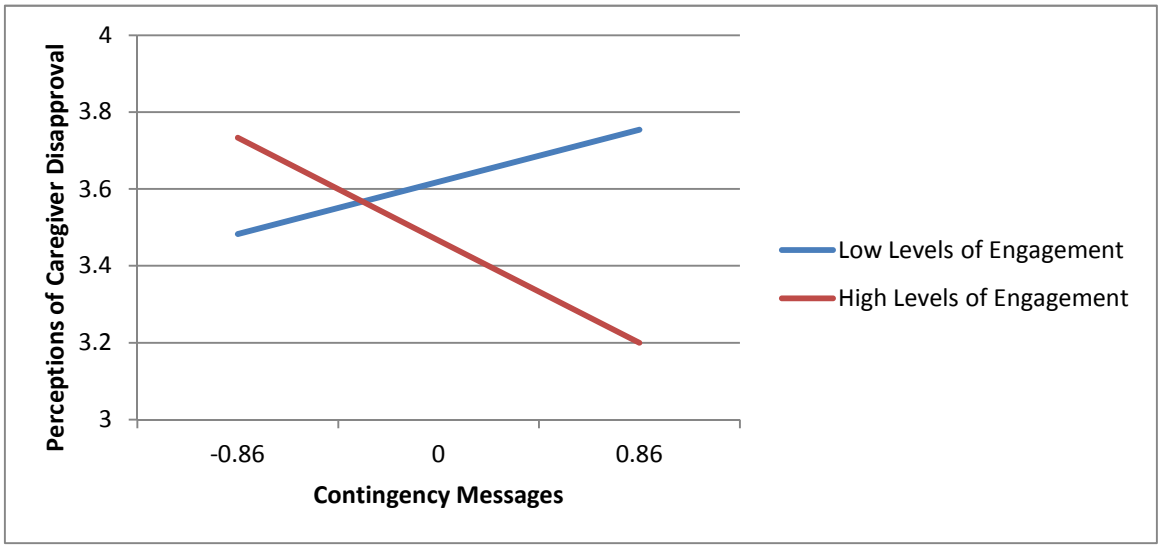


Figure 3: Adolescents' conversational dominance significantly moderated the relation between positivity towards alcohol and intentions to drink

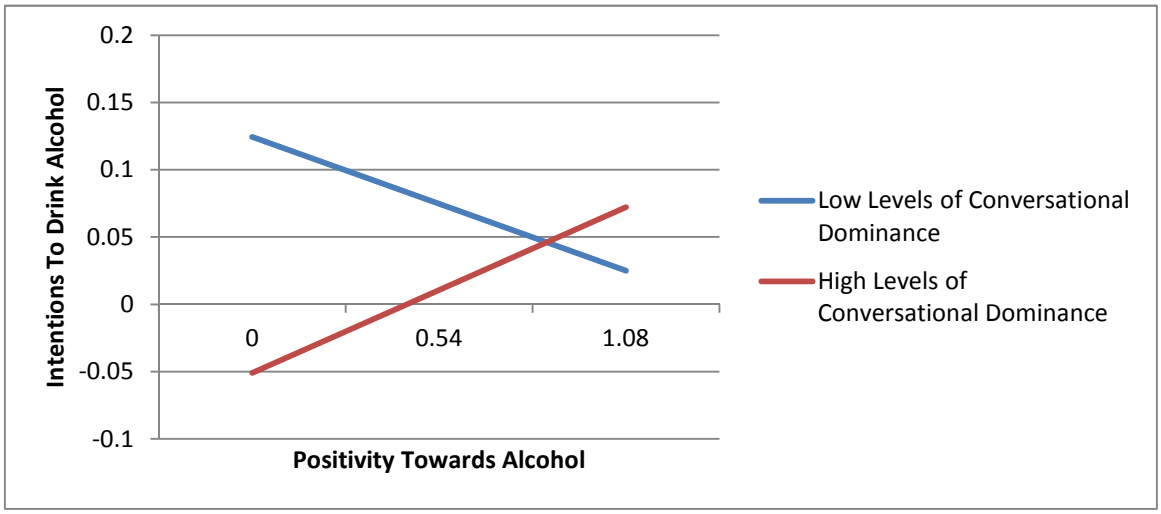


Figure 4: Adolescents' use of questions significantly moderated the relation between negativity towards alcohol and perceptions of caregiver disapproval

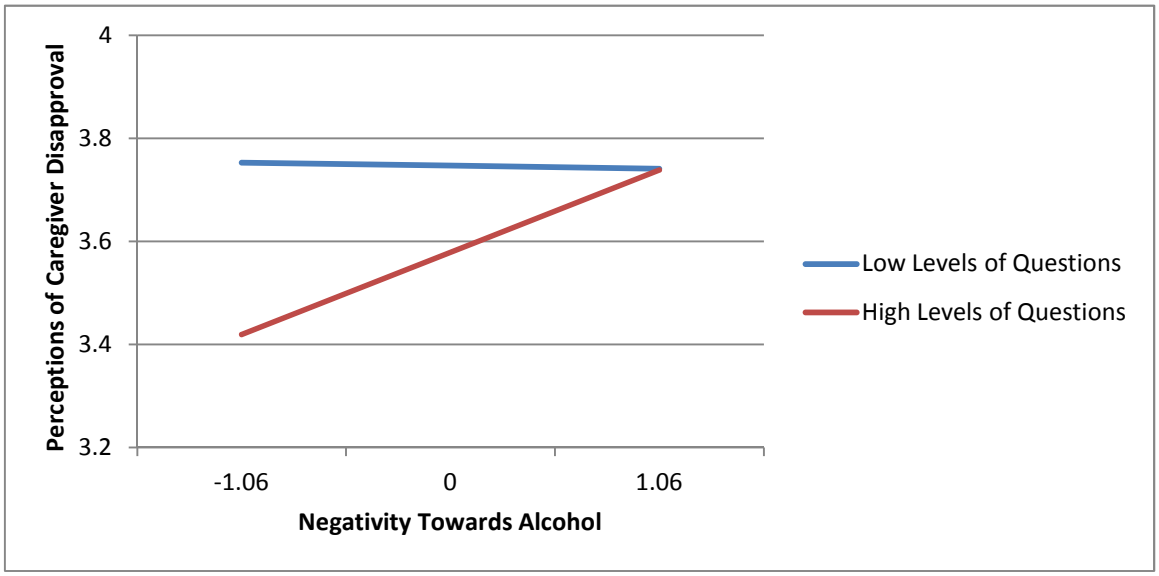
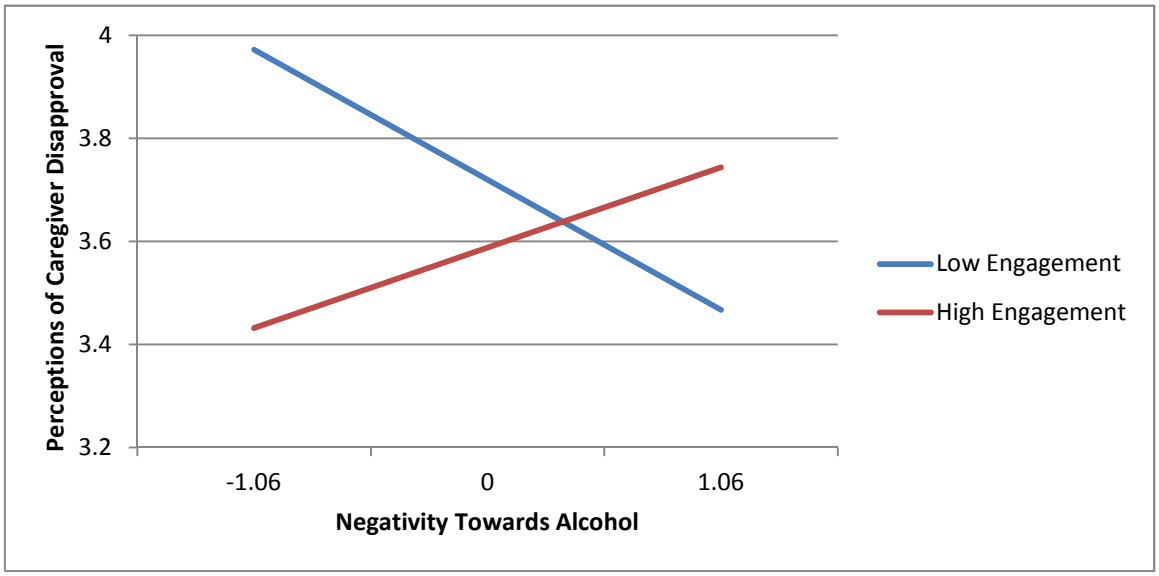


