The Influence of Alcohol-Specific Communication on Adolescent Alcohol Use and Alcohol-Related Consequences

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Abstract

The Influence of Alcohol-Specific Communication on Adolescent Alcohol Use and Alcohol-Related Consequences
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Alcohol-specific communication is conceptualized as a direct conversation between an adult and a child regarding alcohol use and during these conversations, the adult relays *messages* to the child about alcohol. The current study examined the construct of alcohol-specific communication and the effect of messages on adolescent alcohol use and alcohol-related consequences. Parent-child dyads were assessed biannually for 3 years (grades 9-11 at wave 6) to examine these relations in a large longitudinal study of adolescents initially in grades 6 through 8. An exploratory factor analysis identified two factors among alcohol-specific communication items, permissive messages and negative alcohol messages. Results showed that permissive messages predicted higher frequency of future alcohol use. However, previous level of adolescent alcohol use moderated the permissive message- alcohol use/alcohol consequences relation. Results suggest that parental messages regarding alcohol use may impact adolescent alcohol use beyond the effect of general parenting style and parental alcohol use.

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Public health campaigns ranging from media ("Office of National Drug," n.d.) to family interventions (Brody et al., 2004; Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001) encourage parents to talk to their children about alcohol. However, these interventions rarely indicate what parents should say to their children when they do discuss this topic. Moreover, current research provides little guidance for parents in how different alcohol-related messages relate to adolescents' future use of alcohol. What we do not yet know is the extent to which each type of message is used and effective for various types of adolescents.

Adolescent alcohol use is very common in the United States and alcohol is the primary substance used by our youth (Johnston, O'Malley, Bachman, & Schulenberg, 2009). A nationally representative study found that individuals begin drinking as early as age 13 and the percentage of individuals who report having ever consumed alcohol increases over adolescence and young adulthood (Substance Abuse and Mental Health Services Administration, 2005). For example, 39% of 8th grade students compared to 72% of 12th grade students have reportedly tried alcohol in their lifetime (Johnston et al., 2009). These numbers are of concern considering the effect that alcohol consumption has on children and adolescents. Alcohol use by children and adolescents is associated with negative consequences such as decreased academic performance, legal troubles, increased risky sexual behavior and increased risk for alcohol abuse and dependence (U.S. Department of Health and Human Services, 2007). In fact, individuals 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).

Studies vary in the percentage of children whose parents have talked to them about alcohol use. As expected, with increasing age, more children report having discussed substance use with a parent (from 43% in a sample with mean age=13, Miller-Day, 2002 to 93% in sample with mean age=18.5 Miller-Day, 2008). Parents who discuss alcohol use with their children use multiple types of messages in these conversations (Ennett, Bauman, Foshee, Pemberton, & Hicks, 2001; Miller-Day & Dodd, 2004; Miller-Day, 2008).

Alcohol-specific communication is conceptualized as a direct conversation between an adult and a child regarding alcohol use. Within these conversations, *messages* are relayed from the adult, in this case a parent, to the child such as 'it is acceptable to drink alcohol' or 'drinking will result in negative consequences.' Alcohol-specific communication is conceptualized to be different than, although likely associated with, general parenting style (Ennett et al., 2001). General parenting style, such as responsiveness and demandingness, is a broad concept and refers to the way a parent provides for a child's needs for both nurturance and limit setting (Baumrind, 1991). Evidence demonstrates that general parenting styles are associated with adolescent alcohol use (Baumrind, 1991) but less evidence exists regarding how specific forms of parenting, such as alcohol-specific communication, are associated with adolescent alcohol use.

Evidence supports the notion that just the occurrence of alcohol-specific communication, irrespective of the message content, predicts better alcohol use outcomes for adolescents. The more frequently conversations regarding alcohol use occur, the more likely adolescents are to use safe drinking practices (Booth-Butterfield & Sidelinger, 1998). On the other hand, parents who less frequently caution their young adolescents about substance use have children who are more likely to initiate drinking one year later (Andrews, Hops, Ary, Tildesley & Harris, 1993). These findings suggest that the presence of alcohol-specific communication may have a beneficial effect on adolescent alcohol use. However, methodological limitations undermine confidence in the conclusions we can draw about the benefit of alcohol-specific communication. Of the two studies above, one is cross-sectional, limiting the causal conclusions that can be drawn, and the other relied

on only one item to measure the frequency of parental messages about the health consequences of alcohol use.

Preliminary research finds that commonly used messages concern rules regarding alcohol use (i.e., the child cannot use alcohol or the child will be disciplined for use; Ennett et al., 2001), information regarding the negative consequences that result from alcohol use (i.e., resulting health problems associated with alcohol use; Ennett et al., 2001; Andrews et al., 1993), and messages that express permissiveness of alcohol use (i.e., parents allow the child to drink alcohol at home; Jackson, Henriksen, & Dickinson, 1999; Miller-Day, 2008; van der Vorst, Engels, Dekovic, Meeus, & Vermulst, 2007).

In a previous study using the same data included in this study, a confirmatory factor analysis showed evidence of 4 types of messages parents may give about alcohol (Freire, 2008). Two of these are similar to those reported in previous studies; namely negative alcohol messages (e.g., messages about health consequences) and permissive alcohol messages (e.g., messages allowing the child to drink alcohol at home). The remaining two include alcohol contingency messages (e.g., messages about what the child should do if they do drink) and alcohol monitoring (e.g., checking for physical evidence of substance use). Alcohol contingency messages are conceptually similar to permissive messages. With these messages, parents are discussing with their children what to do when they do drink which may condone the drinking behavior itself. Therefore, alcohol contingency messages are conceptualized as a form of permissive messages in the current study. Alcohol monitoring occurs when parents check for physical evidence of alcohol use such as looking around the child's room and smelling a child's breath for signs of alcohol use. This differs from alcohol-specific communication in that discussions about alcohol use do not necessarily occur when parents monitor for alcohol use. For this reason, alcohol monitoring may be conceptually distinguished from other alcohol-specific communications. **Thus, I posit that alcohol-specific communication includes 3 primary factors. These include messages about health consequences, rule-based**

messages and permissive messages, all of which have been shown to be common types of alcohol-specific communication.

