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## Abstract

This study examined parental factors as predictors of alcohol use and alcohol-related consequences among 9<sup>th</sup> grade students ( $N = 296$ ). Perception of parental disapproval of teen drinking and perceived quality of parent-child general communication were significant predictors of adolescent alcohol use and alcohol-related consequences. Implications for parent education are discussed.

Researchers have documented increased alcohol use among adolescents, particularly during high school years. For example, according to national survey data, 70% of high school students report alcohol use by senior year (Johnston, O'Malley, Bachman, & Schulenberg, 2012). Heavy drinking in high school is associated with numerous interpersonal, academic, legal, and neurocognitive difficulties (Arata, Stafford, & Tims, 2003; Brown, Tapert, Granholm, & Delis, 2000; French & Maclean, 2006; Hanson, Median, Padula, Tapert, & Brown, 2011). Long-term consequences are also salient. Youth who drink heavily during their teen years tend to continue this pattern into college and early adulthood (D'Amico, Elickson, Collins, Martino, & Klein, 2005; Kenney, LaBrie, & Hummer, 2010) and are at risk for the development of alcohol dependence (Hingson, Heeren, & Winter, 2006).

Alcohol use increases during adolescence more than earlier stages of development. Although alcohol use may begin as early as age 12, there is a substantial increase in use by age 16 (U.S. Department of Health and Human Services, 2007). The largest increase in use occurs between 8<sup>th</sup> and 10<sup>th</sup> grades, making the transition to high school a particularly high-risk period for changes in consumption patterns. Johnston et al. (2012), for instance, reported that

alcohol use increases substantially during the transition to high school, with 13% of 8<sup>th</sup> grade students, 27% of 10<sup>th</sup> grade students, and 40% of 12<sup>th</sup> grade students reporting alcohol use in the past 30 days (Johnston et al., 2012). When looking at use in the past 12 months, rates are 27%, 50%, and 64% for 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grade students, respectively (Patrick & Shulenberg, 2014). Even more concerning is the escalation in heavy drinking during the transition from middle to high school. Survey data provide evidence that binge drinking in the past 2 weeks increases from 6.4% in the 8<sup>th</sup> grade, to 14.7% in the 10<sup>th</sup> grade, to 21.6% in the 12<sup>th</sup> grade (Johnston et al., 2012; Centers for Disease Control and Prevention, 2013).

One explanation for the increase in drinking rates between 8<sup>th</sup> and 10<sup>th</sup> grade is that this time period is associated with an increase in risky decision-making (D'Amico et al., 2005; D'Amico & Fromme, 2000; Albert & Steinberg, 2011). Many social regions of the brain continue to develop throughout adolescence, resulting in a heightened sensitivity to peer influences and evaluation (Burnett, Sebastian, Kadosh, & Blakemore, 2010). Such changes may result in increased risky behavior as adolescents attempt to conform to perceived peer expectations. Additionally, one of the primary psychological developmental tasks during adolescence is autonomy (Bray, Adams, Getz, & Baer, 2001). As children develop from pre-adolescence to adolescence, there is a natural tendency to strive for independence from the family. During this time, adolescents try new behaviors and may find themselves in risky situations as parental authority is tested (D'Amico & Fromme, 2000). These developmental challenges emphasize the importance of parental guidance and support for teens as they transition into high school.

### **Association of Parental Behaviors and Teen Drinking**

Contrary to the widely held belief that parents lose their ability to influence their children in adolescence as peer relationships become primary, adolescent drinking is influenced by parental attitudes and behaviors (Wood, Read, Mitchell, & Brand, 2004). These associations are sustained even when accounting for peer variables (Arata et al., 2003; Kim & Neff, 2010). Among the widely studied behaviors in this area are parental monitoring, parental disapproval of teen drinking, and parent-child communication.

#### Parental Monitoring

Parental monitoring is defined as the parent's awareness of their child's activities and friends and the degree to which they set and enforce clear standards for their child (Kim & Neff, 2010). Numerous researchers have reported that parental monitoring is related to lower levels of alcohol use among adolescents in middle school (Simons-Morton & Chen, 2005; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001; Van Der Vorst, Engels, Meeus, Dekovic, & Vermulst, 2006) and high school (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2006; Kim & Neff, 2010; Luthar & Goldstein, 2008). Low levels of parental monitoring are also associated with adolescent alcohol-related problems (Arata et al., 2003) and risky behavior (Strunin, Martinez, Diaz-Martinez, Heeren, Kuranz, Winter, et al., 2013). In terms of exploring potential pathways between parental monitoring and adolescent alcohol use, Kim and Neff (2010) found that parental monitoring is associated with adolescent participation in pro-social activities, which, in turn, is associated with lower levels of drinking.