Figure 5: Adolescents' engagement significantly moderated the relation between negativity towards alcohol and perceptions of caregiver disapproval



APPENDIX 1: ALCOHOL-SPECIFIC COMMUNICATION CODING SYSTEM

Alcohol-Specific Communication Coding System

Overview

The following coding system globally rates the content and process of parent-adolescent communication about alcohol, or alcohol-specific communication, during an observational task in which parents and adolescents are asked to discuss alcohol for 10 minutes.

Parental Content—what the parent says about alcohol.

1) Permissive
2) Contingencies
3) Alcohol Rules
4) Context
5) Consequences
6) Peer Pressure
7) Parent/Family Disapproval

Adolescent Content—what the adolescent says about alcohol.

1) Positivity towards alcohol
2) Negativity towards alcohol

Process—what the parent or adolescent does or how they act while discussing alcohol.

1) Conversational Dominance
2) Engaging Questions
3) Disclosure Questions
4) Scenarios
5) Avoidance
6) Discomfort
7) Connection
8) Hostility
9) Magnification- Exaggerated Emotional Response
10) Magnification- Exaggerated Statements/Scare Tactics
11) Humor
12) Self-Disclosure
13) Other-Disclosure

Response Scale

0	1	2	3	4
Not at all	**A little bit**	**Somewhat**	**Quite a bit**	**Very Much**

Coder training: Coders will be assigned to one of two coding teams, namely the Parent alcohol-specific communication coding team and the Adolescent alcohol-specific communication coding team. All coders will begin with an introduction to observational coding in general and the specific observational coding system that will be used for their assigned team. Coders will then practice the coding system on tapes from two pilot families and discuss codes assigned to refine understanding. After the training phase, coders will independently code tapes of additional pilot families until they reach an intra-class coefficient (ICC) of 0.70 (Shrout & Fleiss, 1979) and are

within 1 point in either direction of Alison's codes. The master coder will code all tapes while a second coder will code randomly selected tapes such that 25% of tapes are double coded. Reliability of double coded tapes will be calculated along the way to determine whether observer shift occurs (Taplin & Reid, 1973). If observer shift occurs, both coders will return to the training process using pilot family tapes until they reach an ICC of 0.70 at which point they would return to coding "real" interaction tapes.

Coding Instructions

Each ten-minute interaction should be watched at least three times.

1) First, you should observe either the parent's or adolescent's discussion without any particular focus or intention of scoring. This first pass is to understand what the parent or adolescent is discussing and in general how the conversation went.
2) You should then watch the interaction a second time to form an opinion about the content discussed during the interaction. You will want to pay attention to the ***strength and frequency*** of each type of message used throughout the interaction. For example, how *strongly* did the parent's permissive messages come across during the interaction? How *strong* were the adolescent's negative comments about alcohol? It is possible that a parent would make one comment that is rule-based, but it comes across loud and clear (receiving a score of 4). A parent can also spend the majority of the interaction talking about rules and the message comes across loud and clear by the end of the interaction (also receiving a score of 4). You are coding how clearly/firmly the message was delivered as well as the amount of time spent on a topic.
3) You should then watch the interaction a third time to form an opinion of the process of the interaction. For example, how dominant was the individual during the conversation? For these process codes, you again want to pay attention to both the ***strength and frequency*** of the behavior throughout the whole 10-minute interaction. Even when an individual isn't talking, we want to know how they are acting, responding etc.

Parent Content Codes

Permissive Messages- content that reflects an approving attitude towards adolescent alcohol use (e.g., "it's okay for you to drink but just use your judgment") or adolescent exposure to alcohol (e.g., it's okay to be at parties where there might be alcohol). This can include talking about the benefit of the adolescent drinking (e.g., "people at school might think you are cool if you drink"), discussing when and where the adolescent is allowed to drink (e.g., "you can drink a little bit of champagne to celebrate a special occasion, like New Years"), stating that drinking in moderation is okay, direct encouragement of drinking (e.g., "you should drink at home with us so you know how to handle your alcohol in front of other people"), and vague permissiveness such as "just be responsible" and "use your judgment".

Permissiveness related to any other topic (sexuality, curfew etc.) should NOT be coded here. This code is meant to capture permissive messages specifically about alcohol.

Not at all (0) The parent never used any permissive messages. Or, the parent did use permissive messages but the messages were not at all strong or were sarcastic. The parent did not discuss alcohol in a positive way and was not at all approving of alcohol.

A little bit (1) The parent used permissive messages infrequently or permissiveness was subtle. He or she discussed alcohol in an approving, permissive, or positive way but did so without much conviction or did so infrequently (less than half the time the parent was talking).

Somewhat (2) The parent used permissive messages with moderate strength such that the message was somewhat strong or the parent occasionally used permissive messages (about half of the time they were talking).

Quite a bit (3) The parent's permissive comments about alcohol were quite strong or the parent used permissive messages frequently throughout the conversation (more than half of the time the parent was talking). The parent clearly discussed alcohol in an approving, permissive, or positive way.

Very Much (4) The parent's permissive comments about alcohol were very strong or were consistent throughout the conversation (near constant use of comments or statements that are permissive). This could be exemplified by extremely clear and strong approval of drinking (without repercussions or disappointment), encouragement to drink, or strong support for the benefits of drinking.

Contingency Messages- content about what the adolescent should do if they do drink would be included in this category. This would include messages such as "call home to be picked up if you have been drinking" or "stay with friends if you have been drinking". These are messages that are thought to be an effort to reduce the adolescent's risk of harm from drinking. These messages are not directly permissive in nature (the parent does not seem to be directly approving of drinking) but rather appear to be an attempt to keep the adolescent safe if they do drink. Parents may seem worried about the adolescent when discussing contingencies.

> "I want you to tell me if you do decide that you want to try alcohol" should NOT be coded here because it does not aim to keep the child safe if/when they drink.
>
> Statements about not getting in the car with someone whose been drinking also should NOT be coded here because although it aims to keep the child safe, it is not related to the adolescent's drinking.
>
> Statements about calling home if friends have been drinking or if alcohol is present at a party should NOT be coded here as it is not directly related to reducing harm if the *adolescent* drinks (but could be considered under the Context code).
>
> Threatening statements such as "If you drink, you better not come home if you know what's good for you" would NOT be considered a contingency message because it does not convey the harm reduction message this code is intended to capture.