Several studies have assessed messages used in alcohol-specific communication and found different effects on adolescent substance use with different message content. Studies have found that alcohol-specific communication regarding rules (Spijkerman, van den Eijnden, & Huiberts, 2008; van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005) and health consequences (Andrews et al., 1993) are associated with lower rates of alcohol use whereas permissive alcohol-specific communication predicts higher levels of use (Jackson et al., 1999) and alcohol misuse (Freire, 2008; Wood, Read, Mitchell, & Brand, 2004). Therefore, use of permissive messages both increases the likelihood of alcohol consumption and is related to problematic drinking.

However, most of these studies assess the effect of only one type of message on adolescent alcohol use. The current study extends this work by assessing different types of messages simultaneously. Whereas many previous studies have developed face valid items to assess alcohol-specific messages (van der Vorst et al., 2005; Andrews et al., 1993), this study uses factor analysis to assess the structure underlying such messages to directly test, for example, whether the 3 dimensions of alcohol-specific communication are distinct or some are opposing ends of a single dimension (i.e., alcohol-specific rules and permissive messages).

The efficacy of such messages, however, may differ across children based on factors such as the adolescent's previous experience with alcohol. Some evidence suggests that if the child is already using alcohol, parental messages regarding health consequences is associated with a continuation of use (Andrews et al., 1993). Whereas children whose parents apply strict rules about alcohol use have been found to be less likely to *initiate* drinking at a one year follow up (van der Vorst, Engels, Meeus, & Dekovic, 2006), children who had already initiated use and been exposed to such rule-based messages have been found to escalate alcohol consumption (Ennett et al., 2001; van der Vorst et al., 2007). Whereas some evidence suggests that previous level of alcohol use may moderate the relation between rule based messages and adolescent alcohol use as well as health

consequence messages and alcohol use, no evidence exists regarding permissive messages. Additionally, to my knowledge, no studies have examined whether the adolescent's alcohol use moderates the relation between alcohol-specific messages and alcohol-related consequences. Once the child has already initiated alcohol use, reducing alcohol-related consequences becomes important. Exploration of the effect that alcohol-specific communication has on alcohol-related consequences will elucidate whether parental messages about alcohol reduce the harmful consequences associated with drinking. **The current study will first test the effect that different types of alcohol-specific messages have on future adolescent alcohol use and alcohol-related consequences. Secondly, the current study will explore adolescent alcohol use as a moderator of the relation between several types of alcohol-specific communication and subsequent alcohol use and alcohol-related consequences.**

The current study assesses the effect of alcohol-specific communication on future alcohol use and alcohol-related consequences in children ages 11-18, an age range known for initiation of and increases in alcohol use and alcohol-related consequences. The current study has 3 aims. First, I will identify the different types of messages that parents use in communicating about alcohol use with their children, focusing on rule-based messages, health consequence messages and permissive messages. In addition, I will test the effect of parent-communicated messages on the adolescent's future alcohol use and alcohol-related consequences. Consistent with previous studies, I expect that adolescents whose parents use rule-based or health consequence messages will not escalate their alcohol use and alcohol-related consequences. On the other hand, I expect that use of permissive messages will result in an escalation of alcohol use and alcohol-related consequences. Then, I will examine whether the child's previous experience with alcohol moderates the relation between alcohol-specific communication and subsequent alcohol use and alcohol-related consequences. Specifically, I expect that with increasing levels of previous alcohol use, subsequent increases in alcohol use and alcohol-related consequences will occur for those whose parents use rule-based or health consequence messages. On the other hand, I expect that the use of permissive messages will

result in an escalation of alcohol use and alcohol-related consequences for all children regardless of current level of alcohol use.

Current empirical evidence is not sufficient to show whether all types of alcohol-specific messages from parents will have positive effects on future substance use and given that millions of dollars are being spent to encourage alcohol-specific communication, it is imperative that we have evidence of the benefit of these conversations. Additionally, prevention efforts in reducing adolescent alcohol use and alcohol-related consequences should be well informed regarding what messages are most beneficial for different types of adolescents. The current study hopes to inform prevention efforts by testing what types of messages are beneficial in reducing alcohol use and alcohol-related consequences in our youth. Exploring children's level of alcohol use as a moderator may help parents to make a better decision regarding the type of communication to use in order to predict better alcohol outcomes for their adolescents. Findings could also help identify which children are most at risk for escalating substance use and are therefore in need of intervention.

Methods

I analyzed data that examines the development of adolescent risk behaviors and the contribution of parental factors to the development of those behaviors. The data come from a longitudinal study, referred to as Context/Linkages, supported by NIDA (R01 DA13459, granted to Dr. Susan Ennett) and by CDC (R49 CCV423114; granted to Dr. Vangie Foshee).

Participants

The Context/Linkages study consists of adolescents and parents in three counties across the state of North Carolina. All schools in these counties with grades 6-11 participated including middle schools, high schools, K-8 schools and alternative schools. At the initial wave of data collection, subjects were enrolled in the 6^{th}, 7^{th} or 8^{th} grade (9^{th} grade marked the beginning of high school) and were assessed twice annually for three years, or for 6 waves (see table 1). At each wave, all adolescents in the targeted grades within participating schools were eligible for the study with the exception of those in classrooms for Exceptional Children and those with inadequate English reading

skills to complete the questionnaire. At the first wave of data collection, 5220 adolescents in 13 schools participated. Adolescents were almost evenly distributed among 6th, 7th, and 8th grade with 36%, 33% and 31% enrolled in each grade, respectively.

A simple random sample of 2727 parents who had adolescents in participating schools was identified. Of the 2727 parents chosen, 512 were not contacted to participate because their adolescent did not participate in wave 1 of the study (i.e., 17 adolescents were absent on the day of data collection, 266 parents refused adolescent participation, 31 adolescents refused to participate, and 196 adolescents were not eligible) resulting in 2215 parents contacted for participation. Eligibility criteria for parent participation included having only one child in the school-based study and the ability to complete the interview in English (N=2062). 80.7% of eligible parents participated (N=1663) and 90% of those interviewed were mothers or mother surrogates. Unlike the adolescent sample, new parents were not enrolled after wave 1. This core sample includes families in which both the adolescent and parent participated in the study (N=1663).