#### Parental Disapproval of Teen Drinking

Similarly, parental disapproval of teen drinking is associated with lower levels of adolescent alcohol use (Mares, Van Der Vorst, Engels, & Lichtwarck-Aschoff, 2011; Nash, McQueen, & Bray, 2005) and alcohol-related consequences (Arata et al., 2003; Nash et al., 2005). In fact, parental approval of teen alcohol use is identified as one of the primary risk factors for the initiation of drinking during adolescence (Donovan, 2004), and parental provisioning of alcohol to teens is related to adolescent alcohol use and binge drinking (Foley, Altman, Durrant, & Wolfson, 2004). Researchers have also explored mediation models, which examine potential mechanisms by which parental disapproval of teen drinking is related to adolescent alcohol use. For instance, Nash et al. (2005) found that parental disapproval of teen alcohol use is associated with less peer influence to use alcohol, less involvement with friends who use alcohol, and greater self-efficacy for avoiding alcohol use. These outcomes are, in turn, associated with reduced rates of adolescent alcohol use. Parental disapproval of teen drinking also strengthens the relationship between peer disapproval of alcohol use and lower rates of teen drinking (Mrug & McCay, 2013). Thus, in response to parental monitoring and disapproval of teen use, teens are more likely to associate with non-drinking peers, engage in pro-social activities, be less impacted by peer influence to drink, and delay the initiation of alcohol use.

## Parent-Child Communication

Parent-child communication is viewed as the structural component of the familial foundation. When parents engage in ongoing communication with their teens, stronger bonds are formed, which may make more difficult conversations, such as those about alcohol use, easier to navigate. Alcohol, however, is rarely the main topic of discussion between parents and adolescents (Miller-Day, 2002) and several factors have been found to inhibit this type of communication. For some parents, there is a tendency to believe alcohol use is a process of coming of age. As teens enter high school, parents may perceive alcohol use as the beginning stage of entering young adulthood. Parents who believe adolescent alcohol use is a normal part of the progression toward independence are more passive in conversing about alcohol use with their teens (Keefe, 1994). Additionally, if parents use alcohol themselves, they are less likely to engage in conversations about alcohol use (Ennett, Bauman, Foshee, Pemberton, & Hicks, 2004). Parents may feel they are being hypocritical in communicating a message of abstinence for their teen while they consume alcohol themselves.

Although it seems logical to conclude that parent-child communication would be related to lower levels of adolescent alcohol use, the literature concerning communication as a protective factor is mixed. In a series of studies conducted in the Netherlands, alcohol-specific communication was related to lower levels of alcohol use in some studies (Mares et al., 2011; Van Der Vorst, Burk, & Engels, 2010) and to higher levels of alcohol use in others (Spijkerman, van den Eijnden, & Huiberts, 2008; Van Der Vorst, Engels, Meeus, Dekovik, & Van Leeurve, 2005). Other researchers found, as expected, that permissive alcohol-related communication is related to greater frequency of use by adolescents (Reimuller, Hussong, & Ennett, 2011). By contrast, in a study investigating communication in three domains (rules and discipline, consequences and circumstances, and media influences), results demonstrated no relationship between communication and the initiation of alcohol use, but that communication about rules and discipline predicted an escalation in use (Ennett et al., 2004).

Less attention has been paid to the relationship between adolescent alcohol use and parent-child general communication relative to alcohol-specific communication. Somewhat mixed findings have been reported in this area, as well. In a study involving 11-15 year old adolescents, Smetana, Crean, & Daddis (2002) found that observer-rated positive parent-child communication, including factors such as the ability to express ideas, comfort with interaction, and involvement in the discussion, is related to lower levels of delinquent behaviors, including alcohol. Teens' perceived ability to talk with their parents about problems (Akard, Neumark-Sztainer, Story, & Perry, 2006) and satisfaction with communication (Guilamo-Ramos, Turrissi, Jaccard, Wood, & Gonzalez, 2004) are related to lower levels of alcohol use. On the other hand, in a study investigating parent-child communication and substance use among 10<sup>th</sup> grade students, ease of discussing things that bother them with parents was related to lower levels of tobacco and marijuana use, but not alcohol use (Luk, Farhat, Iannotti, & Simon -Morton, 2010).