Not at all (0) The parent never used any contingency messages. Or, the parent did use contingency messages but the messages were not at all strong or were sarcastic.

A little bit (1) The parent infrequently used contingency messages or contingency messages were subtle. He or she discussed what the adolescent should do to remain safe when drinking but did so without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The parent used contingency messages with moderate strength such that the message was somewhat strong or contingency messages were occasionally used (about half of the time they were talking).

Quite a bit (3) The parent's comments about alcohol emphasized contingencies for alcohol consumption or were frequent throughout the conversation (more than half of the time the parent was talking). The parent clearly discussed contingencies for drinking.

Very Much (4) The parent used contingency messages consistently throughout the discussion or these messages were extremely clear and strong. This may be evidenced by very enthusiastic or passionate comments or statements that are related to what the adolescent should do if they do drink.

Rules about drinking- content that highlights rules about drinking or discipline/punishment that would occur if the adolescent does drink. These messages explicitly state the punishment that would occur (e.g., "you will be grounded if we catch you drinking" or "you are not allowed to drink while living under my roof") or sets clear limits about drinking with the adolescent (e.g., "you *cannot* drink until you are 21"). The rule or punishment must be in relation to the adolescent's use of alcohol (i.e., must be a direct statement about the adolescent's behavior).

Other rules such as who the adolescent can and can't hang out with should not be coded here because it is not in direct relation to the adolescent's drinking (see Context code below).

Statements such as "I don't want you to drink" or "Drinking is not something I want for you now" should NOT be coded here. These statements do not focus on the adolescent's behavior directly but rather the parent's attitude towards the behavior (i.e., see Parent/Family Disapproval below).

Not at all (0) The parent never discussed rules about drinking. Or, the parent did use rules about drinking but the messages were not at all strong or were sarcastic.

A little bit (1) The parent infrequently discussed rules about drinking or these messages were subtle. He or she discussed rules about drinking or punishment/discipline associated with drinking but did so without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The parent discussed rules about drinking with moderate strength or occasionally discussed rules about drinking (about half of the time they were talking).

Quite a bit (3) The parent's comments about alcohol were frequently related to rules about drinking or punishments for drinking or rules about drinking were emphasized throughout the conversation (more than half of the time the parent was talking).

Very Much (4) The parent consistently discussed rules for drinking throughout the discussion or these messages were extremely clear and strong. This may be evidenced by passionate comments or statements that are related to rules about or punishments for drinking.

Context- content that highlights contexts surrounding drinking that may increase the child's exposure to alcohol or increase their likelihood of drinking. For example, this could involve discussions about parties that have alcohol present, friend's houses where parents drink alcohol, or friends that drink. This could also include explicit rules about the context or discipline/punishment that would occur if the adolescent pursues/is around such environments but limit setting is not necessary to be coded here (e.g., friends the child cannot hang out with because they drink alcohol or forbidding the child to be at parties if alcohol is present). Parents use these types of messages to reduce exposure to alcohol or set limits about drinking but they do so through the environmental context rather than discussing the child's drinking specifically. The statement or rule must be <u>in relation to environments that may expose an adolescent to alcohol</u>.

Rules about drinking itself should NOT be coded here (see Rules about Drinking code above).

Comments about not getting in a car with someone who has been drinking should NOT be coded here. Those statements are not explicitly associated with the adolescent's exposure to alcohol or drinking but rather associated with the adolescent's safety in a vehicle.

Not at all (0) The parent <u>never</u> discussed the context surrounding drinking or punishment for being in particular contexts. Or, the parent discussed context but the messages were <u>not at all strong</u> or were <u>sarcastic</u>.

A little bit (1) The parent <u>infrequently</u> discussed the context surrounding drinking or these messages were <u>subtle</u>. He or she discussed the context or punishment for being in particular contexts but did so without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The parent discussed the context surrounding drinking or punishment for being in particular contexts with <u>moderate strength</u> or discussed the context <u>occasionally</u> (about half of the time they were talking).

Quite a bit (3) The parent's comments were <u>frequently</u> related to the context surrounding drinking or punishment for being in particular contexts, or they were <u>emphasized</u> throughout the conversation (more than half of the time the parent was talking).

Very Much (4) The parent <u>consistently</u> discussed the context surrounding drinking or punishments for being in particular contexts throughout the discussion or these messages were <u>extremely clear and strong</u>. This may be evidenced by passionate comments or statements that are related to the context surrounding alcohol.

Consequence Messages- content that discusses the negative consequences of alcohol. This can include health consequences (e.g., alcohol can impact your liver and other organs), social consequences (e.g., fights with friends or family), legal consequences (e.g., you could get arrested if you have been drinking), or academic consequences (e.g., your grades could be affected). This can also include a discussion about the negative effects of alcohol (e.g., blacking out, vomiting etc.).

This does NOT include consequences that the parent would impose (see Rules about Drinking and Context above).

Not at all (0) The parent never discussed consequences that arise from drinking. Or, the parent did discuss consequences but the messages were not at all strong or were sarcastic.

A little bit (1) The parent infrequently discussed consequences from drinking or these messages were subtle. He or she discussed consequences but did so without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The parent discussed consequences with moderate strength or occasionally used consequences messages (about half of the time they were talking).

Quite a bit (3) The parent's comments about alcohol were frequently related to the consequences that arise from drinking, or they were emphasized throughout the conversation (more than half of the time the parent was talking).

Very Much (4) The parent consistently discussed consequences throughout the discussion or these messages were extremely clear and strong. This may be evidenced by passionate comments or statements that are related to the consequences of drinking.

Peer Pressure Messages- content related to peer pressure to drink or peer pressure related to alcohol. This can include a discussion about what peer pressure is, different forms of peer pressure, the adolescent's experiences of peer pressure, or ways to handle it if/when it occurs. This can also include pressure/offers from siblings or an adult (e.g., uncle, friend's parents, etc.). Only messages about pressure related to alcohol would be coded. For example, messages about peer pressure to drink or peer pressure to get alcohol from parents would be coded here.

Parental messages about peer pressure to have sex or to bully others should NOT be coded here because it is not in direct relation to alcohol.

Parental pressure to drink during the conversation should NOT be coded.

"Good" peer pressure, or peer pressure not to drink, should NOT be included in this code.

Not at all (0) The parent never discussed peer pressure or if the parent did discuss it, the messages were not at all strong or were sarcastic.

A little bit (1) The parent infrequently discussed peer pressure or these messages were subtle. He or she discussed peer pressure without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The parent discussed peer pressure with moderate strength or occasionally used peer pressure messages (about half of the time they were talking).

Quite a bit (3) The parent's comments were frequently related to peer pressure or peer pressure was emphasized throughout the conversation (more than half of the time the parent was talking).

Very Much (4) The parent consistently discussed peer pressure throughout the discussion or these messages were extremely clear and strong. This may be evidenced by passionate comments or statements that are related to peer pressure to drink.

Parent/Family Disapproval Messages- content that includes explicit statements that alcohol use is not acceptable, would disappoint the parent, or is not consistent with the family's values. Something must be explicitly said by the parent in order to fall into this code (not if they just seem to be disapproving). For example, parents may discuss how much they'd be disappointed if they discovered the adolescent was drinking or they may discuss how alcohol is not valued in their family and those who drink are looked down upon. Similarly, parents may discuss the shame associated with the adolescent drinking (either shame towards the individual or shame brought to the family). Disapproval messages demonstrate a negative view or attitude on alcohol use but without an explicit rule or punishment attached to it. Statements such as "I don't want you to drink" or "drinking is not what I want for you" should be coded here because there are no explicit rules or punishments associated with the behavior but rather explicitly states how the parent would feel if the adolescent engaged in that behavior.