88.4% of eligible adolescents within participating schools completed wave 1. Eligible adolescents did not participate due to absence from school on data collection day, parental refusal of adolescent participation, or adolescent refusal. Completion rates in the core sample decreased over the 6 waves; 100% participated at wave 1, 82.8% at wave 2, 85.2% at wave 3, 80.0% at wave 4, 76.1% at wave 5 and 59.6% at wave 6. Across the 6 waves of data collection, between 0.4% and 1.8% of the core sample did not participate due to school absence, between 5.4% and 11.1% did not participate due to parental refusal, between 1.5% to 5.4% did not participate due to adolescent refusal, and between 4.4% to 24.7% did not participate because they could not be contacted. Attrition also occurred in the parent sample; 82.5% of the initial parent sample participated in wave 3 and 71.8% participated at wave 5.

The core sample consists of a diverse group of adolescents self-identifying as 56% Caucasian, 36% African American, 1% Latino and 5% "another race". 48% of this sample is male and 31% reported living with only one parent. At the initial wave of data collection, the mean age

was 13 years. The core sample is representative of the larger sample on all demographic variables and will be used in all analyses.

Procedures

Adolescents completed self-report questionnaires that took approximately 1 hour within classrooms or larger group settings (i.e., cafeteria). Teachers stayed in classrooms to control student behavior but, to maintain confidentiality, they did not move around the room. Additionally, students spread themselves around the room and were asked to place questionnaires into envelopes before returning them to study staff. Parents were asked to complete a 25 minute telephone survey annually at waves 1, 3 and 5.

Schools in one of the three counties did not participate in school-based administration in wave 6 but questionnaires were mailed to those adolescents in the core sample. Additionally, students who moved out of participating counties were mailed questionnaires and parents were still interviewed via telephone.

Measures

All measures and items included in analyses remained identical for all waves of data collection.

Demographics. Adolescents reported their gender and age. They were also asked to report their race as "White', 'Black or African American', 'Hispanic or Latino', "American Indian or Native American', 'Asian or Pacific Islander', "Multiracial (mixed race)', 'Other' or 'Don't know'. Adolescents who reported a race other than Caucasian or African America were collapsed into an 'other race' option due to small frequencies. Dummy variables were then created with Caucasian as the reference category. In addition, adolescents were asked who they live with most of the time and were asked to choose from 'mother and father', 'mother and stepfather', 'stepmother and father', 'mother only', 'father only', 'stepmother only', 'stepfather only', or 'other.' This was used as an indicator of whether the child lives in a one parent or two parent home. Level of education

completed by both a mother figure and a father figure was assessed through adolescent report and the highest level of education reported across both parents was used.

Alcohol-Specific Communication. Parents reported on use of alcohol-specific communication with their children. 71% of parents reported having ever had a direct conversation with their child regarding alcohol and 76% of those parents had that conversation in the past 3 months. All participating parents indicated on a dichotomous scale (yes/no) whether or not they have ever made 12 specific statements regarding alcohol-specific communication. These same items were predictive of concurrent alcohol misuse in Friere et al. (2008).

Adolescent's Level of Alcohol Use. Adolescent alcohol use was assessed as the frequency of use in the past 3 months. Adolescents reported the number of days they had 1 or more drinks of alcohol. 6 options were given ranging from "0 days" to "20 or more days" and responses were scored as 0-5 with higher scores representing more frequent alcohol use. Three additional questions assessed the number of times in the past 3 months that the adolescent (1) had 3 or 4 drinks in a row, (2) had 5 or more drinks in a row, and (3) had gotten drunk or very high from drinking alcoholic beverages. Reponses were scored as None=0, 1-2 times=1, 3-5 times=2, 6-9 times=3, and 10 or more times=4. Each of the four items were standardized and averaged to create a composite adolescent alcohol use score with high reliabilities at both baseline and follow-up (α=0.95 and α=0.95, respectively).

Alcohol-Related Consequences. Adolescents reported the number of times that 6 alcohol-related consequences occurred over the past 3 months. Items were adapted from the National Longitudinal Study of Adolescent Health and included being hungover, getting into trouble with parents because of drinking, having problems with someone they are dating because of drinking, doing something they later regretted because they had been drinking, getting into a sexual situation they later regretted because they had been drinking, and getting into a physical fight because they had been drinking (Bearman, Jones & Udry, 1998). Response options included "None," "1-2 times," "3-5 times," "6-9 times," or "10 or more times" but items were dichotomized to reflect whether or

not any consequences occurred because frequencies were heavily skewed to the right. 'None' was scored as 0 indicating that the consequence had not occurred and all other response options were rescored as 1 indicating that consequences had occurred with some frequency. These 6 items were averaged to create a composite score with higher scores indicating greater alcohol-related consequences with adequate reliabilities for both baseline and follow-up (α=0.91 and α=0.88, respectively).

General Parenting Style. Adolescents were asked to report on parental responsiveness and demandingness using items from the Authoritative Parenting Index (Jackson, Henriksen, & Foshee, 1998). Three items from each scale were administered and responses were averaged to create a composite responsiveness score and a composite demandingness score. Because 90% of parents who participated were mothers or mother surrogates, adolescent reports of maternal parenting were chosen for analyses. Response options for all items were 'not like her,' 'sort of like her,' 'a lot like her,' and 'just like her.' Items were scored on a 0-3 scale with higher scores indicating high levels of responsiveness and demandingness. Reliability for the responsiveness and demandingness scales were adequate (α=0.87 and α=0.80, respectively).

Parental Alcohol Use. Parents reported the frequency of their own alcohol use in the past 3 months using 6 response options ranging from 'almost every day' to 'less than one day a month'. Reponses were scored such that higher scores correspond to higher levels of alcohol use. Parents were also asked how many drinks they would usually have on days when they drank. Five response options were given with the number of drinks increasing from '1 drink' to '5 or more drinks'. Responses were scored such that higher scores indicate higher quantities of use. Individuals who had never had a drink in their lives skipped out of these questions and it is therefore assumed that they would have responded 'never drink' to both questions. A product of quantity and frequency scores was created as an indicator of parental alcohol use.

Results

Data Sampling

To focus on short-term changes in adolescent alcohol use associated with parents' behavior and to retain the advantages of prospective data, I chose a 2 wave design for analysis. However, the data were nested within person across 6 time points, resulting in dependence of observations. In order to eliminate this nesting, I selected a single time window for analysis for each individual in the core sample such that predictor and control variable data were used for each parent-child dyad at wave 1, wave 3 or wave 5. For each parent-child dyad, data also included adolescent outcome measures from the subsequent assessment wave (2, 4 or 6, respectively). The lag time between the 2 data points was 6 months, with the first data point including data from a spring assessment and the second including data from the fall assessment. For example, a portion of adolescents were sampled to use the wave 1 and 2 data. For these youth, I used wave 1 data, collected in the *spring* of 2002, for all predictor and control variables. Outcome variables used wave 2 data, collected in the *fall* of 2002. This resulted in a model that predicts adolescent alcohol outcomes 6 months after the initial assessment. Selection of wave for analysis was guided by the goals of retaining all possible cases and creating a balanced distribution across the three assessment windows. Almost all participants were retained but sampling just one time point eliminates concern about dependence of observations and simultaneously allows an analysis of a larger age range than simply analyzing change over time from wave 1 to wave 2.