## **The Current Study**

Although a growing body of research supports the relationship between parental factors and adolescent drinking, there are several gaps in the literature. First, although the literature provides support for the importance of parental monitoring and parental disapproval of teen alcohol use, results regarding parent-child communication are mixed and few researchers have studied the relationship of parent-child general communication and adolescent drinking. Additionally, with the exception of one study investigating both parental disapproval and alcohol-specific communication (Mares et al., 2011), the majority of studies focus on either parental monitoring or parental disapproval of alcohol use in isolation—or, in similarly problematic fashion, either alcohol-specific or general parent-child communication. As these variables are likely associated with each other, it is important to study these variables within the same model and explore whether any is a unique predictor of teen drinking, after accounting for the interrelationship among variables. Finally, most of these studies were conducted with either middle school or high school students or with adolescents within a 3-4 year age range. Thus, it is not clear how parental variables are related to adolescent drinking specifically for students transitioning from middle school to high school.

The aim of the current study is to address these gaps in the literature. Specifically, we sought to examine the interrelationships among parental monitoring, perception of parental disapproval of alcohol use, quality of parent-child alcohol-specific communication, and quality of parent-child general communication to adolescent alcohol use and alcohol-related consequences. We chose to investigate these relationships in a sample of 9<sup>th</sup> grade students, as this age group represents the high-risk transition from middle school to high school.

The research question for this study was: Are specific parental variables uniquely related to adolescent drinking behavior after controlling for the effects of other parent behaviors when examined simultaneously?

## Method

### Participants

Participants were 296 (52% female,  $n = 154$ ) 9<sup>th</sup> grade students recruited from a high school centrally located in a metropolitan area in the northwest. Participant ages ranged from 13 to 16 ( $M = 14.23$ ,  $SD = 0.48$ ). Participants were primarily Caucasian (66.9%,  $n = 198$ ), with 6.4% ( $n = 198$ ) Hispanic, 6.1% ( $n = 18$ ) Asian, 4.4% ( $n = 13$ ) American Indian/Alaskan Native, 2.4% ( $n = 7$ ) African-American, 2.0% ( $n = 6$ ) Hawaiian/Other Pacific Islander, 1.4% ( $n = 4$ ) other, and 10.5% ( $n = 31$ ) not answered. Approximately 30% ( $n = 266$ ) of the students at the school qualify for free or reduced lunch. The school is ranked 3<sup>rd</sup> academically among the high schools in the district.

### Procedures

Parents were mailed a letter at their permanent addresses provided by the registrar's office. Enclosed in the letter was a project-addressed, stamped decline postcard. If a parent did not want their child to participate in the research project, they were asked to print their name and student's name and return the postcard indicating their option to decline. In addition, a phone number and email address were provided so that parents could decline their children's participation via phone or email. If the parent did not send in a decline postcard, call, or email, students were invited to participate in the study. We selected this method of consent as passive consent is commonly used in school-based research (Smith, Boel-Studt, & Cleeland, 2009) and has several advantages over active consent including higher response rates and less sample bias relative to active consent procedures (Courser, Shamblen, Lavrakas, Collins, & Ditterline, 2009). Response rate estimates for school-based research are 90% for passive consent and 30-60% for active consent and samples recruited with active consent procedures are less diverse and have lower rates of high-risk participants (Smith et al., 2009).

Students were recruited during class periods. At the start of the class period, a school counselor described the research and invited students with parental consent to participate. Students with parental consent who elected to participate logged on to the survey website and were directed to a welcome screen describing the research. They were presented with the informed assent statement describing the study procedures and were asked to signify their assent by clicking "Agree." If participants indicated their willingness to continue, they were then routed to the survey, which was completed immediately. This survey took approximately 15 minutes to complete. Students without parental consent and those who chose not to participate were given an alternative activity to complete during the class period. All study procedures were approved by the School District Research Board and the University Institutional Review Board approved analysis of data collected by the schools.

### Measures

*Drinking Variables.* Drinking variables include three indicators of alcohol use: frequency of drinking, peak drinking, and typical weekly drinking. The frequency of alcohol-related consequences was also measured.