Do NOT code any statements that have an explicit rule or punishment attached to it (see Rules about Drinking or Context codes instead).

Not at all (0) The parent never discussed his/her or the family's disapproval or if the parent did discuss it, the messages were not at all strong or were sarcastic.

A little bit (1) The parent infrequently discussed his/her or the family's disapproval of drinking or these messages were subtle. He or she discussed his/her or the family's disapproval without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The parent discussed his/her or the family's disapproval with moderate strength or occasionally stated his/her or the family's disapproval (about half of the time they were talking).

Quite a bit (3) The parent's comments were frequently related to his/her or the family's disapproval or parent/family disapproval was emphasized throughout the conversation (more than half of the time the parent was talking).

Very Much (4) The parent consistently discussed his/her or the family's disapproval throughout the discussion or these messages were extremely clear and strong. This may be evidenced by passionate comments or statements that are related to parent/family disapproval.

Adolescent Content Codes

Positivity towards alcohol- content that reflects the belief that alcohol or drinking is positive. This could include statements about the positive aspects of alcohol (e.g., "drinking makes people more social and makes me feel like I fit in"), demonstrates a positive view towards alcohol (e.g., "drinking alcohol is really fun and exciting") or states an intention to drink in the near future. This includes only direct comments that portray alcohol in a positive light (not comments that say "alcohol is not negative" or are passive in some way). This code is intended to capture positive valence (and intensity of the positivity) in the adolescent's comments.

> NOTE: If the adolescent is only responding to parental questions and does not expand on responses, assign a code based on strength of the positivity rather than frequency of positive comments.

Not at all (0) The adolescent never discussed alcohol in a positive light or if the adolescent did discuss alcohol positively, these statements were not at all strong or were sarcastic.

A little bit (1) The adolescent infrequently made statements that portrayed a positive view towards alcohol or these messages were subtle. He or she discussed positive views about alcohol without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The adolescent discussed alcohol positively with moderate strength or did so occasionally (about half the time the adolescent was talking). This is exhibited by the occasional use of statements discussing the positive aspects of alcohol or statements that demonstrated a positive view about alcohol.

Quite a bit (3) The adolescent's comments about alcohol were frequently positive (more than half of the time the adolescent was talking) or positive effects of alcohol were emphasized throughout the conversation.

Very Much (4) The adolescent consistently made statements or comments about alcohol that were positive throughout the discussion or these messages were extremely clear and strong. This may be evidenced by passionate comments or statements that are related to the positive effects of alcohol.

Negativity towards alcohol- content that reflects their belief that alcohol or drinking is negative. This could include statements about the negative aspects of alcohol (e.g., "I don't want to take the chance of throwing up"), a negative view towards alcohol (e.g., "kids in my school think that drinking is cool but I don't"), comments about alcohol that are negative (e.g., "I wouldn't drink just because someone wanted me to"), or statements that display no intention of drinking alcohol in the near future. This code is intended to capture negative valence (and intensity of the negativity) in the adolescent's comments.

NOTE: If the adolescent is only responding to parental questions and does not expand on responses, assign a code based on strength of the positivity rather than frequency of negative comments.

Not at all (0) The adolescent never discussed alcohol in a negative light or if the adolescent did discuss alcohol negatively, these statements were not at all strong or were sarcastic.

A little bit (1) The adolescent infrequently made statements that portrayed a negative view towards alcohol or these messages were subtle. He or she discussed negative views about alcohol without much conviction or did so infrequently (less than half the time he/she was talking).

Somewhat (2) The adolescent discussed alcohol negatively with moderate strength or did so occasionally (about half the time the adolescent was talking). This is exhibited by the occasional use of statements discussing the negative aspects of alcohol or statements that demonstrated a negative view about alcohol.

Quite a bit (3) The adolescent's comments about alcohol were frequently negative (more than half of the time the adolescent was talking) or negative effects of alcohol were emphasized throughout the conversation.

Very Much (4) The adolescent consistently made statements or comments about alcohol that were negative throughout the discussion or these messages were extremely clear and strong. This may be evidenced by passionate comments or statements that are related to the negative effects of alcohol.

Process Codes- Used for both parent and adolescent

Conversational Dominance- the extent to which an individual dominates the conversation, or attempts to control/influence what is discussed during the interaction/how the conversation proceeds. An individual may lecture the other on how to think, act, or feel in a way that assumes superiority and discourages the other's ability to respond, initiate discussions, or think independently. This could also manifest as the individual interrupting the other or through the use of leading or interrogating questions. Conversational dominance reflects an agenda to dictate the discussion and/or outcome of the interaction. Interjections should not be considered as part of this section; only those interruptions that purposely cut off the person should be included. This code entails more than simply how much a given individual talks throughout the 10-minute interaction but demonstrates purposeful behavior that is dismissive of the other individual's role in the conversation. In fact, an individual could talk very little but his/her comments are still very controlling and agenda driven if they are strong and dictate the direction of the discussion (e.g.," we will *not* be discussing that topic).

Do NOT code if parents talk most of the time because the adolescent is shy or refuses to talk. In other words, if the parent is just filling the time but would be willing to relinquish control, this does not demonstrate dominance.

Not at all (0) The individual never used any manifestation of conversational dominance or if he/she did demonstrate conversational dominance, these behaviors were not at all strong.

A little bit (1) The individual infrequently exhibited one, or some combination, of conversational dominance behaviors or the dominance was subtle. He or she may have displayed a brief instance of attempting to dominate the discussion but this lasted less than half the time or was minor in nature.

Somewhat (2) The individual occasionally exhibited at least one or some combination of, conversational dominance behavior(s) or one or more behaviors were moderate in strength. He or she displayed at least one dominant behavior about half of the time of the interaction or the behavior was moderate in strength. The individual may take control or have some sort of agenda for the discussion, but the other is given reasonable opportunity to express opinions and/or feelings.

Quite a bit (3) The individual frequently exhibited conversational dominance behaviors with a fairly obvious desire to direct the conversation. The individual controlled the majority of the conversation with the other being given sporadic opportunities to contribute to the discussion.

Very Much (4) The individual consistently demonstrated conversational dominance throughout the interaction or the behaviors were extremely clear and strong. He or she displayed at least one, or some combination of dominant behaviors throughout the entire interaction, with the other had rare opportunities to engage in the discussion, or the behaviors were very forceful or clear.

Engaging Questions- the extent to which questions are posed to the other individual that attempt to elicit the other's thoughts or opinions about alcohol in an attempt to engage the other individual in the conversation. Engaging questions can be any format but typically tends to be open ended rather than closed ended. These may include questions that inquire about the other's opinion ("e.g., so what do you think about alcohol) or questions that reflect back what the other person is discussing to validate their thoughts or encourage them to continue (e.g., "so you'd feel comfortable saying no to peer pressure?"). These questions typically show interest, care or concern.

NOTE: Questions can be coded as engaging even if the other individual is not engaged in the conversation. As long as engaging questions are posed and an attempt is made, such questions should be coded here.

NOTE: Some questions are neither engaging nor disclosure questions. For example, asking for an example of a negative effect of alcohol can be neither engaging nor disclosure seeking.