To sample time points for each participant, I first identified participants' eligibility for the three groups (wave 1 & 2, wave 3 & 4, or wave 5 & 6; step one). In order to be eligible for a group, the adolescent must have completed both assessment waves and the parent must have completed the first wave. For example, to be eligible for the wave 1 & 2 group (group 1), the adolescent must have completed both the wave 1 and wave 2 assessments and the parent must have participated at wave 1. 152 participants did not meet the criteria necessary to be in any group and were dropped from analyses. Parent-child dyads that were only eligible for one of the three groups were then assigned to that group (step two). Based on this criterion, 207 families were assigned to use wave 1&2 data

(group 1), 38 families were assigned to use wave 3&4 data (group 2) and 49 families were assigned to use wave 5&6 data (group 3).

The remaining participants were randomly assigned to groups for which they were eligible, but with the constraint that approximately equal sample sizes (~503) would be obtained in each of the three groups. I began this assignment with participants eligible for two groups (step three). I assigned these individuals according to the proportion of the total needed for a given group. Specifically, individuals eligible for groups 1 and 2 were assigned to group 1 and group 2 according to the proportion of the total number still needed to fill that group (i.e., group 1: 503 total needed - 207 already assigned in step 2 above = 296 still needed to fill group 1; group 2: 503 total needed - 38 already assigned = 465 still needed to fill group 2). I repeated this procedure for individuals eligible for both groups 1 and 3 and then those eligible for both groups 2 and 3. Lastly, I randomly assigned individuals who were eligible for all three groups until the groups were filled (step four). In the final sample, 502 families were assigned to group 1 (Wave 1 and 2 data), 503 families were assigned to group 2 (Wave 3 and 4 data) and 506 families were assigned to group 3 (Wave 5 and 6 data).

Exploratory Factor Analysis

An exploratory factor analysis was conducted, following Gorsuch's (1983) recommendations, to elucidate the underlying messages that parents convey to their adolescents through a variety of alcohol-specific discussions. A principal components analysis with commonalities set to unity was used to determine the number of factors that should be extracted. Examination of eigenvalues showed a precipitous drop from a one factor solution to a two factor solution and another substantial decrease from two factors to three factors. A scree plot indicates extraction of either two or three factors.

A maximum likelihood exploratory factor analysis with an oblique rotation was then used to model factor correlations and to identify the simple structure underlying the relation of the items to the underlying factors. A two factor solution found that although 3 items cross loaded on both factors, the majority of items cleanly loaded onto one of the two factors (see table 2). The interfactor

correlation of the two factor solution was 0.41. The three factor solution contained one factor with a single item and two additional items that cross loaded among the factors. Interfactor correlations were 0.33 (factors 1 and 2), 0.49 (factors 1 and 3), and 0.25 (factors 2 and 3). The two factor solution was considered a better fit than the three factor solution based on the criteria of simple structure and parsimony (Gorsuch, 1983).

Although the two factor solution was chosen as the best fit, there remained concern with the three cross loading items. A two factor maximum likelihood EFA with oblique rotation was conducted removing these three items. Results show that removing cross loading items results in a cleaner two factor solution with an interfactor correlation of 0.38 (see table 2). Analysis of item content reveals a "negative alcohol messages" factor and a "permissive messages" factor. Items that load onto the negative alcohol message factor are related to health consequences and parental rules associated with alcohol use whereas items that load on the permissive message factor show acceptance of alcohol use. Findings informed scoring of two alcohol-specific communication scales for subsequent analyses. Cronbach's alphas indicated that the negative alcohol message scale has high reliability ($\alpha = 0.95$) and the permissive alcohol messages scale is reasonably reliable ($\alpha = 0.69$).

Descriptive Analyses

Descriptive analyses examined associations among key variables in analyses (table 3) and differences in alcohol-specific communication across families as a function of demographic characteristics (table 4). Parents used significantly more permissive messages with girls than with boys ($t(1317)=2.05$, $p<.05$) and with older adolescents, aged 15-18 years old, than with younger adolescents, aged 11-14 years old ($t(1313)=-2.02$, $p<.05$). On the other hand, two-parent households used significantly more negative alcohol messages then one-parent households ($t(1237)=2.24$, $p<.05$).

There were also significant differences in the use of negative alcohol messages ($F(2,1297)=13.67$, $p<.0001$) and permissive messages ($F(2,1297)=43.45$, $p<.0001$) by parents from different cultural backgrounds. Caucasian parents and parents who self-identified as neither

Caucasian nor African American reported using significantly more permissive messages than African American parents ($p<.05$). Additionally, Caucasian parents also acknowledged using negative alcohol messages more than minority parents with a significant difference between Caucasian parents and African American parents ($p<.05$).

Multiple Imputation

In order to compensate for missing data in study predictors and outcomes, multiple imputation was conducted using PROC MI (SAS Institute, 2009). Multiple imputation uses data observed in the sample to predict missing values and allows for data analysis with a complete dataset. Demographic variables, model predictors and model outcomes were included in the imputation at the item level in order to assist in the prediction of missing values. 20 imputations were calculated in order to account for the uncertainty of correct values (Bodner, 2008; Graham, Olchowski, & Gilreath, 2007). Imputed datasets were then used for study analyses and findings across imputed datasets were combined to produce results using PROC MI ANALYZE (SAS Institute, 2009). Multiple imputation was conducted among the 1511 subjects who were sampled to have two consecutive waves of data. Those who did not participate at one of two consecutive waves would need all predictors and/or outcomes imputed and therefore remained dropped from analyses.