*Quantity and Frequency of Drinking.* Frequency of drinking and peak drinking were assessed using the Quantity/Frequency/Peak Index (QFP; Dimeff, Baer, Kivlahan, & Marlatt, 1999; Marlatt et al., 1998). Participants are asked to record the frequency of drinking on an 8-point scale with options ranging from 1 (*every day*) to 9 (*do not drink alcohol at all*). Peak drinking quantity was assessed by the question "What is the most number of drinks that you have consumed on any given night in the past three months?" Typical weekly drinking was assessed using the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985) in which participants were asked, "Given that it is a typical week, please write the number of drinks you probably would have each day." A response scale is provided for each day of the week (e.g., Monday\_\_, Tuesday\_\_, etc.). A drink was defined as "a 12-ounce can or bottle of beer, a 4-ounce glass of wine, or a shot of distilled spirits in a mixed drink." Weekly drinking was calculated by combining the reports for the seven days of the week. Previous research with adolescents and adults demonstrates nonsignificant correlations between these drinking measures and indexes of social desirability, reasonably high test-retest reliability estimates with coefficients from  $r = .85$  to  $.90$ , and good convergence between these items and indexes of drinking

quantity and frequency with coefficients of  $r = .70$  or higher (Turrisi, 1999; Turrisi & Jaccard, 1991). Additionally, the DDQ has excellent test-retest reliability at 14 and 28 days ( $r = .91$ ) and high levels of concurrent validity ( $r = .80$ ) and predictive validity ( $r = .99$ ) (Williams, Aitken, & Malin, 2005).

*Alcohol-Related Consequences.* Alcohol-related consequences were assessed using the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). The RAPI is a 23-item self-administered screening tool for assessing adolescent problem drinking. Participants were asked “how many times have the following scenarios happened to you while you were consuming alcohol or as a result of your drinking in the past 30 days.” Responses were measured on a 5-point scale ranging from never to more than 10 times. A total consequence score was created by summing the 23 items. The RAPI assesses both traditional consequences (e.g., tolerance, withdrawal symptoms, physical dependency) and consequences presumed to occur at higher rates in adolescent populations (e.g., missing school, not doing homework, going to school drunk). The RAPI has good internal consistency (Neal & Carey, 2004) and test-retest reliability (Miller et al., 2002) and has been correlated significantly with several drinking variables (White & Labouvie, 1989). Coefficient alpha for this sample was  $\alpha = .90$ .

*Parental Variables.* Participants completed four measures assessing parental variables. These included parental monitoring, parental disapproval of teen alcohol use, quality of parent-child alcohol-specific communication, and quality of parent-child general communication.

*Parental Monitoring.* Parental monitoring was assessed with a modified version of the Strictness–Supervision scale (Steinberg, Lamborn, Dornbusch, & Darling, 1992). The original 9-item scale assessed parental monitoring and limit setting. Modified versions of the scale have been used in the literature to assess parental monitoring. These studies report inclusion of two to four items (Abar & Turrisi, 2008; Fairlie, Wood, Laird, 2012; Wood et al., 2010; Wood et al., 2004; Varvil-Weld, Turrisi, Hospital, Mallett, Bámaca-Colbert, 2014; Varvil-Weld, Turrisi, Scaglione, Mallett, & Ray 2013). Our modified scale included the four monitoring items used in the literature to assess student perceptions of what their parents attempt to know about their behaviors. These items were “How much do your parents *try* to know: (1) Where you go at night? (2) What you do with your free time? (3) Where you are during the day? (4) About your drinking?” Response options for these items were as follows: 0 (*don’t try*), 1 (*try a little*), and 2 (*try a lot*). The original scale is part of a larger questionnaire in which parenting practice items were selected from the literature and were factor analyzed using oblique rotation (Steinberg, Elmen, & Mounts, 1986). Factor analysis confirmed a three dimensions (acceptance/ involvement, behavioral supervision and strictness, and psychological autonomy-granting) across ethnic, social class, and family structure groups (Steinberg et al., 1986; Steinberg Mounts, Lamborn, & Dornbusch, 1991). Internal consistency of the original nine-item Strictness-Supervision scale was adequate,  $\alpha = .76$  (Steinberg et al., 1986). Coefficient alphas for the modified version of the scale range from  $.70 - .85$ . Coefficient alpha for the current sample was  $\alpha = .72$ .

*Parental Disapproval of Teen Alcohol Use.* Perceived parental disapproval of alcohol use was assessed with three items that had been previously modified from the Monitoring the Future Study (Johnston, O’Malley, & Bachman, 1996). Items assessed how participants thought their parents would feel if they (a) drank one or two drinks on one occasion, (b) drank three or four drinks on one occasion, (c) drank three or more drinks once or twice each weekend. Responses were measured on a 5-point scale ranging from 1 (*strongly disapprove*) to 3 (*strongly approve*). Thus, low scores are reflective of parental disapproval and high scores are reflective of parental approval of drinking. Reports of internal consistency of this modified scale range from  $\alpha = .70 - .96$  (Abar & Turrisi, 2008; Walls, Fairlie, & Wood, 2009; Wood et al., 2004). Coefficient alpha for this sample was  $\alpha = .86$ .