Questions that seem to be interrogative or aggressive should NOT be coded here (see conversational dominance code and hostility codes, respectively).

If the individual asks a question and then continues talking (e.g., a rhetorical question), do NOT consider it in this code. The individual must wait for a response (even if the other doesn't provide one).

Not at all (0) The individual never asked any engaging questions or if he/she did ask engaging questions, they were sarcastic or rhetorical. This could be exemplified by talking/lecturing throughout the conversation (no questions posed at all) or asking questions that are not engaging or are sarcastic.

A little bit (1) The individual infrequently asked engaging questions or the questions were only slightly engaging. He or she posed engaging questions to the other dyad member only a few times throughout the conversation or when asking questions, they were only slightly engaging.

Somewhat (2) The individual occasionally asked engaging questions or the questions that they asked were moderately engaging. He or she asked questions about half of the time he/she was talking, demonstrating a moderate amount of interest in the other dyad member.

Quite a bit (3) The individual frequently posed engaging questions with a fairly obvious interest in obtaining the other's opinion or engaging them in the conversation. The individual asked engaging questions quite a bit throughout the conversation or asked questions that demonstrated quite a bit of interest in the other's thought or opinions.

Very Much (4) The individual consistently asked engaging questions of the other person or the questions posed were particularly engaging. It is clear that the individual is interested in obtaining the other's response or engaging the other person in the conversation.

Disclosure Questions- questions posed by the individual that explicitly ask about the other's alcohol use (e.g., "have you ever drank alcohol) or, in the parent's case, ask about the adolescent's exposure to alcohol (e.g., "do any of your friends drink" or "do you think your brother drinks"). These questions are used to elicit particular information from the other individual. The individual may appear to be interrogating the other person or may be asking in a non-interrogative way as in parents monitoring their adolescent's behavior.

NOTE: Questions can be coded as disclosure questions even if the other individual does not elicit the desired information. As long as the questions are posed and an attempt is made, such questions should be coded here.

NOTE: Some questions are neither engaging nor disclosure questions. For example, asking for an example of a negative effect of alcohol can be neither engaging nor disclosure seeking.

Questions that attempt to elicit the other's opinion should NOT be coded here (see Engaging Questions code above).

Questions that are interrogative or aggressive should NOT be coded here (see conversational dominance code and hostility codes, respectively).

If the individual asks a question and then continues talking (e.g., a rhetorical question), do NOT consider it in this code. The individual must wait for a response (even if the other doesn't provide one).

Not at all (0) The individual never asked any disclosure questions or if he/she did, they were sarcastic or rhetorical. This could be exemplified by talking/lecturing throughout the conversation (no questions posed at all) or not asking questions that elicit particular information about the other's alcohol use (or alcohol exposure).

A little bit (1) The individual infrequently asked disclosure questions or the questions were only slightly focused on obtaining the information. He or she posed disclosure questions to the other dyad member only a few times throughout the conversation or when asking questions, they only probed for information subtly.

Somewhat (2) The individual occasionally asked disclosure questions or the questions that they asked were moderately focused on obtaining a disclosure. He or she asked disclosure questions about half of the time he/she was talking, demonstrating a moderate desire to elicit information from the other individual.

Quite a bit (3) The individual frequently used disclosure questions with the fairly obvious intent of obtaining particular information. The individual asked disclosure questions quite a bit throughout the interaction or asked questions that were quite focused on eliciting a disclosure.

Very Much (4) The individual consistently asked disclosure questions throughout the interaction or the questions that were posed were clearly eliciting of a disclosure. It is clear that the individual is interested in gathering particular information.

Scenarios- the extent to which an individual presents a scenario or situation to the other person such as a 'what if' or a 'hypothetical role play'. This may involve any content but most typically may be found with peer pressure messages (e.g., 'what would you do if your friend offered you alcohol') or context messages (e.g., 'what should I do if I went to a party and my friends started drinking and they were supposed to drive me home'). The function of why the scenario is posed (e.g., helping the other dyad member think through how they may behave in a given situation, to ensure the other person knows what to do, or in the adolescent's case, to seek the other's advice on what to do) does NOT matter and any use of a scenario should be coded here.

NOTE: Scenarios can be coded even if the other individual does not answer or engage with the particular example provided. As long as the scenarios are posed and an attempt is made, it should be coded here.

Questions that attempt to elicit the other's opinion should NOT be coded here (see Engaging Questions code above).

Questions that attempt to elicit particular information about the other's use of or exposure to alcohol should NOT be coded here (see Disclosure Questions above).

If the individual poses a scenario and then continues talking (e.g., a rhetorical question), do NOT consider it in this code. The individual must wait for a response (even if the other doesn't provide one).

Not at all (0) The individual never posed any scenarios or if he/she did, they were rhetorical or sarcastic. This could be exemplified by talking/lecturing throughout the conversation (no engaging the other person at all) or not posing any 'what ifs' during the conversation.

A little bit (1) The individual infrequently posed scenarios or the individual posed scenarios that were not very in depth or only slightly focused on how the other person may handle a given situation. He or she posed scenarios to the other dyad member only a few times throughout the conversation or when posing scenarios, they did so subtly.

Somewhat (2) The individual occasionally posed scenarios or the scenarios that they posed were moderately focused on how the other would handle a given situation. He or she posed scenarios about half of the time he/she was talking, demonstrating a moderate desire to either gather this particular information or help the other dyad member think or plan ahead accordingly.

Quite a bit (3) The individual frequently posed scenarios with the fairly obvious intent of understanding how the other dyad member would handle a given situation. The individual posed scenarios quite a bit throughout the interaction or seemed quite focused on a particular scenario.

Very Much (4) The individual consistently posed scenarios throughout the interaction or the scenarios that were posed were clearly focused on understanding how the other would handle a given situation. It is clear that the individual is interested in gathering this particular information or helping the other dyad member think or plan ahead accordingly.

Avoidance- the extent to which an individual pulls back from the interaction or does not engage from the start in such a way so as to avoid discussion of alcohol/drinking. This may manifest as zoning out/checking out, defiance (refusing to speak), physically turning one's body away so he or she is no longer facing the other individual, changing the topic, diverting attention, hesitating, or delaying the discussion. Reluctance to discuss certain topics because of shyness or nervousness should also be coded (along with the Discomfort code, see below). This code assesses the extent to which an individual is avoidant of discussing alcohol regardless of the reason for such behavior. A lack of concern and disregard for the discussion may be present but is not necessary.

If the individual "runs out of things to say" and the conversation comes to a natural end, do NOT code this as avoidance. In other words, the individual would not avoid continued discussion of alcohol/drinking but doesn't have anything else to contribute.

Not at all (0) The individual never demonstrated any avoidant behaviors or if he/she did, they were done in a sarcastic or joking manner. He or she was engaged in the entire interaction.

A little bit (1) The individual infrequently exhibited one, or some combination of, avoidant behaviors or these behaviors were minor or subtle. He or she may display a few brief instances of attempting to avoid the discussion but either reengaged or the behaviors were minor.

Somewhat (2) The individual occasionally demonstrated at least one or some combination of, avoidant behaviors or the behaviors demonstrated a moderate attempt at avoiding the discussion about drinking. The individual was engaged at times but demonstrated a moderate desire to avoid discussing alcohol.

Quite a bit (3) The individual frequently engaged in avoidant behaviors with a fairly obvious desire to disengage from, redirect, or block the conversation. The individual may have displayed one, or a combination of, avoidant behaviors quite a bit throughout the interaction or the behaviors displayed were quite strong efforts to avoid the discussion. The individual actively avoided engaging and did not contribute to the conversation much.