Alcohol-Specific Communication and Alcohol Use

A hierarchical regression analysis was conducted to test the effect of parent-communicated messages on an adolescent's future alcohol use (see table 5). Frequency of adolescent alcohol use was first predicted by demographic variables (model 1). Analyses showed a marginally significant effect of family structure on adolescent alcohol use 6 months later (β =-0.10, $p<.10$). In particular, adolescents who live in a one parent household drank alcohol less frequently than those living in a two parent home. Adolescents who used alcohol more frequently at time 1 drank significantly more frequently 6 months later than adolescents who drank less frequently at baseline (β =0.43, $p<.001$). When negative alcohol messages and permissive messages were added into the model, only

permissive messages significantly predicted higher frequency of future alcohol use (β =0.19, p<.05; model 2).

In order to test for the effect of different levels of alcohol-specific communication across culturally diverse groups, interaction terms between race and messages were added to the model (model 3). Results showed a marginally significant interaction of being African American and using negative alcohol messages on adolescent alcohol use (β =0.21, p<.10). Plotting of this interaction showed that with an increase in negative alcohol messages, Caucasian children drink alcohol less frequently (β = -0.17, p<.05) whereas the effect of negative alcohol messages on alcohol use was nonsignificant in African American children (β = 0.04, p>.10; see figure 1).

To examine whether the child's current level of alcohol use moderates the relation between alcohol-specific communication and alcohol use, interactions between both alcohol-specific communication scales and adolescent alcohol use at baseline were included in the model (model 4). Results indicate that there is a significant interaction of permissive messages and alcohol use at time 1 on subsequent adolescent alcohol use (β =0.25, p<.01). Plotting the region of significance shows that the effect of permissive messages on alcohol use is stronger as the frequency of previous alcohol use increases (see figure 2). Increasing permissive messages resulted in an increase in alcohol use frequency at low and high levels of previous alcohol use (β = 0.19, p=.05 and β = 1.18, p=.05, respectively) but the strength of this relation increased with greater previous alcohol use.

Alcohol-Specific Communication and Alcohol Consequences

A similar hierarchical regression analysis was conducted predicting adolescent's alcohol-related consequences rather than adolescent's alcohol use (see table 6). Alcohol-related consequences was first predicted by demographic variables (model 1). Analyses showed a significant effect of family structure on alcohol-related consequences (β =-0.03, p<.05). In particular, adolescents who live in a one parent household endorse significantly less alcohol-related consequences than those living in a two parent home. Parental demandingness had a marginally significant effect on alcohol-related consequences such that with high levels of demandingness,

adolescents reported lower levels of alcohol-related consequences (β=-0.01, p<.10). Additionally, adolescents who reported having more alcohol-related consequences at time 1 reported significantly more alcohol-related consequences 6 months later than adolescents who reported fewer consequences at baseline (β =0.32, p<.001).

When negative alcohol messages and permissive messages were added into the model, neither type of alcohol-specific communication was significantly associated with alcohol-related consequences (model 2). Interactions of race and messages were added in order to test for the effect of different levels of alcohol-specific communication across culturally diverse groups (model 3). Results indicated that there were no significant interactions of race and communication scales on alcohol-related consequences.

To examine whether the child's previous level of alcohol use moderates the relation between alcohol-specific communication and alcohol-related consequences, interactions between both of the alcohol-specific communication scales and adolescent alcohol use at baseline were included (model 4). Results indicate that there is a significant interaction of permissive messages and alcohol use at time 1 on alcohol-related consequences (β=0.04, p<.05). Plotting this interaction shows that the effect of permissive messages on alcohol-related consequences follows the same pattern as the effect on alcohol use. However, probing of simple slopes showed no region of significance indicating that at no level of previous alcohol use is the effect of permissive messages on alcohol-related consequences significant.

Discussion

The current study examined alcohol-specific communication as a construct and evaluated whether alcohol-specific communication (i.e., negative alcohol messages and permissive messages) has an effect on adolescent alcohol use and alcohol-related consequences. Findings provide evidence of construct validity of alcohol-specific communication scales as identified by an exploratory factor analysis. Support for the detrimental effect of permissive messages emerged. However, strength of the effect of permissive messages on alcohol use and alcohol-related consequences was found to

depend on the adolescent's frequency of alcohol use at baseline. These findings were found above and beyond effects of parental alcohol use and general parenting factors which provides support for the importance of parent-child communication about alcohol use regardless of other parenting behaviors.

Alcohol-Specific Communication

The exploratory factor analysis revealed two factors among the alcohol-specific communication items, negative alcohol messages and permissive messages, which does not support the hypothesized three factor structure predicted. Parental messages regarding rules and health consequences factored together onto one factor, indicating that parents in the current study tend to discourage alcohol use through both types of messages. These findings are different from those found by Ennett et al. (2001) in which rule-based messages and consequences were found to be two separate factors. However, in post hoc analyses conducted in the current study, an exploratory factor analysis showed that when permissive items are excluded, rule-based messages and health consequence messages are found to be separate factors. These findings are consistent with Ennett et al. (2001) and provide support for a hierarchical factor structure. Negative alcohol messages may consist of two underlying factors, health consequence messages and rule-based messages. When permissive messages are included, rule-based and health consequence messages are more similar to one another than to permissive messages and consequently fall together on one factor. Therefore, the current study found evidence of two factors, negative alcohol messages and permissive messages, with support for a hierarchical factor structure in which negative alcohol messages is made up of two factors, rule-based messages and health consequence messages.

Parents reported using negative alcohol messages more often than permissive messages. Previous studies have presented mixed findings concerning the frequency with which negative alcohol messages and permissive messages are used (Jackson et al., 1999; Miller-Day, 2008). Discrepant findings may be a function of the child's age. Fifth graders reported having more rules about alcohol use than parental permissiveness of alcohol use at home (Jackson et al., 1999). On the

other hand, a study of undergraduates found that permissive messages were used by parents more frequently than rules or health consequence messages (Miller-Day, 2008). The current study assessed a sample of middle and high school students and found that parents reported using negative alcohol messages more than permissive messages. However, consistent with this trend, parents used permissive messages more with older adolescents than younger adolescents. Findings are consistent with previous studies supporting the possibility that parents use different types of messages depending on the age of the child.