*Quality of Parent-Child Communication.* The quality of parent-child alcohol-specific communication was assessed using 9 items selected from a 16-item scale developed by Turrisi, Wiersma, and Hughes (2000) to assess the extent to which a parent has talked with the teen about the alcohol-related topics. Items were selected to be appropriate for younger teens and some items were omitted due to requirements of the school district (e.g. “My parent and I have talked about the negative consequences of mixing alcohol and sex”). Items were also modified to assess quality, rather than quantity, of the parent-child communication. Participants rated the quality of discussions with their parents about a list of topics. Items were rated on a 5-point scale with response options ranging from 1 (*very negative*) to 5 (*very positive*). Alcohol-specific communication topics included how alcohol works in the body, how to find fun things to do instead of drinking, the importance of not being pressed by others into drinking, drunk driving and its consequences. The reliability of the items in the original 16-item measure ranged from  $.53$  to  $.75$  with a mean of  $.64$  and with the exception of one item, items were not correlated with a measure of social desirability tendencies (Turrisi et al., 2000).

The quality of parent-child general communication was assessed using a 4 items adapted from a larger set of items developed for older teens (Turrisi et al., 2000). Specific terms were selected to be appropriate for this younger age group and were modified to assess quality, rather than quantity, of the parent-child communication. Participants rated the quality of discussion with their parents on a list of topics, including sports, clubs, school, and interpersonal relationships. Items were rated on a 5-point scale with response options ranging from 1 (*very negative*) to 5 (*very positive*). In a pilot study conducted on the original items, the items showed test-retest reliabilities ranging from 0.65 to 0.83 with a mean of 0.75 and none of the items were significantly correlated with social desirability.

To confirm that the parent-child communication items represent two factors, we factor analyzed the 13 communication items used to measure alcohol-specific and general communication. We subjected the items to a principle components factor analysis with oblique rotation. We used an oblique rotation to allow for correlation among the communication items. Eigenvalues showed that the first component (alcohol-specific communication) explained 54% of the variance, the second component (general communication) explained 19% of the variance, and the remaining components had eigenvalues below one. A two-factor solution, which explained 73% of the variance, was selected with 9 items loading on alcohol-specific communication and 4 items loading on general communication. Coefficient alpha for these scales for this sample were  $\alpha = .96$  and  $\alpha = .87$ , respectively.

## Results

A series of simultaneous regression analyses was conducted to examine the relationship of parental variable to frequency of drinking, weekly drinking quantity, peak drinking quantity, and alcohol-related consequences. We chose to utilize simultaneous regression, as opposed to other forms of multiple regression, as we had no theoretical model to guide a hierarchical ordering of the variables. Additionally, we chose to retain all predictor variables in the analyses, regardless of significance of the bivariate correlations as our a priori research question concerned examining which of these predictors have a unique relationship to each outcome variable. Retaining all predictor variables also allows for examination of suppression effects in which a weak predictor may become significant within the regression model. Further, the majority of bivariate correlations were significant or approached significance.

Preliminary analyses were conducted to assess normality of the variables. All outcome variables were examined for skew and kurtosis at baseline and follow-up assessments. The distribution for weekly drinking, peak drinking, and alcohol-related consequences substantially deviated from the normal distribution ( $> 3$  skew and  $> 10$  kurtosis) so a logarithmic transformation was used to normalize the distributions (Tabachnick & Fidell, 2007). Raw means and standard deviations and bivariate correlations using transformed variables are presented in Table 1. Analyses were also conducted to assess multicollinearity among the predictor variables. Results revealed correlations ranging from  $r = .01$ , ns to  $r = .24$ ,  $p < .01$ . Although two of the correlations were significant at the  $p < .01$ , the variance inflation factor (VIF) ranged between 1.0 – 1.1, with corresponding tolerance levels ranging from .90 - .95. The VIF is well below the rule of thumb of  $VIF < 10$  (Erford, 2008), suggesting low levels of multicollinearity among the predictor variables.