Very Much (4) The individual consistently engaged in avoidant behaviors throughout the interaction with a clear and strong attempt to disengage from, redirect, or block the conversation. The individual may have displayed one, or a combination of, avoidant behaviors throughout the entire interaction task. It is obvious that the individual did not wish to take part in any sort of discussion and actively avoided doing so.

Discomfort- the extent to which the individual demonstrates distress or uneasiness, exemplified as the affective state of anxiety. This could be characterized as tension (body tension, foot tapping or shaking, stammering, lots of 'uhs', fidgeting, shifting, nervous smiling and laughter that doesn't seem appropriate to context, shaky voice) and shy behavior (wandering eyes/difficulty making eye contact, hands over the eyes or face, closed body position). Discomfort can be expressed through facial expressions, body orientation, or tone of voice.

Not at all (0) The individual never demonstrated any discomfort. He or she appeared comfortable and did not demonstrate any behavior consistent with discomfort/anxiety.

A little bit (1) The individual infrequently exhibited one, or some combination of, behaviors that demonstrated discomfort or the discomfort was subtle. He or she may display a brief instance of discomfort but did so less than half the time or the discomfort was minor.

Somewhat (2) The individual occasionally exhibited discomfort through at least one or a combination of behaviors or the behaviors demonstrated moderate discomfort. The individual displayed behaviors consistent with discomfort during about half of the interaction or displayed moderately strong discomfort at times during the interaction.

Quite a bit (3) The individual frequently exhibited discomfort, engaging in behaviors that demonstrated discomfort more often than not during the interaction, or the individual demonstrated fairly obvious discomfort at times during the interaction. The individual may have displayed one, or a combination of, discomfort behaviors quite a bit throughout the interaction or the behaviors displayed were quite strong displays of discomfort.

Very Much (4) The individual consistently demonstrated discomfort throughout the interaction or the individual displayed strong and clear discomfort. The individual may have displayed one, or some combination of behaviors consistent with discomfort throughout the entire interaction task or it was very clear that the individual was anxious/uncomfortable.

Connection- the extent to which an individual appears to have rapport with the other person or demonstrates warmth towards the other individual. The individual demonstrates caring, love, or concern for the other person. These are actions that establish or bolster the relationship between the two individuals and can include complimenting, verbal or physical affection, demonstrating empathy, using non-verbal encouragers, or using an appropriate tone of voice. It is not necessary for the individual to be smiling and/or demonstrating positive affect but this may be seen amongst those who are connected.

Not at all (0) The individual never demonstrated any connection or behaviors were sarcastic or mocking. The individual does not seem to like the other person or appears disconnected or disengaged from the person (not the conversation).

A little bit (1) The individual infrequently exhibited connection or the individual only seemed slightly connected to the other dyad member. This may manifest as few instances where warmth and connection are displayed with other periods of disengagement or even hostility.

Somewhat (2) The individual occasionally exhibited connection or the individual displayed a moderate amount of connection towards the other individual. This may manifest as occasional empathetic comments or affection or a somewhat appropriate and warm tone of voice throughout the interaction.

Quite a bit (3) The individual was frequently connected to the other individual, engaging in behaviors that demonstrated connection more often than not during the interaction, or there was quite a bit of connection displayed. The individual demonstrates quite a bit of rapport and affiliation towards the other person.

Very Much (4) The individual consistently displayed connection throughout the interaction or the individual displayed strong and clear connection. The individual may have displayed one, or some combination of behaviors that demonstrated connection throughout the entire interaction task or the individual was very clearly connected. It is clear that the individual is connected to and shows a great deal of liking/affiliation for the other person.

Hostility- the extent to which an individual is directly hostile, critical, or harshly rejecting of the other's opinions, behaviors, and/or personal characteristics. Hostile statements include malicious teasing, cursing, harsh criticism, insults, derogatory statements, or threatening statements. An individual may accuse, judge, or place undue blame on the other or be particularly insensitive to or dismissive of the other's opinions and/or feelings. Aggressive or harsh questions may also be posed. Lastly, this may also be characterized by a strongly negative tone of voice, hostile eye rolling, or a nasty facial expression.

Appropriate expressions of anger should NOT be coded here.

Light teasing should NOT be coded here.

Not at all (0) The individual never demonstrated hostility towards the other dyad member. He/she did not say anything mean, critical, or rejecting at any point during the conversation or if he/she did, the comment was sarcastic.

A little bit (1) The individual infrequently exhibited one, or some combination of, hostile behaviors. He or she may have engaged in hostile behavior but did so less than half the time or the behavior was subtle or minor. This may manifest as an eye roll or a critical comment but the individual is able to refrain from hostility throughout the rest of the interaction.

Somewhat (2) The individual occasionally demonstrated hostility through one or some combination of, hostile behaviors or the hostility was moderately strong. The individual was somewhat critical or demeaning during the conversation or demonstrated hostility for about half of the interaction.

Quite a bit (3) The individual frequently exhibited hostile behaviors, displaying hostility more often than not during the interaction, or the hostility was quite strong. This could be exemplified by a frequent number of critical comments or the use of a harsh tone of voice for more than half of the conversation or could be exemplified by one particularly harsh and critical comment.

Very Much (4) The individual consistently engaged in hostile behaviors throughout the interaction or the hostility displayed was strong and clear. The individual may have displayed one or a combination of hostile behaviors throughout the entire interaction task or the individual is clearly hostile, making very demeaning, harsh or threatening comments at times during the interaction.

Magnification- Exaggerated Emotional Response - the extent to which an individual's emotional reaction seems out of proportion to the context. This includes reactions such as shock, fright, crying/tearing up, and laughter in response to the other person's comments. For example, an adolescent discloses that they have tried alcohol before and the parent responds by gasping in shock ("I can't believe you would do something like that!!"). Or, an adolescent responds to a comment by shouting (e.g., "Mom, every single one of my friends drinks and they are all fine!). Laughter that is extreme or inappropriate to context should be coded here (and may or may not also be coded as Discomfort). Emotional responses must occur shortly after a stimulus to be coded.

If the emotion builds slowly throughout the conversation, resulting in high levels of emotion by the end of the conversation, this should NOT be coded as it is not an exaggerated response to a given statement.

Not at all (0) The individual never demonstrated any exaggerated emotional response throughout the interaction or if he/she did, it was sarcastic or joking in nature. His/her responses were appropriate to the context throughout the entire interaction.

A little bit (1) The individual infrequently exhibited an exaggerated emotional response or the response was subtle or minor. This includes reacting more strongly than what may be appropriate to context on a few occasions or responding in a way that seems a little bit out of proportion to the context. However, the person was able to regroup and move forward after this slightly exaggerated response.

Somewhat (2) The individual occasionally exhibited an exaggerated emotional response or the reaction was moderately blown out of proportion. This includes reacting more strongly than what may be appropriate to context on more than a few occasions or responding in a way that seems moderately out of proportion to the context.

Quite a bit (3) The individual frequently exhibited an exaggerated emotional response, displaying exaggerated responses more often than not during the interaction, or the response was quite exaggerated. This could be exemplified by a frequent number of exaggerated responses or by one particularly exaggerated response.

Very Much (4) The individual consistently exhibited exaggerated emotional responses throughout the interaction or the exaggerated responses displayed were strong. His/her responses were consistently inappropriate to the context or he/she greatly escalated/magnified the original affect present in the room.