Use of messages also depended upon other participant demographics. Two-parent households reported using more negative alcohol messages than one parent households. This may simply reflect more opportunities for the child to receive messages from parents concerning alcohol. On the other hand, parents used more permissive messages with girls than with boys. It is possible that parents are more trusting of female children than male children in regards to alcohol use. Additionally, Caucasian parents and parents who self-identified as neither Caucasian nor African American use more permissive messages and negative alcohol messages than African American parents. Caucasian parents appear to communicate with their children about alcohol use more, regardless of the type of message used. This is hypothesized to be related to ethnic differences in parent-child communication. Caucasian parents have been found to communicate with their children more than African American and Latinos or Asians (Hill & Tyson, 2008 and Shakib et al., 2003, respectively). Results of the current study identify racial differences in alcohol-specific communication which may reflect differences in communication more generally.

Permissive Messages

The current study found that, as predicted and previously supported, permissive messages were associated with more frequent alcohol consumption. However, the effect of permissive messages on alcohol use and alcohol-related consequences was found to depend on the adolescent's experience with alcohol at baseline. Although permissive messages have a detrimental impact on many adolescents, using permissive messages with those children who are already drinking was

found to be more harmful than using permissive messages with adolescents who are not already using alcohol.

Although the effect of permissive messages on alcohol-related consequences is in the same direction as on alcohol use, the effect is weaker. This weaker effect could simply be due to the skewed nature of alcohol-related consequences. Alternatively, along with parental acceptance of alcohol use, permissive messages also indicate conditions under which it is acceptable to drink (e.g., the child can drink at home). This could result in increases in alcohol consumption but may not significantly impact alcohol-related consequences. For example, a child may increase drinking at home which would impact frequency of alcohol use but would not put him/her in situations in which alcohol-related consequences tend to occur. Although the effect of permissive messages on alcohol-related consequences is weak, it remains important to consider these findings given the adverse effects alcohol-related consequences have on adolescents.

Parents should be cautious when using permissive messages with their children as the current study provides support for the harmful nature of permissive messages on adolescent alcohol use and alcohol-related consequences. Parents who wish to relay permissive messages to their children should be aware of the amount their children are using alcohol before choosing to do so. However, previous studies have found that parents are not generally aware of their adolescent's alcohol use (Williams, McDermitt, Bertrand, & Davis, 2003; Friedman, Glickman, & Morrisey, 1990). This makes the decision to use permissive messages more difficult because parents cannot be sure of the extent of risk involved with using such messages if they are unsure how much their child is drinking.

Negative Alcohol Messages

Although negative alcohol messages were found to be predictive of less frequent alcohol use in previous studies, the current study found that these messages have different effects on children of different racial backgrounds. Findings show that negative alcohol messages were associated with less frequent alcohol consumption only for Caucasian youth and were unrelated to alcohol use for

minority youth. These findings provide support for the benefit of rule-based and health consequences messages on adolescent alcohol use among Caucasian adolescents. Although parents from minority groups report using negative alcohol messages less frequently than Caucasian parents, parental use of these messages does not appear to impact alcohol use of minority youth. This raises questions regarding the types of messages that may be associated with less frequent alcohol use for African American children and points to the need for identification of additional types of messages that may be beneficial for minority youth.

Implications and Conclusions

The current study used data from a diverse group of adolescents and parents to assess the effect of alcohol-specific communication on alcohol use and alcohol-related consequences. Findings provide evidence of construct validity of alcohol-specific communication scales identified by an exploratory factor analysis. In addition, results indicated that the effect of permissive messages on alcohol use and alcohol-related consequences depends on an adolescent's frequency of alcohol use at baseline. Negative alcohol messages were found to be beneficial for Caucasian youth but did not impact alcohol use for minority children. These results provide preliminary evidence for reconsideration of the way in which media campaigns are framed. More research is needed in order to detail what should and should not be discussed with different groups of children as one type of parental message does not appear to be beneficial for all children.

Although study findings are encouraging in the impact alcohol-specific communication may have on adolescents, several limitations of the current study should be noted. While results were found to be significant, effect sizes are small and should be considered when interpreting study findings. Nevertheless, these effects represent residualized change in adolescent alcohol use after controlling for general parenting behaviors and parental alcohol use. Parents may have responded with more socially desirable answers than they might have if not interviewed over the phone and asked to provide answers aloud. Parents may have been more likely to endorse negative alcohol messages than permissive messages as permissive messages may be seen as less socially desirable.

Additionally, there is no indication of whether alcohol-specific communication was in response to alcohol use or consequences already in place before the study assessment. Future studies should examine the transactional nature of these processes. Additionally, alcohol-specific communication was assessed dichotomously to identify whether or not parents had ever relayed certain messages to their child. Therefore, the current study did not take into account the frequency with which these messages were used which could be a future direction in identifying the effect of alcohol-specific communication on adolescent drinking.

In conclusion, findings provide evidence of construct validity of alcohol-specific communication scales identified. However, future research should continue to develop this construct, exploring additional types of messages such as peer selection (i.e., messages encouraging the adolescent to choose friends that do not drink), peer pressure (i.e., messages that warn adolescents about peer pressure and ways in which to deflect such pressures), and parental disappointment (i.e., messages that express parental dissatisfaction with the adolescent if he/she were to use alcohol). The current study found evidence that alcohol-specific communication may play a role in adolescent alcohol use and alcohol-related consequences beyond the effect of parental alcohol use and general parenting behaviors. Future research should address the effect of simultaneous use of multiple types of messages by the same parent and the ways in which children internalize these potentially conflicting messages. Furthermore, adolescents whose parents each use a different type of message should be examined as another possible form of opposing messages. Studies should explore the effect that mixed messages of parental alcohol use and alcohol-specific communication have on teens as well as the impact that child involvement in parental alcohol use may have on a child's alcohol use. Results reveal the need for more research with which parents can be steered in the types of messages they should and should not use when discussing alcohol with their children.