*Alcohol Use.* For outcome variables associated with alcohol use, we conducted three simultaneous regressions. Each simultaneous multiple regression analysis tested a model predicting the outcome variable (frequency of drinking, weekly drinking, and peak drinking) from parental monitoring, parental approval, quality alcohol-specific communication, and quality of general communication. Results of the regression analyses are presented in Table 2. The full regression equation was significant for frequency of drinking,  $F(4, 260) = 12.88$ ,  $p < .001$ , weekly drinking,  $F(4, 260) = 5.54$ ,  $p < .001$ , and peak drinking,  $F(4, 260) = 10.76$ ,  $p < .001$  (see Table 2). Examination of the adjusted  $R^2$  for each variable indicates parental factors accounted for 15% of the variance in frequency of drinking, 6% of variance in weekly drinking, and 13% of the variance in peak drinking. As seen in Table 2, results showed that, after controlling for other predictor variables, parental disapproval and quality of parent-child general communication were significant predictors of all three drinking variables, while parental monitoring and alcohol-specific communication were not. As hypothesized, high parental disapproval of teen drinking (low scores) and high quality of parent-child general communication were related to low levels of drinking. Standardized beta values indicated that the effects were in the medium range ( $\beta = .24 - .33$ ) for parental disapproval and in the small to medium range for parent-child general communication ( $\beta = .15 - .24$ ).

*Alcohol Related-Consequences.* For alcohol-related consequences, we conducted one simultaneous regression: we tested a model predicting alcohol-related consequences from parental monitoring, parental approval, quality of alcohol-specific communication, and quality of general communication. Results of the regression analyses for alcohol-related consequences are presented in Table 3. The full regression equation was significant,  $F(4, 260) = 6.91$ ,  $p < .001$  (see Table 3). Examination of the adjusted  $R^2$  indicates parental factors accounted for 8% of the variance in alcohol-related consequences. As seen in Table 3, results showed that, after controlling for other predictor variables, parental disapproval and quality of parent-child general communication were significant predictors of alcohol-related consequences. Parental monitoring and alcohol-specific communication were not significant predictors in the model. As hypothesized, low parental approval of teen drinking and high quality of parent-child general communication were related to low levels of alcohol-related consequences. Standardized beta values indicated that the effects were in the small to medium range ( $\beta = .16 - .21$ ).

## Discussion

The present study investigated the relationship between parental factors and adolescent drinking behaviors in a sample of 9<sup>th</sup> grade students. Our findings demonstrated significant associations between parental variables and alcohol use and alcohol-related consequences. Specifically, parental disapproval of teen alcohol use and quality of parent-child general communication were inversely associated with adolescent alcohol use and alcohol-related consequences, whereas parental monitoring and alcohol-specific communication were not significant predictors of adolescent drinking behavior after taking into account other predictor variables under study.

Results of this study are consistent with previous research indicating parents play an important role in their adolescents' lives, even when entering the formative years (Wood et al., 2004; Kim & Neff, 2010). Results suggested that parental disapproval of teen alcohol use was associated with lower levels of both alcohol use and alcohol-related consequences. These findings are consistent with prior research indicating perceived parental disapproval of drinking is associated with lower levels of alcohol use and alcohol-related consequences (Arata et al., 2003; Mares et al., 2011; Nash et al., 2005). Given that parental disapproval remained a significant predictor of these outcomes after controlling for the effects of other parental behaviors, the results of our study implied that parental disapproval of teen alcohol use is a unique predictor of adolescent alcohol use and the associated consequences.

Results also indicated that the quality of parent-child general communication was associated with alcohol use and alcohol-related consequences. These results add to the findings of previous researchers who similarly reported that parent-child general communication is related to lower levels of alcohol use and heavy drinking (Akard et al., 2006; Guilamo-Ramos, Turrisi et al., 2004; Smetana et al., 2002). In contrast, the quality of alcohol-specific parent-child communication was not associated with alcohol use or alcohol-related consequences, after taking account of the effects of other parental behaviors. While prior research examining this relationship is mixed, results of this study are consistent with studies that have found a non-significant relationship between alcohol-specific communication and the initiation of alcohol use (Ennett et al., 2004). Our results add to the literature, suggesting that the perceived quality of parent-child general communication may be more predictive of adolescent drinking behavior than the perceived quality of alcohol-specific communication.