Magnification- Exaggerated Statements/Scare Tactics- the extent to which an individual makes statements that are out of proportion or include unrealistic information. This includes an individual blowing something out of proportion/unrealistic for early adolescents (e.g., talking about the effects of drinking all day everyday rather than the effects of drinking a sip or drink) or discussing unrealistic information, typically in an attempt to scare the other person away from drinking (e.g., "for every drink you consume, your kidneys and liver shut down and then you'll have to be on a machine for the rest of your life"). These statements will often be associated with consequences but do not necessarily have to be (e.g., could be associated with peer pressure or rules about drinking)

> Statements that are realistic, such as "some people die from drinking because they choke on their vomit", should NOT be coded. Although this information is on the somewhat extreme end of the possible consequences from drinking, it is realistic that this could occur.

Not at all (0) The individual never used any exaggerated statements throughout the interaction or if he/she did, they were sarcastic or joking in nature. His/her statements were realistic or within reason throughout the entire interaction.

A little bit (1) The individual infrequently used exaggerated statements or the statements were only slightly unrealistic or out of proportion. This includes the use of exaggerated statements on a few occasions or statements that are a little bit unrealistic or out of proportion. However, the person also used statements that were within reason for the majority of the conversation.

Somewhat (2) The individual occasionally used exaggerated statements or the statements were moderately unrealistic or blown out of proportion. This includes the use of exaggerated statements on more than a few occasions or responding in a way that seems moderately out of proportion but the individual also often used statements that were realistic or within reason.

Quite a bit (3) The individual frequently made exaggerated statements, using exaggerated statements more often than not during the interaction, or statements used were quite exaggerated. This could be exemplified by a frequent number of exaggerated statements or by one particularly exaggerated statement.

Very Much (4) The individual consistently used exaggerated statements throughout the interaction or the exaggerated statements were strong. His/her statements were consistently unrealistic/blown out of proportion or he/she made statements that were entirely unrealistic/blown out of proportion.

Humor- the extent to which joking or light teasing is used during the conversation. This can be humor directed at one another or at somebody or something else. The function of the humor (e.g., to lighten the mood, used to disclose sensitive information, to convey permissiveness) does not matter. Any joke or statement that is laughter-evoking (when laughter is appropriate; not nervous laughter) or intends to evoke laughter (even if not successful) should generally be coded. The humor or joke can be about any topic, not necessarily just about alcohol or drinking.

Teasing or sarcasm that feels malicious, demeaning, or an attack of the other person should NOT be coded here (see Hostility code above).

Not at all (0) The individual never used any humor or made any statements that provoked (appropriate) laughter or if they did, the humor was malicious or hostile. This may be exhibited by the individual remaining serious throughout the interaction.

A little bit (1) The individual infrequently used humor or statements that provoked (appropriate) laughter or the humor or statements were only slightly humorous. He or she may have used humor but did so only a few times.

Somewhat (2) The individual occasionally used humor or statements that provoked (appropriate) laughter or the humor or statements used were moderately humorous. He or she may have used humor sprinkled throughout the interaction or used a statement or joke that was somewhat humorous.

Quite a bit (3) The individual frequently exhibited humor or made frequent statements that provoked (appropriate) laughter, or the statements used were quite humorous or elicited quite a bit of laughter.

Very Much (4) The individual consistently used humor or made statements that provoked (appropriate) laughter throughout the entire interaction task or the statements used were very humorous or elicited a lot of laughter. This may be exemplified as an extremely light-hearted conversation that was filled with humor.

Self-Disclosure- First, please note any self-disclosure that occurs during the conversation by indicating the timestamp on the bottom of the coding sheet. Self-disclosures will be analyzed in more detail to refine this code in the next version of the coding manual.

Parent: discussion of the parent's alcohol use either currently or in the past (e.g. at the adolescent's age). This can include statements that refer to their own use (e.g., "your dad and I drink wine at parties or when we have friends over as a way to celebrate"), the parent telling a story about their use (e.g., when I first tried alcohol, I drank so much that I threw up), or the parent's response to a question about their use (e.g., I started drinking when I was 13 years old). Any self-disclosure by the parent should be coded regardless of whether it is parent-initiated or in response to an adolescent's question and regardless of disclosure content (e.g., empathy- "I've been there", suggestion- "here is how I handled peer pressure", deviance training- "drinking made me feel like I fit in" or warnings- "don't do what I do"). This code is intended to capture the extent to which parents discuss their own alcohol use and not necessarily "true" disclosures (information the adolescent did not already know).

> If the parent comments on another individual's use (e.g., your uncle had a hard time cutting down after he started drinking), this would NOT be coded here (see Other Disclosure code below).

Adolescent: discussion of the adolescent's experience with alcohol. This can include comments about their own use (e.g., "I drank a few beers at a party once" or "I have never drank alcohol"), OR their exposure to alcohol (e.g., "I've been to one party that had alcohol"). This allows adolescents who have not yet initiated an opportunity to obtain a similar score to adolescents who have already initiated if they are forthcoming and disclosing during the interaction. Adolescent disclosure should be coded regardless of whether it is adolescent-initiated or in response to a parent's question and regardless of disclosure content. This code is intended to capture the extent to which adolescents discuss their experience with alcohol (their own use or exposure to alcohol) and not necessarily "true" disclosures (information the parent did not already know).

> If the adolescent comments on another individual's use (e.g., Sarah's parents let her drink at dinner), this would NOT be coded here (see Other Disclosure code below).

Not at all (0) The individual never self-disclosed during the conversation or if they did, the comment was sarcastic.

A little bit (1) The individual infrequently self-disclosed or the self-disclosure was minor or subtle. He or she discussed alcohol use (or exposure to alcohol) but did so at most a few times or the disclosure was limited in detail (e.g., a yes or no response to the other person's question).

Somewhat (2) The individual occasionally self-disclosed or the self-disclosure was moderate. This may be exhibited by the occasional comment or story about his/her own alcohol use (or exposure to alcohol), or an occasional response to a question from the other person about his/her own use (or exposure to alcohol). It could also be exhibited by a self-disclosure that was moderate in strength, as indicated by the individual providing details about their experience.

Quite a bit (3) The individual's comments were frequently related to their own alcohol use (or exposure to alcohol) or a self-disclosure was quite disclosing in nature. This may be exhibited by a self-disclosure that is quite revealing or disclosing (with information that may or may not be appropriate).

Very Much (4) The individual consistently self-disclosed about their alcohol use (or exposure to alcohol) or self-disclosures were very disclosing in nature. This may be exhibited by a self-disclosure that is very revealing or disclosing (with information that may or may not be appropriate).

Other-Disclosure- First, please note any other-disclosure that occurs during the conversation by indicating the timestamp on the bottom of the coding sheet. Other-disclosures will be analyzed in more detail to refine this code in the next version of the coding manual.

Parent: discussion of someone else's current or past alcohol use or problems with alcohol. This can include the parent telling a story about someone's use (e.g., when your uncle first tried alcohol, he drank so much that he threw up) or commenting on someone's drinking (e.g., you know your uncle drinks a lot of beer). Other-disclosures can include statements about family members, celebrities, TV characters, book characters, news stories, etc. as long as the individual is talking about a particular person (e.g., Lindsay Lohan), not just a vague reference (e.g., "celebrities"). Any other-disclosure should be coded regardless of whether it is parent-initiated or in response to the adolescent's question and regardless of disclosure content. This code is intended to capture the extent to which parents discuss other people's alcohol use and not necessarily "true" disclosures (information the adolescent did not already know).

> If the parent comments on his/her own use (e.g., I only ever drink one drink), this would NOT be coded here (see Self Disclosure code above).

Adolescent: discussion of someone else's experience with alcohol. This can include disclosure about that individual's drinking (e.g., "Sarah drank a few beers at a party once" or "Sarah has never had a drink"), or exposure to alcohol (e.g., "Sarah's parents drink wine at dinner"). Other-disclosures can include statements about family members (including the participating caregiver), peers, celebrities, TV characters, book characters, news stories, etc. as long as the individual is talking about a particular person (e.g., Lindsay Lohan), not just a vague reference (e.g., "celebrities"). Other-disclosure should be coded regardless of whether it is adolescent-initiated or in response to a parent's question and regardless of disclosure content. This code is intended to capture the extent to which adolescents discuss other people's experience with alcohol and not necessarily "true" disclosures (information the parent did not already know).

> If the adolescent comments on his/her own experience with alcohol (e.g., I've been at a party where they had alcohol), this would NOT be coded here (see Self Disclosure code above).

Not at all (0) The individual never discussed someone else's alcohol use (or exposure to alcohol) during the conversation or if they did, the comment was sarcastic.

A little bit (1) The individual infrequently discussed someone else's alcohol use (or exposure to alcohol) or the other-disclosure was minor or subtle. He or she discussed someone else's alcohol use (or exposure to alcohol) but did so at most a few times or the disclosure was limited in detail (e.g., a yes or no response to the other person's question).

Somewhat (2) The individual occasionally discussed someone else's alcohol use (or exposure to alcohol) or the other-disclosure was moderate. This may be exhibited by the occasional comment or story about someone else's alcohol use (or exposure to alcohol), or an occasional response to a question from the other person about another's use (or exposure to alcohol). It could also be exhibited by an other-disclosure that was moderate in strength, as indicated by the individual providing details about someone's experience.

Quite a bit (3) The individual's comments were frequently related to someone else's alcohol use (or exposure to alcohol) or an other-disclosure was quite disclosing in nature. This may be exhibited by a disclosure that is quite revealing or disclosing (with information that may or may not be appropriate).

Very Much (4) The individual consistently discussed someone else's alcohol use (or exposure to alcohol) or other-disclosures were very disclosing in nature. This may be exhibited by a disclosure that is very revealing or disclosing (with information that may or may not be appropriate).

Alcohol-Specific Communication: Parent Rating Sheet

Participant #: _____ Coder: _____ Parent's Sex: M F Adolescent's Sex: M F

CONTENT:

Code	Notes	Score
Permissive		
Contingencies		
Alcohol Rules		
Context		
Consequences		
Peer Pressure		
Parent/Family Disapproval		

PROCESS:

Code	Notes	Score
Conversational Dominance		
Engaging Questions		
Disclosure Questions		
Scenarios		
Avoidance		
Discomfort		
Connection		
Hostility		
Exaggerated Emotional Response		
Exaggerated Statements/ Scare Tactics		
Humor		
Self-Disclosure		
Other-Disclosure		

Self-Disclosure segments: _____ _____ _____

Other-Disclosure segments: _____ _____ _____

Alcohol-Specific Communication: Adolescent Rating Sheet

Participant #: _____ Coder: _____ Parent's Sex: M F Adolescent's Sex: M F

CONTENT:

Code	Notes	Score
Positivity towards alcohol		
Negativity towards alcohol		

PROCESS:

Code	Notes	Score
Conversational Dominance		
Engaging Questions		
Disclosure Questions		
Scenarios		
Avoidance		
Discomfort		
Connection		
Hostility		
Exaggerated Emotional Response		
Exaggerated Comments/ Scare Tactics		
Humor		
Self-Disclosure		
Other-Disclosure		

Self-Disclosure segments: _____ _____ _____

Other-Disclosure segments: _____ _____ _____

APPENDIX 2: SELF-REPORT MEASURE OF ALCOHOL-SPECIFIC COMMUNICATION

Caregiver Content

1. While you and your adolescent were just talking about alcohol, how strongly did you emphasize how your adolescent would be punished if he/she drank alcohol?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

2. While you and your adolescent were just talking about alcohol, how strongly did you emphasize the people or places he/she should avoid because they are associated with alcohol?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

3. While you and your adolescent were just talking about alcohol, how strongly did you emphasize the effects of alcohol, such as the way alcohol affects your health, relationships with other people, grades, or consequences like getting arrested?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

4. While you and your adolescent were just talking about alcohol, how strongly did you emphasize issues related to peer pressure to drink?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

5. While you and your adolescent were just talking about alcohol, how strongly did you emphasize whether you or your family would disapprove of his/her drinking?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

6. While you and your adolescent were just talking about alcohol, how strongly did you emphasize that it would be okay if he/she drank alcohol in certain circumstances?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

7. While you and your adolescent were just talking about alcohol, how strongly did you emphasize what your adolescent should do if he/she does drink, like call someone to be picked up or stay at a friend's house?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

Adolescent Content

8. While you and your caregiver were just talking about alcohol, how much did you talk about drinking alcohol as a bad thing?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

9. While you and your caregiver were just talking about alcohol, how much did you talk about drinking alcohol as an okay thing?

0	1	2	3	4
Not at All	A little bit	Somewhat	Quite a bit	Very Much

Caregiver and Adolescent Process

10. While you and your adolescent/caregiver were just talking about alcohol, how much did you take control of the conversation?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

11. While you and your adolescent/caregiver were just talking about alcohol, how often did you ask questions that showed interest in your adolescent's/caregiver's opinions?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

12. While you and your adolescent/caregiver were just talking about alcohol, how often did you ask questions to get information from your adolescent/caregiver?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

13. While you and your adolescent/caregiver were just talking about alcohol, how much did you check out or zone out?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

14. While you and your adolescent/caregiver were just talking about alcohol, how much did you avoid the topic altogether, (e.g., by talking about something or distracting your adolescent/caregiver to keep them off topic)?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

15. While you and your adolescent/caregiver were just talking about alcohol, how much do you think you showed discomfort, like tapping your foot, fidgeting, or not making eye contact?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

16. While you and your adolescent/caregiver were just talking about alcohol, how much did you show that you were willing to hear what your adolescent/caregiver had to say, like nodding your head to show you are listening or not changing the subject?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

17. While you and your adolescent/caregiver were just talking about alcohol, how much did you show that you care for your adolescent/caregiver?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

18. While you and your adolescent/caregiver were just talking about alcohol, how often did you make critical or harsh comments?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

19. While you and your adolescent/caregiver were just talking about alcohol, how often did you react stronger to the situation than you think other people might have?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

20. While you and your adolescent/caregiver were just talking about alcohol, how often did you say something that was exaggerated to scare or shock your adolescent/caregiver?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

21. While you and your adolescent/caregiver were just talking about alcohol, how often did you joke, use humor, or tease your adolescent/caregiver?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

21-Caregiver. While you and your adolescent were just talking about alcohol, how often did you talk about your alcohol use (either now or in the past) regardless of whether you brought it up or your adolescent asked you about it?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

21-Adolescent. While you and your caregiver were just talking about alcohol, how often did you talk about your experience with alcohol (like your own drinking, people you know who drink, or times when you have been around alcohol) regardless of whether you brought it up or your caregiver asked you about it?

0	1	2	3	4
Never or Rarely	A little bit/ Infrequently	Somewhat Occasionally	Quite a bit/ Frequently	A lot/ Consistently

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