Table 1

Study design and enrollment information

Wave	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
Date	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004
Grades	6, 7, 8	7, 8, 9	7, 8, 9	8, 9, 10	8, 9, 10	9, 10, 11
Number of Schools	13	19	19	19	19	5
Adolescents	N=5220	N=5060	N=5059	N=5017	N=4676	N=2775
Parents	N=1663		N=1372		N=1194	

Table 2

Factor loadings for the two factor maximum likelihood EFA with oblique rotation

Variable	*Factor Analysis 1*		*Factor Analysis 2*	
	Factor 1	*Factor 2*	*Factor 1*	*Factor 2*
If he/she ever wants to try a drink, he/she should talk with you first	**0.46**	**0.32**	---	---
If he/she ever wants to try a drink, he/she can have sips of a drink at home in front of you	-0.04	**0.59**	0.00	**0.61**
Under some circumstances, it's okay to have sips of a drink, like with parents or for special family occasions	-0.08	**0.68**	-0.05	**0.75**
He/she cannot ride with someone who has been drinking	**0.83**	0.18	**0.86**	0.12
He/she cannot drink and drive when he/she is old enough to drive	**0.83**	0.19	**0.87**	0.13
He/she should call home to be picked up if he/she does drink	**0.68**	0.24	**0.73**	0.13
If or when he/she does drink, he/she should drink responsibly	**0.38**	**0.44**	---	---
In your family, drinking is not acceptable	**0.78**	-0.40	---	---
Drinking in moderation is okay	-0.02	**0.67**	0.09	**0.56**
Drinking is not healthy	**0.92**	-0.19	**0.91**	-0.21
Drinking can lead to alcoholism	**0.93**	0.00	**0.95**	-0.05
Drinking can cause loss of control	**0.90**	0.08	**0.93**	0.01
Cronbach Alpha			0.95	0.69

Table 3

Correlation matrix of key predictor and outcome variables

	M (SD)	*Range*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1. Age	14.01 (1.23)	11-18	1.00												
2. Gender	---	---	0.07	1.00											
3. Parent Education	2.69 (1.54)	0-5	-0.07	0.02	1.00										
4. Family Structure	---	---	0.02	-0.06	-0.16	1.00									
5. Responsiveness	2.32 (0.85)	0-3	-0.06	0.09	0.10	-0.08	1.00								
6. Demandingness	2.27 (0.83)	0-3	-0.07	0.03	0.08	-0.14	0.49	1.00							
7. Parent's Alcohol Use	2.68 (4.33)	0-30	0.03	-0.03	0.08	0.02	0.00	-0.01	1.00						
8. Adolescent Alcohol Use- Baseline	0.02 (0.93)	-0.3-5.7	0.14	0.04	-0.10	0.10	-0.12	-0.18	0.07	1.00					
9. Adolescent Alcohol Use- Follow up	0.02 (0.94)	-0.3-5.4	0.08	0.02	-0.04	-0.01	-0.07	-0.10	0.08	0.43	1.00				
10. Adolescent Alcohol Consequences- Baseline	0.05 (0.17)	0-1	0.10	0.02	-0.05	0.08	-0.12	-0.15	0.06	0.73	0.32	1.00			
11. Adolescent Alcohol Consequences- Follow up	0.05 (0.17)	0-1	0.03	-0.04	-0.06	-0.01	-0.09	-0.14	0.04	0.30	0.67	0.36	1.00		
12. Negative Alcohol Messages	0.67 (0.42)	0-1	0.05	0.03	0.13	-0.06	0.03	0.05	-0.04	0.02	0.01	-0.01	0.01	1.00	
13. Permissive Alcohol Messages	0.18 (0.30)	0-1	0.05	-0.06	0.20	-0.04	0.00	0.01	0.23	0.10	0.11	0.04	0.05	0.33	1.00

Table 4

Descriptive analyses of alcohol-specific communication by demographic variables

Group	**Sample Size**	**Permissive Messages M(SD)**	**Negative Alcohol Messages M(SD)**
Gender			
Male	721	**0.16 (0.28)***	0.68 (0.41)
Female	790	**0.20 (0.31)***	0.66 (0.43)
Family Structure			
One Parent	452	0.16 (0.29)	**0.63 (0.45)***
Two Parents	958	0.19 (0.30)	**0.69 (0.41)***
Age			
11-14 Years Old	1163	**0.17 (0.29)***	0.66 (0.42)
15-18 Years Old	348	**0.21 (0.32)***	0.69 (0.42)
Race			
Caucasian	843	**0.24 (0.33)*****	**0.72 (0.39)*****
African American	543	**0.08 (0.20)*****	**0.59 (0.46)*****
Other	99	**0.18 (0.32)*****	**0.62 (0.44)*****
Group Comparisons	---	W>B*, O>B*	W>B*

* messages differ @ p<.05, *** messages differ @ p<.0001

Table 5

Hierarchical regression analyses: the effects of alcohol specific communication on adolescent alcohol use

Predictors	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)
Step 1:				
Intercept	0.07 (0.07)	0.07 (0.07)	0.07 (0.07)	0.07 (0.07)
Age	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.02 (0.02)
Gender	-0.01 (0.05)	-0.005 (0.05)	-0.006 (0.05)	-0.01 (0.05)
Parent Education	-0.002 (0.02)	-0.006 (0.02)	-0.006 (0.02)	-0.006 (0.02)
Family Structure	**-0.10 (0.05)**†	**-0.10 (0.05)** †	**-0.10 (0.05)** †	**-0.10 (0.06)** †
Responsiveness	-0.002 (0.03)	0.003 (0.03)	-0.002 (0.03)	0.003 (0.03)
Demandingness	-0.03 (0.03)	-0.03 (0.03)	-0.03 (0.03)	-0.03 (0.03)
Parental Alcohol Use	**0.009 (0.05)**†	0.007 (0.005)	0.007 (0.005)	0.007 (0.005)
Adolescent Baseline Alcohol Use	**0.43 (0.03)*** **	**0.43 (0.03) *** **	**0.43 (0.03) *** **	**0.40 (0.03)*** **
Black	-0.07 (0.05)	-0.05 (0.05)	-0.05 (0.05)	-0.05 (0.05)
Other Race	0.005 (0.09)	0.007 (0.09)	0.002 (0.09)	-0.0007 (0.09)
Step 2:				
Negative Alcohol Messages		-0.07 (0.06)	**-0.17 (0.09)** †	**-0.16 (0.09)** †
Permissive Alcohol Messages		**0.19 (0.09)***	**0.21 (0.11)** †	0.17 (0.10)
Step 3:				
Negative Messages * Black			**0.21 (0.12)** †	**0.20 (0.12)** †
Permissive Messages * Black			-0.05 (0.21)	0.02 (0.21)
Negative Messages * Other Race			0.13 (0.26)	0.10 (0.26)
Permissive Messages * Other Race			0.11 (0.34)	0.05 (0.34)
Step 4:				
Negative Messages * Previous Alcohol Use				0.04 (0.09)
Permissive Messages * Previous Alcohol Use				**0.25 (0.08)****
R^2	0.2019	0.2052	0.2077	0.2168
Increment in R^2	---	0.0033	0.0025	0.0091

Note: † p < .10, * p < .05, ** p<.01 and *** p<.001

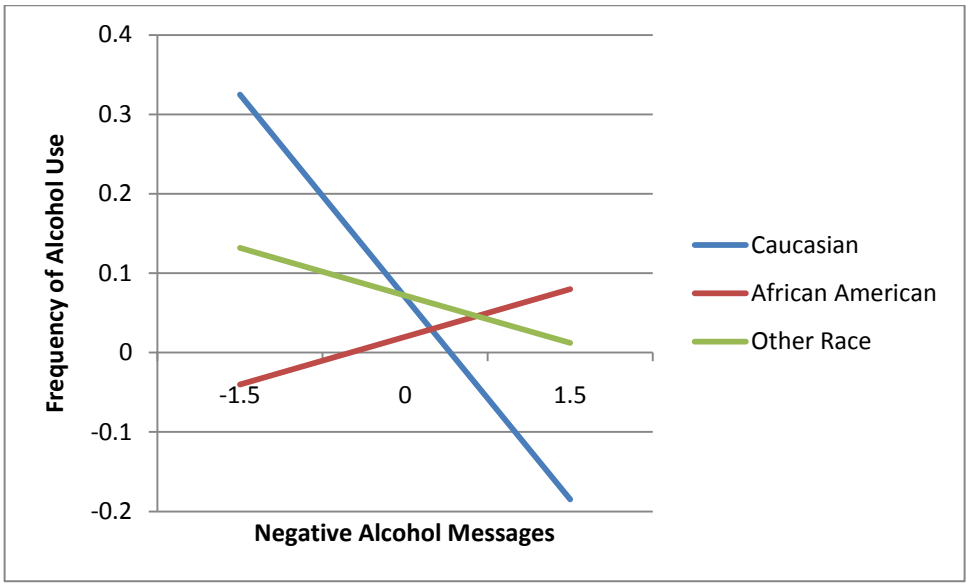
Table 6

Hierarchical regression analyses: the effects of alcohol specific communication on alcohol-related consequences

Predictors	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)
Step 1:				
Intercept	**0.08 (0.02)*** **	**0.08 (0.02)*** **	**0.08 (0.01)*** **	**0.08 (0.02)*** **
Age	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Gender	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Parent Education	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Family Structure	**-0.03 (0.01)***	**-0.03 (0.01)***	**-0.03 (0.01)***	**-0.03 (0.01)***
Responsiveness	0.0004 (0.008)	0.0005 (0.008)	0.0004 (0.008)	0.0004 (0.008)
Demandingness	**-0.01 (0.008)**†	**-0.01 (0.008)**†	**-0.01 (0.008)** †	-0.01 (0.008)
Parental Alcohol Use	0.0006 (0.001)	0.0002 (0.001)	0.0002 (0.001)	0.0002 (0.001)
Adolescent Baseline Alcohol Consequences	**0.32 (0.03)*** **	**0.32 (0.03)*** **	**0.32 (0.03)*** **	**0.29 (0.04)*** **
Black	-0.008 (0.01)	-0.005 (0.01)	-0.004 (0.01)	-0.001 (0.01)
Other Race	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)
Step 2:				
Negative Alcohol Messages		-0.006 (0.01)	-0.02 (0.02)	-0.02 (0.02)
Permissive Alcohol Messages		0.03 (0.02)	0.03 (0.02)	0.02 (0.02)
Step 3:				
Negative Messages * Black			0.02 (0.03)	0.02 (0.03)
Permissive Messages * Black			0.01 (0.05)	0.02 (0.05)
Negative Messages * Other Race			0.02 (0.06)	0.02 (0.06)
Permissive Messages * Other Race			-0.03 (0.08)	-0.04 (0.08)
Step 4:				
Previous Alcohol Use				0.009 (0.008)
Negative Messages * Previous Alcohol Use				-0.001 (0.02)
Permissive Messages * Previous Alcohol Use				**0.04 (0.02)***
	0.1414	0.1436	0.1455	0.1519
R^2	---	0.0022	0.0019	0.0064
Increment in R^2				

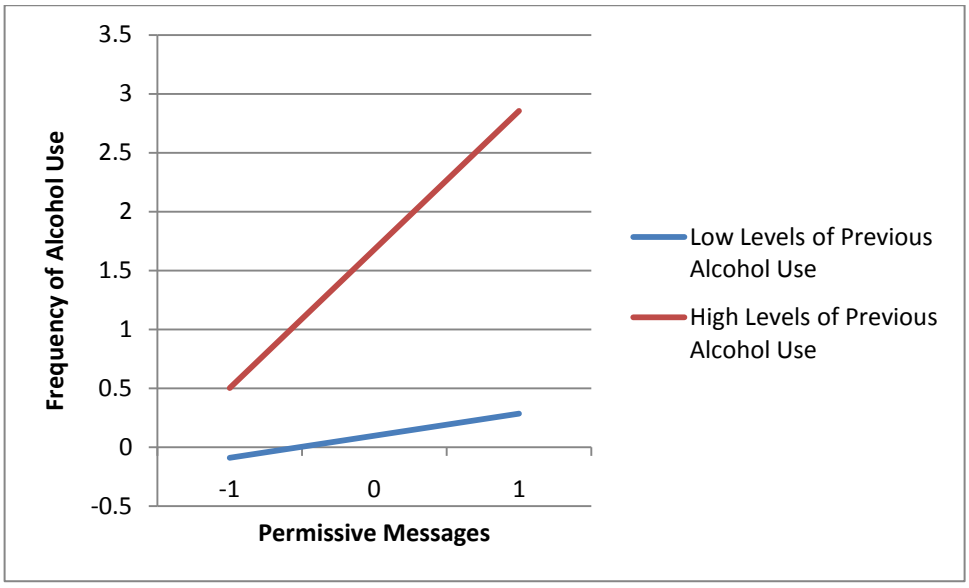
Note: † p < .10, * p < .05, ** p<.01 and *** p<.001

Figure 1: Race marginally moderates the relation between negative alcohol messages and frequency of alcohol use at time 2.



Note: The metric of alcohol use ranges from -0.3 to 5.4, given that it is the mean of standardized items

Figure 2: Previous frequency of alcohol use significantly moderates the relation between permissive messages and frequency of alcohol use at time 2.



Note: The metric of alcohol use ranges from -0.3 to 5.4, given that it is the mean of standardized items

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