Finally, parental monitoring was not a significant predictor of drinking behavior, after accounting for the effects of other parental behaviors. This finding is surprising in light of the large body of literature indicating parental monitoring is predictive of adolescent alcohol use (Barnes et al., 2006; Kim & Neff, 2010; Luthar & Goldstein, 2008; Simons-Morton & Chen, 2005; Simons-Morton et al., 2001; Van Der Vorst et al., 2006), alcohol-related consequences (Arata et al., 2003), and risky behavior (Strunin et al., 2013). One explanation for this difference is that this study examined parental monitoring within a model including parental disapproval of teen drinking and the quality of both parent-child general and alcohol-specific communication. Placed in the context of this model, the current findings suggest parental monitoring may not uniquely contribute to the variance in teen drinking behavior, but rather, its influence may be mediated through other variables such as parental disapproval and the quality of parent-child communication.

### Limitations and Directions for Future Research

Certain limitations and interpretational cautions should be considered for this study. First, the primarily Caucasian composition of the sample limits the external validity of the results. Therefore, future research with more diverse samples is recommended to replicate the findings in this study. Second, parental factors and drinking variables were measured at the same time point, limiting the ability to make causal statements about the relationship of these variables. Future research using a prospective design would extend this study by allowing the examination of the relationships across time, thus adding to our temporal understanding of these relationships. A third limitation concerns the measures used in this study. Although we used measures with strong psychometric properties to measure drinking variables, some of the scales used to measure parenting variables, particularly the general parent-child communication scale, have less psychometric support. This, however, is not uncommon in studies examining general communication and adolescent alcohol use, with studies using one item to measure this communication variable (Akard et al., 2006; Guilamo-Ramos et al., 2004; Luk et al., 2010). Fourth, due to the high number of statistical tests run, there is potential for a Type I error. However, with the exception of general communication in the weekly drinking regression analysis, all predictors would have remained significant at the  $p < .05$  level using a Bonferroni adjustment. Finally, information in this study was obtained through self-report. Self-reported alcohol use is common practice in studies examining alcohol use among adolescents and the reliability and validity of self-reported use in this age group have been demonstrated (Flisher, Evans, Muller, & Lombard, 2004; Lintonen, Ahlstrom, & Metso, 2004). Future research should, however, include parental reports of monitoring, disapproval of underage drinking, and quality of communication in addition to adolescent reports.

### Counseling Implications

Results of this study provide directions for prevention and intervention efforts aimed at decreasing alcohol use and alcohol-related consequences for 9<sup>th</sup> grade students. This study adds to the body of research providing evidence that what parents do does matter, as parental attitudes and behaviors are associated with adolescent alcohol use. The findings suggest that parent-based interventions targeting parental disapproval of underage drinking and parent-child general communication may be particularly useful for 9<sup>th</sup> grade students.

One strategy to increase parental disapproval of teen alcohol use is through alcohol education, which remains an important aspect in deterring adolescent alcohol use. By providing parents with information of how permissiveness toward teen drinking negatively impacts teens' decision making regarding alcohol use, parents may understand the importance of expressing their disapproval of adolescent alcohol use to their teen. Counselors in both clinical and school settings can assist parents by providing factual information about potential consequences of use to parents, who, in turn, can communicate their disapproval of adolescent drinking to their teen. For example, Family Matters (Bauman, Foshee, Ennett, Hicks, & Pemberton, 2001) is a family-directed program designed to reduce tobacco and alcohol use among 12-14 year old adolescents. The program includes mailings of four booklets, which include educational materials and suggested activities. A prominent feature of this program involves parents identifying their own actions that may influence alcohol use by their child. Once identified, parents, together with their child, establish rules related to alcohol use. Telephone discussions initiated by health educators are conducted two weeks after a booklet is sent - when the health educator determines that booklet has been completed, the next is mailed. Research supports Family Matters as an evidence-based approach for reducing alcohol use among this age group (Bauman, Ennett, Foshee, Pemberton, King, & Koch, 2002).

This study also supports the importance of building a healthy relationship and strong communication between parents and adolescents, particularly during the transition to high school. Parents are interested in learning skills and strategies they can use when talking with their teens about alcohol use (Bryant et al., 2006). Results of this study, however, suggest that working with parents on parent-child general communication may be more beneficial than training parents in alcohol-specific communication. Thus, prevention and intervention programs that incorporate tips about engaging parents in quality communication with teens about everyday activities may be particularly useful. These strategies include asking teens about academics and school-related activities, social interactions and engagements with peers, and inquiring about their teen's opinions regarding specific interests and hobbies. Additionally, scheduling family time, such as mealtime and outdoor activities when parents can interact with teens, is a prime opportunity to engage in casual conversations. Establishing a routine of communication between parents and teens strengthens the familial bond, creating a more natural transition to discussing more difficult topics such as alcohol use and alcohol-related consequences.

Providing education that focuses on building strong familial bonds based on parent-child general communication related to school, social and personal growth of the adolescent is essential. For example, the Strengthening Families Program (SFP; Kumpfer, DeMarsh, & Child, 1989) is an evidence-based multicomponent parenting and family skills training program that includes strategies for enhancing parent-child communication. Parents and youth are engaged in family interactions and activities during 14 2-hour group sessions that are preceded by a family meal. Several versions are available, including a shorter 7-session program and a DVD version, including 10 30-minute DVDs developed for families to watch together at home. Additionally, four different age versions of SFP (SFP 3–5, 6–11, 10–14, and 12–16 years) are offered. Researchers have found SFP significantly reduces alcohol use among adolescents ages 10 – 16 years old (Kumpfer, Whiteside, Greene, & Allen, 2010).

### Conclusion

The aim of this study was to investigate the relationship between parental factors and adolescent alcohol use and alcohol-related consequences. Findings indicated that, after taking account of the effects of related parental behaviors, parental disapproval of alcohol use and the quality of parent-child general communication were significant predictors of frequency and quantity of alcohol use and alcohol-related problems. In view of these results, students might benefit from prevention and intervention programs that engage parents, providing education regarding the relationship between underage alcohol use and parental disapproval of teen alcohol. Programs might also work with parents and teens to acquire new communication skills that improve the quality of parent-child general communication, rather than focusing primarily on alcohol-specific communication.

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Table 1

*Means, Standard Deviations, and Bivariate Correlations for Drinking Variables and Parental Variables*

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7	8
Drinking Frequency	1.12 (1.52)	—							
Drinking Quantity	.72 (2.22)	.64**	—						
Peak Drinking	.81 (2.75)	.65**	.55**	—					
Alcohol Consequences	2.40 (5.26)	.66**	.57**	.48**	—				
Parental Monitoring	10.00 (1.95)	-.16**	-.07	-.11 <sup>+</sup>	-.12*	—			
Parental Disapproval	4.12 (2.05)	.29**	.24**	.33**	.22**	-.24**	—		
Alcohol Communication	28.44 (8.76)	-.13*	.02	-.06	-.11 <sup>+</sup>	-.08	.01	—	
General Communication	15.27 (4.17)	-.26**	-.12*	-.18**	-.18**	.19**	-.03	.23**	—

<sup>+</sup>  $p < .10$ , \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 2

*Summary of Simultaneous Regression Analysis for Alcohol Use*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	95% CI
Frequency of Drinking				
Monitoring	-0.04	0.05	-0.05	[-.13, .05]
Disapproval	0.21	0.04	0.28***	[.13, .30]
Alcohol Communication	-0.01	0.01	-0.07	[-.03, .01]
General Communication	-0.09	0.02	-0.24***	[-.13, -.05]
Adjusted <i>R</i> <sup>2</sup>	.15			
<i>F</i>	12.88***			
Weekly Drinking Quantity				
Monitoring	0.00	0.01	0.01	[-.02, .02]
Disapproval	0.03	0.01	0.24***	[.02, .05]
Alcohol Communication	0.00	0.00	0.06	[-.00, .01]
General Communication	-0.01	0.00	-0.15*	[-.02, -.00]
Adjusted <i>R</i> <sup>2</sup>	.06			
<i>F</i>	5.54***			
Peak Drinking Quantity				
Monitoring	- 0.00	0.01	-0.00	[-.02, .02]
Disapproval	0.04	0.01	0.33***	[.03, .06]

Alcohol Communication	0.00	0.00	0.02	[-.00, .00]
General Communication	-0.01	0.00	-0.18**	[-.02, -.00]
Adjusted $R^2$	.13			
$F$	10.76***			

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Note. CI = confidence interval.

\*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 3

*Summary of Simultaneous Regression Analysis for Alcohol-Related Problems*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	95% CI
Monitoring	- 0.01	0.01	-0.03	[-.03, .02]
Disapproval	0.04	0.01	0.21***	[.02, .07]
Alcohol Communication	-0.01	0.00	-0.09	[-.01, .00]
General Communication	-0.02	0.01	-0.16**	[-.03, -.00]
Adjusted $R^2$	.08			
<i>F</i>	6.91***			

*Note.* CI = confidence interval.

\*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .