

MODERATORS OF THE PEER CONTEXT OF ALCOHOL USE AMONG BLACK AND
WHITE ADOLESCENTS

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ABSTRACT

DORENE MACKINNON: Moderators of the Peer Context of Alcohol Use Among Black and White Adolescents

(Under the direction of Henry Frierson and Susan Ennett)

Using data from the Context of Adolescent Substance Use, the current study investigated and compared how the peer contexts of Black and White youth influence adolescent drinking behavior, while considering the moderating influences of family and school contexts.

Primary socialization theory guided the research which suggests that the peer context is primary in the transmission of pro-social and deviant norms for the adolescent, but that peer influences can be moderated by family and school influences. The two most important contextual influences identified by the theory are behavioral norms and the strength of the bonds with others in the context. A specific study aim was to investigate whether the effects of adolescent alcohol use on alcohol use by peers, mother, and schoolmates were moderated by the adolescent's attachment to peers, mother, and school, respectively. In addition, the study examined whether the effects of peer alcohol use on adolescent alcohol use were moderated by alcohol use by mother and schoolmates and by the adolescent's attachment to mother and school. Relationships were examined for both any recent alcohol and heavy alcohol use, and separate analyses were conducted for Black and White youth. Consistent with prior studies of adolescent alcohol behavior, findings supported some differences between Black and White youth in predictors of alcohol use. Moreover, aligned with the theoretical framework, the study results show the behavior of the peer context – peer alcohol

use – to be the most salient predictor for adolescent alcohol behaviors. Other relationships suggested by the theoretical framework supported were for the mother context such that attachment to the mother attenuated the influence of mother's alcohol use on recent alcohol use for both Black and White youth and on recent heavy alcohol use for White youth only. For the school context, counterintuitive findings resulted. Therefore, results show the strength of attachment to and reported alcohol use of other adolescent social contexts are important in transmitting pro-social or deviant norms. However, a richer understanding of how social contexts transmit norms for Black and White youth warrants further investigation using Primary Socialization Theory.

DEDICATION

I dedicate this dissertation to my family, especially...

 Mariah for being my love, joy, hope, and dream come true;

 Mom and Shanta for your unconditional love and support;

 Dad and Gram for being the wind beneath my wings.

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The writing of a dissertation can be a lonely and isolating experience, yet it is obviously not possible without the personal and practical support of numerous people. Thus, my sincere gratitude goes to members of my dissertation committee, Drs. Henry Frierson, Susan Ennett, Valerie Williams, William Malloy, and William Ware. Special appreciation is due to Dr. Henry Frierson for his continued support during this journey and Dr. Susan Ennett for her faithful dedication, support, and guidance during the time it took me to breathe life into my research and allow it to come to fruition in this dissertation document.

I would like to thank the many people who believed in this path for me – sometimes I became uncertain of where this path would end, but you could see the end all the time. Also, I'd like to thank my wonderful friends who have supported me while on the path. While it was not always easy, I can honestly say I would not have changed a thing about the journey because I've come to know that *I can do everything through Him who gives me strength* (NIV Phil 4:13).

The LORD God is my strength, and He will make my feet like hinds' feet, and He will make me to walk upon mine high places.

Habakkuk 3:19 (King James Version)

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CHAPTER I

Introduction

The purpose of the present research is to investigate and compare how the peer contexts of Black and White youth influence adolescent drinking behavior, while considering the moderating influences of families and school. The theory guiding this investigation is Primary Socialization Theory (PST; Oetting & Donnermeyer, 1998), which suggests that deviant behavior, such as alcohol use, is socially learned behavior and that the primary contexts for adolescent socialization are peers, family, and school. Because Primary Socialization Theory is explicitly focused on adolescents, intended to explain deviant behaviors such as alcohol use, and is comprehensive in its focus on family, peer, and school contexts, it is appropriate for guiding the investigation of how alcohol use may be learned through social bonds. Using data collected for the Context of Adolescent Substance Use Study (Context), the current study explores the influences of peer, family (mother), and school contexts on alcohol consumption of Black and White adolescents.

Alcohol Use among Adolescents

Alcohol use among adolescents has long been a concern because of the harmful consequences and because research suggests that the earlier young people engage in alcohol use and heavy drinking, the more likely they are to have alcohol-related problems and alcohol dependence in adulthood (Barnes, Welte, & Dintcheff, 1992). The 2005 National Survey on Drug Use and Health (NSDUH) showed that the prevalence rates of current (i.e., past month) alcohol use increased with age, 4.2% to 30.1% for 12 and 17 years olds,

respectively. NSDUH also highlights the same pattern for heavy alcohol use for these same youth within the past month (e.g., 2% at age 12 and 19.7% at age 17). But within these rates, there are differences for Black and White youth. For example, NSDUH reports that 11.6% of Black adolescents and 18.5% White adolescents aged 12 to 17 reported consuming alcohol in the month prior to survey. In addition, for the same population, heavy alcohol use was reported by 22.3% of White youth and 9.1% of Black youth. Although rates of alcohol and heavy alcohol use are lower for Black youth than White youth, other alcohol researchers indicate that as adults they suffer greater adverse health consequences (Jones-Webb, 1998; Ford & Goode, 1994).

These national data support the need to identify factors that contribute to youth alcohol use and that provide explanation for differences in alcohol use between Black and White youth. Better understanding of alcohol consumption patterns is critical for informing alcohol use prevention and intervention programs. To the extent that the factors explaining alcohol use differ for Black and White youth, different types of interventions may be more efficacious.

Contextual Effects on Youth Development and Alcohol Use

Numerous studies have shown that peers, families, and schools are important social contexts in general for adolescent development and specifically for development of alcohol use (McNeely, Nonemaker, & Blum, 2002; Resnick, Bearman, Blum, Bauman, Harris, Jones, Tabor, Beuhring, Sieving, Shew, Ireland, Bearinger, & Udry, 1997). The family is the initial socialization unit where children receive caring, nurturing, and guidelines for pro-social or deviant norms for social behavior. Children also witness healthy or deviant behaviors,

including alcohol use, within the family. Once children enter school they are exposed to an additional set of norms enforced by the school community. These norms can be supportive of healthy behaviors or facilitate risky behavior adoption. For instance, individual schools communicate different levels of caring that can influence how an adolescent perceives the acceptability of healthy or risky behaviors (Resnick, Harris, & Blum, 1993). Nested within the school is the peer context – the friends through which adolescents learn norms for behavior. Adolescents are especially influenced by peer behavior when it comes to engaging in deviant behaviors, such as alcohol use and cigarette smoking (Hamm, 2000; Haynie, 2002; Bauman & Ennett, 1996).

Although family, peer, and school contexts are all likely relevant to both Black and White youth's alcohol use, some differences might be expected. For example, Bonny, Britto, Klostermann, Hornung, and Slap (2000) explored factors that differentiate adolescents' level of school connectedness and found that being Black, female, and attending an urban school were associated with low school connectedness. They also found that being White, male, and having parents with education greater than a high school diploma were positively associated to school connectedness. Whether social context differences such as these are important to understanding differences in alcohol use by Black and White youth is a question this study addresses.

Primary Socialization Theory

Primary Socialization Theory suggests that all peer, family, and school contexts provide opportunities for adolescents to form bonds – strong or weak – that can influence the adoption of healthy or risky behaviors, such as alcohol use. The theory proposes that

normative and deviant behaviors are learned social behaviors. According to the theory, norms for social behaviors like alcohol use are learned primarily in the context of interactions with the primary socialization sources – peers, family, and school (Oetting & Donnermeyer, 1998). Although the theory’s conceptual model (Figure 1) suggests that peers, family, and school all contribute equally, most emphasis is placed on the adolescent’s interactions with peers as dominating the learning of social behaviors. The theory suggests that family and school, however, contribute through moderating peer effects.

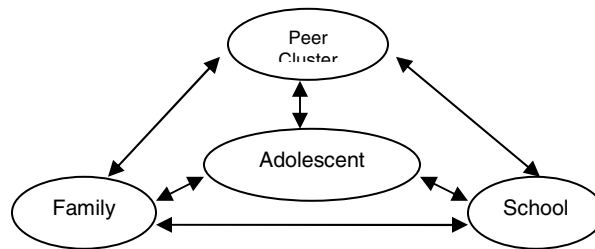


Figure 1. Primary Socialization Theory

Interrelations within and among peer, family, and school contexts are suggested in five additional postulates provided by the theory. The first postulate states that the strength of the youth’s primary social bonds is key in determining how effectively norms are transmitted. This postulate implies that within each context, there will be an interaction between norms and bonds, such that the stronger the attachment, the greater the effect of behavioral norms. For example, adolescents strongly attached to peers who drink may be even more likely to drink than adolescents not strongly attached to peers who drink. The remaining postulates are that healthy family and school bonds are more likely to transmit

pro-social norms, but any bond can transmit deviant norms; peers can transmit either pro-social or deviant norm; weak family-adolescent and/or school-adolescent bonds increase the likelihood that adolescents will bond with deviant peers and engage in deviant behaviors; and changes in bonding with peers can increase with weaker peer bonds.

Consistent with these postulates, it is hypothesized that adolescents exposed to alcohol use by peers, family, or in the school will be more likely to use alcohol. Further, because the theory suggests that the effect of alcohol use by others depends on the strength of the bond, it is hypothesized that there will be an interaction between norms (alcohol use) and bonds (attachment) in each of the three contexts in predicting adolescent alcohol use.

The theory is not completely clear, however, on exactly how the family and school contexts relate to the peer context, with the authors suggesting that weak family/school bonds can lead to association with deviant peers and/or weak family/school bonds can worsen the effects of association with deviant peers. The former suggests mediation while the latter suggests moderation. Because interactions between norms and bonds are central to the theory, moderating effects of family and school on peer alcohol use are tested in the current study. Specifically, it is hypothesized that adolescents who have peers who drink will be at even greater risk of drinking if their mother drinks or if they go to a school with higher percentages of drinkers. Conversely, it is hypothesized that adolescents who have peers who drink will be at less risk of drinking the more they are attached to their mother or school. These two sets of hypotheses are a proposed modification of Primary Socialization Theory.

In summary, the specific aims of the current study are to:

1. Describe the peer, mother, and school contexts for Black and White youth in grades 6 through 10, focusing on alcohol use in each context and the strength of the adolescent's attachment to each context.
2. Examine the longitudinal relationships suggested by Primary Socialization Theory between peer, mother, and school contexts and adolescent alcohol use for Black and White youth.
3. Examine modifications to the theory concerning how mother/school alcohol use and mother/school attachment exacerbate or buffer the effect of peer alcohol use on adolescent alcohol use for Black and White youth.

CHAPTER II REVIEW OF LITERATURE

The following literature review highlights empirical findings concerning the three contexts of concern – family, peers, and school – and the two dimensions -- alcohol use and attachment – that define each context as they relate to adolescent alcohol use. In addition, select theories, in addition to Primary Socialization Theory, that are concerned with socialization of deviant behavior are discussed.

Family

The family bond is the initial and most proximal bond for youth. According to Social Bonding Theory (Hirschi, 1969), an element of the social bond is attachment to conventional others, which is typically understood to include parents and other adults, such as at school. This social bond to conventional others encourages individuals to follow social norms. Positive family environments, as exemplified by positive parent-child relationships, parental supervision, consistent discipline, and communication of family values, have been found to be a major reason youth do not engage in delinquent or unhealthy behaviors. In fact, family system theorists suggest that strong healthy bonds between the adolescent and family may prevail over other influences, including peer influences (Ary, Tildesley, Hops, & Andrews, 1993). This proposition is not surprising as the literature indicates that parental influence is one of the most consistent correlates (Mason & Windle, 2001) and a strong predictor of adolescent alcohol use (Li, Pentz, & Chou, 2002; Chassin, Curran, Hussong, & Colder,

1996). Some studies suggest that the strength of the family bond is key in serving as a protective factor, whereas weaker bonds open up the possibility of risky behavior adoption (Bryant & Zimmerman, 2002). Greater levels of attachment to parents have been associated with decreased involvement in at-risk behaviors, including alcohol use (Hawkins, Catalano, & Miller, 1992).

If parent-child attachment is maximized, both Social Bonding Theory and Primary Socialization Theory would suggest that this family bond buffers the adolescent from deviant influences to engage in behaviors like alcohol use. However, what happens when family members engage in alcohol use? Social Learning Theory (Bandura, 1986) would suggest that modeling the behavior may supercede the influence of attachment. Like Primary Socialization Theory, this theoretical approach would suggest that increased attachment to a parent who drinks would increase the likelihood of adolescent alcohol use (Urberg, Goldstein, & Toro, 2005). Research investigating the relationship between parent attachment, parent alcohol use, and adolescent alcohol use is mixed. Doherty and Allen (1994) found that low attachment increased risk behavior, whereas Andrews, Hops, and Duncan (1997) found that greater levels of attachment were associated with similarity in parent and adolescent use for substances like alcohol. The current study will add to research in this area by examining how the nature of attachment to one's mother and her alcohol use are related to adolescent alcohol use behaviors.

Differences in the influence of families are expected for Black and White youth. Oetting and Donnermeyer (1998) indicate that the family is culturally defined, thus suggesting that the bonds may be different for Black and White youth. Newcomb and Bentler (1989) found that Black adolescents exhibited strong familial bonds that protected

against alcohol consumption, whereas White youth were more heavily influenced by peers than family. Hare and Hare (1986) also suggested that drinking alcohol among Black adolescents was associated with poor family relationships. Based on these findings, the current study may show that the family context is more strongly related to alcohol use for Black youth than White youth.

Peers

The literature has identified the peer context as the source of some of the most important psychosocial factors related to adolescent alcohol use (Curran et al., 1997). In fact, peers are considered by many to be the major source of influence on alcohol and other drug use among youth. These views are consistent with Primary Socialization Theory, which identifies peers as a primary source of socialization. The importance of the peer context may vary for Black and White youth, however. Giordano (2003) suggested that Whites are more affected by behaviors of friends than Black youth.

Studies have consistently shown a similarity in alcohol use between peers (Bauman & Ennett, 1994; Urberg, Degrimencioglu, & Pilgrim, 1997; Dishion & Owen, 2002). Socialization and selection are the two processes that have been used to explain this similarity. Socialization suggests that the peer group influences the adolescent's alcohol use behavior; whereas selection suggests that the adolescent associates with peers who are similar to them in their own alcohol use behavior. Sieving, Perry, and Williams (2000), for example, investigated peer models of influence and selection of adolescent alcohol use by examining nested model difference tests within structural equation models (SEM) framework. Their findings supported peer influence (utilizing adolescent perceived reports of peer use) as a predominant model for explaining alcohol use among adolescents.

In another study conducted by Urberg, Degirmencioglu, and Pilgrim (1997), the goal was to examine how close friend and friendship group influence adolescent cigarette and alcohol use. The authors highlighted literature that supports adolescents' choice of peers with whom they share similarities. They also suggested that the effects of selection and influence are distinct and unique aspects of peer relations. Their findings showed clear evidence of the influence of close friends and friendship groups on the use of both cigarettes and alcohol. Close friends often had the strongest influence on the initiation of use.

The current study limited its focus to socialization by peers as an explanation for peer similarity in alcohol use. Through socialization with peers, adolescents are expected to learn both deviant and pro-social norms about alcohol use. Because of the longitudinal design of the Context study, selection effects can be removed by analytically controlling for the adolescent's prior alcohol use behavior (Bauman & Ennett, 1996).

Similar to expectations for the effects of parent attachment and alcohol use, it may be reasonable to assume that increased peer attachment would serve as a buffer against the influence of peer alcohol use. Because peers are central figures during adolescent development, research has suggested behaviors or the network – like alcohol use – should be effective at directing and controlling adolescent behaviors (Haynie, 2002). From a theoretical stance, Social Learning Theory suggests that the more cohesive the peer group, the more opportunity and reinforcement for modeling each other's behavior. Furthermore, research has shown that peer alcohol use and peer attachment are positively associated (Urberg et al., 2005). Therefore, consistent with Primary Socialization Theory, adolescents may be most at risk for alcohol use when they are strongly attached to peers who drink alcohol.

School

The school environment is the third important socialization context for the adolescent. With adolescents spending the majority of their days at school, the school environment also has the potential to transmit pro-social and deviant norms. Although the school is thought of as a place where engagement in academics occurs, it also serves as a place where adolescents develop friendships and attachments to others outside of their family. In schools, adolescents learn acceptable norms for behavior from their schoolmates. In line with Primary Socialization Theory, adolescents may vie for social acceptance by adhering to the norms evident within the school. In addition, adolescents exhibit varying levels of closeness to the school environment which influences their behavior. Researchers have often used the term “school connectedness” to describe how connected students feel toward their school (Libbey, 2004).

Research has suggested that school attachment can serve as a protective factor for substance use (Henry & Slater, 2007). Consistent with this finding, studies have shown that school disconnectedness is related to deviant behaviors (Battistich & Hom, 1997; Bryant, Schulenberg, O’Malley, Bachman, & Johnston, 2003; McNeely et al., 1997; Zimmerman & Schmeelk-Cone, 2003). For example, McNeely et al. (1997) indicated that students who felt less connected to their school environment were at heightened risk for deviant health behaviors such as tobacco use, alcohol and other drug use. In another study, youth with higher levels of school connectedness had lower levels of tobacco, marijuana, and alcohol use (Battistich & Hom, 1997).

Black and White youth may differ in school connectedness. Bonny, Britto, Klostermann, Hornung, and Slap (2000) explored factors that differentiate adolescents’ level

of school connectedness. Using stepwise and logistic regression analyses, they found that being Black, female, and attending urban schools were associated with low school connectedness. They also found being White, male, and parents with education greater than a high school diploma were associated more positively to school connectedness. These findings suggest the need to examine whether school connectedness influences adolescent alcohol use in similar ways for Black and White youth.

In addition to school connectedness, school-level alcohol use is essential to examine in investigations of adolescent alcohol use. If many students in the school drink alcohol, adolescents may perceive that alcohol use is acceptable behavior. However, if school alcohol use is low, the behavior may be deemed unacceptable. Alexander, Piazza, Mekos, and Valente (2001) found school norms about cigarette smoking were important to adolescent cigarette smoking.

Summary

The above review of literature identifies empirical findings concerning family, peers, and school as they relate to adolescent alcohol use, as well ethnic differences in alcohol use patterns and correlates. According to Primary Socialization Theory and many of the studies cited, peers have the strongest influence on adolescent alcohol use (Curran et al., 1997), but family (Li, Pentz, & Chou, 2002) and school (Bryant et al., 2003) also influence alcohol use; however, the influence of peers may be strengthened or weakened by factors within the family and school. Accordingly, the current study investigated the moderating effects of family and school on peer influences on adolescent alcohol consumption.

CHAPTER III METHODS

Study Design and Sample

The current study was a secondary analysis of data collected for the Context of Adolescent Substance Use Study (Context) led by investigators at the University of North Carolina's School of Public Health. The longitudinal study consisted of five waves of survey data collected in school from middle and/or high school students during each academic semester beginning Spring 2002 through Spring 2004; three waves of telephone interviews with a random subsample of parents; and geo-coding of the addresses of adolescents and parents to allow linkage to U.S. Census data.

During Spring 2002, adolescents enrolled in 6th, 7th, and 8th grades from three central North Carolina school districts were invited to participate in a survey on adolescent health risk behaviors. Consent procedures, approved by the UNC School of Public Health Institutional Review Board, were a waiver of written parental consent and written adolescent assent for participation. Parents received a letter, sent home with students and by first class mail, describing the study and providing instruction for refusing their child's participation. Parents could either call a toll-free number or return a postage paid refusal slip. Written assent was obtained in school by trained data collectors from adolescents whose parents had not refused participation.

The survey asked adolescents an array of questions about demographic, intrapersonal, peer network, and other social characteristics. Adolescents were also asked

about health risk behaviors including substance use – specifically alcohol, tobacco, and other illicit drug use. Instructions for completing the survey were given by trained data collectors who remained in classrooms while adolescents completed the survey. To help maintain order, teachers also remained in the classroom, but did not answer questions about the survey or walk around the classroom. The survey was completed in approximately one hour.

The adolescent participants were enrolled in 13 schools (i.e., two K – 8, three alternative, and eight middle schools) at Wave 1 across the three school districts. Beginning at Wave 2, six additional schools were added to include high school grade levels because Wave 1 eighth grade participants transitioned to high school. At each wave, all students at participating schools were eligible to participate in the school-based survey; that is, at each wave of data collection, students newly enrolled in the schools were eligible for the study. For the five waves of data combined, there were 6825 eligible adolescents of which $n = 5220$ completed the survey at Wave 1 (88.4% of eligible 5904), $n = 5060$ completed at Wave 2 (81.3% of eligible 6226), $n = 5059$ completed at Wave 3 (80.9% of eligible 6251), $n = 5017$ completed at Wave 4 (79.1% of eligible 6342), and $n = 4676$ completed at Wave 5 (76.0% of eligible 6161).

From the Wave 1 adolescent school sample, a random sample of parents was selected to participate in an annual parent interview ($N = 1663$ at Wave 1) at Waves 1, 3, and 5. By design, 97% of parent interviews were with mothers. The current study uses data from adolescents but not parents; parent data are not used because only a subsample of parents participated.

Analytic Sample

For the current study, the sample was limited to adolescents whose address had been geo-coded, as needed to account for the clustered sample design ($N = 6522$), and had reported their race/ethnicity as either White or Black/African American ($N = 5619$). The sample was further limited to adolescents who completed school surveys at Waves 1, 3, and 5 ($N = 2931$) and to adolescents for whom dependent measures of alcohol use could be operationalized at all three waves ($N = 2452$). In sum, the analytic sample consisted of 892 Black adolescents and 1560 White adolescents surveyed at Waves 1, 3, and 5 (see Figure 2).

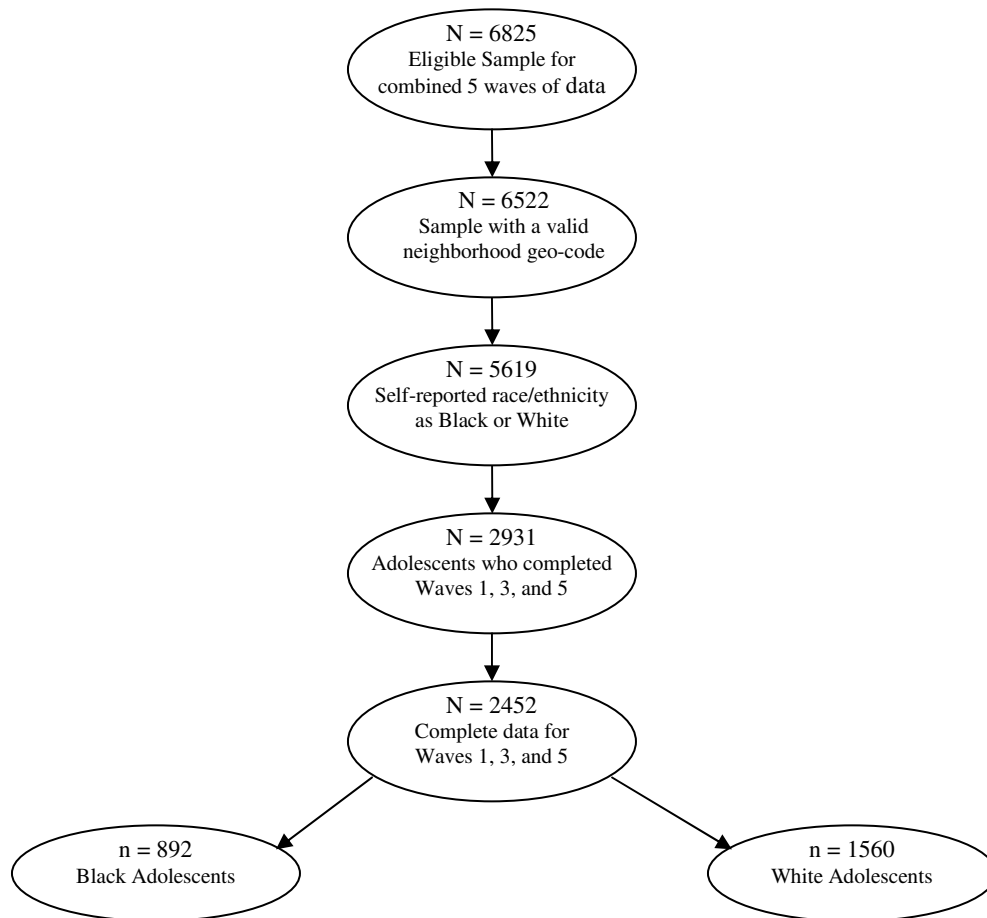


Figure 2. Diagram of Context Analytic Sample

In comparison to adolescents in the analytic sample, excluded adolescents differed on demographic characteristics. Specifically, excluded adolescents were more likely to be older ($t = 4.94$, $df = 2929$, $p < .05$), to be Black ($\chi^2 = 45.50$, $df = 1$, $p < .05$), and to have a mother with less than or equivalent to high school education ($\chi^2 = 9.88$, $df = 1$, $p < .05$). They were also less likely to reside in a two parent household ($\chi^2 = 3.11$, $df = 1$, $p < .05$). However, the excluded students did not differ in terms of gender. With respect to alcohol use, excluded adolescents reported more alcohol use at Waves 1 ($\chi^2 = 224.08$, $df = 1$, $p < .05$), 3 ($\chi^2 = 105.92$; $df = 1$, $p < .05$), and 5 ($\chi^2 = 11.81$, $df = 1$, $p < .05$) and more heavy alcohol use at Wave 3 ($\chi^2 = 7.27$, $df = 1$, $p < .05$). The samples did not differ on heavy alcohol use at Waves 1 and 5. The differences in demographic and substance use characteristics are consistent with other longitudinal studies of youth substance use where disadvantaged adolescents and those higher in substance use are more likely to be lost at follow-up (Caetano, 2001).

Measures

There were two dependent variables of interest – adolescent recent alcohol use and heavy alcohol use. Each of these dependent variables was based on adolescent self-reports at Waves 1, 2 or 3 and 4 or 5. As described below, values for the measures at Waves 2 or 3 and at Waves 4 or 5 were based on the latest wave of data available from the adolescent. The six independent variables – peer alcohol use, peer attachment, mother alcohol use, mother attachment, school alcohol use, and school attachment were measured at Waves 1 and 3. Demographic characteristics, including age (in years), gender, mother's education (a proxy for socioeconomic status), family structure, and friendship network size were measured at Waves 1 and 3.

Dependent Measures

Adolescent alcohol use. Recent alcohol use (during the past 3 months) was assessed at each wave of data collection to define alcohol use at Waves 1, 2 or 3, and 4 or 5. The measure was based on two questions: 1) “How much alcohol have you ever had in your life?” and 2) “During the past 3 months, about how many days did you have 1 or more drinks of alcohol?” For the first question, adolescents indicated their use of alcohol on an 8-point scale (0 = “none”; 1 = “1 or 2 sips, but not a whole drink”; 2 = “3 or more sips, but not a whole drink at one time”; 3 = “1 to 2 whole drinks”; 4 = “3 to 4 whole drinks”; 5 = “5 to 10 whole drinks”; 6 = “11 to 20 whole drinks”; or 7 = “more than 20 whole drinks”). If adolescents reported ‘none’, then they were instructed to skip other alcohol questions in the survey. For responses to the second question, students indicated a frequency range of 0 to 20+ drinks on a 6-point scale (0 = “0 days”; 1 = “1 to 2 days”; 2 = “3 to 5 days”; 3 = “6 to 9 days”; 4 = “10 to 19 days”; or 5 = “20+ days or more”). In prior research, there has been support for the validity and reliability of both questions used here to capture self-reported drinking in adolescence (Lintonen, Ahlstrom, & Metso, 2004).

Recent alcohol use was coded “0” if adolescents reported that they had never had any alcohol or had not had any alcohol in the past 3 months and coded “1” if they reported any alcohol use on 1 or more days in the past 3 months. The variable was dichotomized because at all waves of measurement the frequency distribution was heavily skewed. This generally indicates non-normality in the error terms and according to convention the dependent variable was dichotomized.

Because some adolescents in the sample had missing values on the alcohol use variable at Waves 3 and/or 5 but had non-missing data at Waves 2 and/or 4, the latest wave

of available data was used to operationalize the variables. This method allowed 500 cases to be retained that otherwise would have been deleted from the sample. Thus, for some adolescents alcohol use was measured for at least the last six months and for most adolescents it was measured for the last year. Examination of the phi correlation coefficients suggested that alcohol use at the two waves were correlated: Wave 2 and Wave 3 adolescent alcohol use obtained a phi-coefficient of $\phi = .63$ and Wave 4 and 5 $\phi = .51$.

Adolescent heavy alcohol use. Heavy alcohol use was assessed with the following question – “During the past 3 months, about how many times have you had 3 or 4 drinks in a row?” Respondents used a 5-point ordinal scale ranging from 0 = “none” to 4 = “10 or more times.” Because of the non-normality in the error terms, the variable was dichotomized, such that adolescents who indicated any heavy alcohol use (values of 1 – 4) were coded as “1” whereas students who indicated no heavy alcohol use were coded as “0.”

As for the other alcohol use measure, when adolescent heavy alcohol use was missing for Waves 3 and/or 5, the value for heavy alcohol use from Waves 2 and/or 4 was substituted. This again resulted in an additional 500 cases. Phi correlation coefficients showed that the preceding wave of data and the outcome wave were correlated: Wave 2 and Wave 3, adolescent heavy alcohol use obtained a phi-coefficient of $\phi = .43$ and Wave 4 and Wave 5 $\phi = .47$.

Independent Measures

Composition of the Adolescent's Peer Network. Before measuring peer attachment and alcohol use, the adolescent's peer network had to be defined. The peer context was defined as the adolescent's set of close friends, as identified by the friendship nominations given by each adolescent during survey administration. Adolescents were asked to identify

as many as five of their closest friends by responding to the following question from the school survey: “Please list the names of your 5 closest friends.” Using a friendship directory, adolescents filled in the first name and corresponding identification number for each of five friends in the school. Friendship networks were constructed for each adolescent by summing up the number of friends he/she nominated. Values for friendship network size ranged from 0 – 5 where values of “0” indicated the target adolescent had no friends.

Peer alcohol use. The alcohol use of the peer network was defined as the proportion of target adolescent’s nominated friends that he/she perceives to engage in alcohol use. Thus, peer alcohol use was captured by asking adolescents “How many of these friends do you think drink alcohol (beer, wine, wine cooler, or liquor).” Responses were on a 4-point ordinal scale (0 = “none” to 3 = “most or all”). If the target adolescent did not nominate peers, peer alcohol use was coded “0” to reflect no friends consuming alcohol. This question has been used in previous research studies of adolescent alcohol use and was shown to be a reliable measure of peer alcohol use (Botvin, Baker, Dusenbury, Tortu, and Botvin, 1990; Botvin, Malgady, Griffin, Scheier, and Epsteing, 1998).

Peer attachment. Adolescents were asked “How close do you feel towards each of your friends?” Responses were on a 4-point ordinal scale (0= “not close at all” to 3= “very close”). An average was computed from the adolescent responses for the set of nominated friends. This measure provided an overall assessment of the level of attachment identified by the target adolescent for members of his/her peer network.

Mother’s alcohol use. Adolescent reports of his/her mother/mother figure’s alcohol use were used to measure this variable. To assess mother alcohol use, adolescents responded to the following questions: “Has she ever had a drink of alcohol in her life?” Responses were

from 0 = “no”, 1 = “yes”, and 2 = “don’t know.” Adolescent responses of ‘don’t know’ were coded as missing and accounted for with a dummy-code variable in the analytic models.

Mother attachment. Attachment to mother was assessed using the adolescent’s responses to three questions regarding their relationship with their mother figure. A sample question was “How close do you feel toward her?” Adolescents indicated their responses on a 4-point ordinal scale (0 = “not close at all”; 3 = “very close”). The responses were averaged to compute the attachment the adolescent feels to the mother figure. For Wave 1, Cronbach’s alpha (Cronbach, 1951) was computed to assess the internal consistency (reliability) of the scale. For the current study, the internal consistency reliability for this 3-item attachment scale was $\alpha = .79$ at Wave 1. The internal consistency here is

School alcohol use. Alcohol use data were collected from all adolescents at each school; the proportion of users was computed to describe the school-level recent alcohol use. So, school alcohol use was measured by the proportion of students at target adolescent’s school who reported alcohol consumption.

School attachment. School attachment was defined as the adolescent’s sense of closeness to the school environment (Roberts, Hom, & Battistich, 1995). Three items were used to measure school attachment on a 5-point ordinal scale (0 = “strongly disagree”; 4 = “strongly agree”). A sample question was “My school is like a family.” The responses were averaged to create a score for school attachment. Previous studies have indicated satisfactory reliability for this scale $\alpha = .79$ (Roberts, Hom, & Battistich, 1995) and this study yielded an internal consistency reliability of $\alpha = .80$ at Wave 1.

Control variables. Demographic control variables include gender (0 = male; 1 = female), age (in years), socio-economic status (SES) captured from mother/mother figure’s education

(0 = mother has high school education or less; 1 = mother has beyond high school education), and family structure (0 = two parents reside with child in household; 1 = other than two parents in household). Age was calculated using the difference between the administration date of the survey and the adolescent's report of his/her birth date on the survey. Additionally, friendship network size (number of friends identified by target adolescent) was controlled for in all analyses.

Adolescent prior alcohol use and prior heavy alcohol use at Waves 1 and 3 were controlled for in all analyses examining adolescent alcohol use and heavy alcohol use in an effort to control for selection effects.

Missing Data on Independent Variables. To avoid losing cases with missing values on any of the independent and control variables, a dummy coded variable identified each independent or control measure with missing information. The amount of missing data was less than 10% for most variables; see Table 1 for the number of missing cases for each variable. For example, peer alcohol use at Wave 1 had N = 26 missing cases for which a dummy-coded variable was created to identify these missing cases in the analysis. The dummy-coded variables were used in all logistic regression models. A statistically non-significant effect for the dummy-coded variable suggested the missing cases had no impact on the outcomes under investigation.

Table 1. Missing data pattern for adolescents who completed Waves 1, 3, and 5 (N = 2931)

Variable	Missing Data	
	N	%
Age	–	–
Gender	–	–
Family Structure at Wave 1	38	1.55
Family Structure at Wave 3	111	4.53
Mother Education at Wave 1	–	–
Mother Education at Wave 3	–	–
Friendship Network Size at Wave 1	–	–
Friendship Network Size at Wave 3	–	–
Independent Variables		
Recent Alcohol Use at Wave 1	–	–
Recent Alcohol Use at Wave 3	–	–
Peer Alcohol Use at Wave 1	26	1.06
Peer Alcohol Use at Wave 3	22	.90
Peer Attachment at Wave 1	20	.82
Peer Attachment at Wave 3	30	1.22
Mom Alcohol Use at Wave 1	524	21.37
Mom Alcohol Use at Wave 3	534	21.78
Mom Attachment at Wave 1	113	4.61
Mom Attachment at Wave 3	183	7.46
School Alcohol Use at Wave 1	–	–
School Alcohol Use at Wave 3	–	–
School Attachment at Wave 1	27	1.10
School Attachment at Wave 3	68	2.77
Dependent Variables		
Adolescent Alcohol Use at Wave 3	–	–
Adolescent Alcohol Use at Wave 5	–	–
Heavy Alcohol Use at Wave 3	–	–
Heavy Alcohol Use at Wave 5	–	–

Data Analysis

Overview

Analyses were conducted to predict adolescent alcohol use and heavy alcohol use at Waves 2 and/or 3 and 4 and/or 5 from the measures of their family, peer, and school contexts at Waves 1 and 3, respectively, while controlling for demographic characteristics (To simplify description, the outcomes are referred to as Wave 3 and Wave 5 alcohol use.). Parallel sets of analyses were run to predict recent alcohol use and recent heavy alcohol use from Wave 1 to 3 and from Wave 3 to 5. All analyses to address study aims were conducted separately for Black and White adolescents. Preliminary descriptive analyses were conducted, followed by the primary analyses to test the study aims. As described below, all analyses accounted for the clustering of adolescents in schools and neighborhoods by specifying neighborhood geo-code as the clustering variable.

Techniques used to account for the clustering design.

Because the data were clustered, appropriate analytic techniques were used to account for the study design. Survey method procedures offered in SAS/STAT® Version 9.1.3 were used (SAS Institute, 2004). These procedures calculate statistically valid tests based on standard errors corrected for clustering, and thus allow valid inferences about the adolescent population used in the investigation. Adolescents were clustered by both their school and neighborhood, with several neighborhoods typically clustered within each school. Neighborhood residence, defined by U.S. Census block group, was used as the clustering variable rather than school because of the much larger number of block groups (N=140) than schools (N=19). Intra-class correlations (ICCs) for both neighborhood and school variables ranged from .01 - .02.

PROC SURVEYMEANS and PROC SURVEYFREQ were used to estimate the means and frequencies for each variable while allowing the appropriate standard error calculation for the survey sample. A survey method to calculate mean differences (i.e., *t*-test) has not been devised by SAS so traditional methods were used to calculate these statistics when necessary.

PROC SURVEYLOGISTIC was used for the primary analyses because both dependent variables were binary. PROC SURVEYLOGISTIC fits the linear logistic regression model for the binary response survey data with maximum likelihood estimates, while taking into account the clustering design of the sample.

Analyses were conducted using SAS/STAT® software Version 9.1.3 (SAS Institute, 2004). All statistical tests were two-tailed. A type 1 error rate of 5% ($\alpha = 0.05$) was applied to each individual hypothesis test. Individual test statistics and P-values were reported. Rather than relying on statistical significance alone, we will emphasize the interpretation of effect size estimates and patterns of results.

Preliminary Analysis

The study's first aim was to identify the alcohol behavior and attachment dimensions of the peer, mother, and school contexts for Black and White youth who participated in the Context Study. To address Aim 1, descriptive analyses of the demographic composition of the sample at Waves 1 and 3 and independent measures at Wave 1 and 3 were reported using means and standard deviations for continuous variables and frequencies and percents for categorical variables. Adolescent alcohol outcomes at Waves 1, 3, and 5 were reported using frequencies and percents to evaluate racial/ethnic differences. The bivariate relationship

between controls, independent measures, and alcohol outcomes were examined for Black and White youth using Pearson's correlation coefficient.

Specifically, independent sample *t*-test were conducted to examine the racial/ethnic mean differences for continuous independent measures at Waves 1 and 3 – peer alcohol use, peer attachment, mother attachment, school alcohol use, and school attachment. Two-way contingency tables were computed to examine significant racial/ethnic differences of categorical variables – mother alcohol use, adolescent alcohol use, and heavy alcohol use. Pearson's chi-square was used to detect statistically significant frequency distributions for the variables. Pearson correlation coefficients were also calculated to examine the strength of the relationships between alcohol use behaviors and demographic characteristics of Black and White adolescents, in addition to the relationships between alcohol use behaviors and the peer, mother, and school context measures. The values for the Pearson correlation coefficient range from -1 (strong inverse relationship) to +1 (strong positive relationship).

Primary Analysis

The primary goal of the current study was to assess the impact on adolescent alcohol outcomes for Black and White youth of the six contextual variables: peer alcohol use, peer attachment, mother alcohol use, mother attachment, school alcohol use, and school attachment, while controlling for prior alcohol use and demographic characteristics. To accomplish this, a series of analytic models were tested to address Aims 2 and 3. The purpose of Aim 2 was to examining the relationships between the peer, mother, and school measures and adolescent alcohol use. The purposes of Aim 3 were to test relationships suggested by Primary Socialization Theory (PST) and to test modifications to the theory concerning how mother/school alcohol use and mother/school attachment exacerbate or

buffer the effect of peer alcohol use on adolescent alcohol use. Because of the binary outcome variables, logistic regression models were used. Logistic regression methods allow for the analysis of a set of explanatory variables on a dichotomous outcome to estimate the probability of a certain event occurring. Unlike ordinary least squares regression, logistic regression does not assume linearity of the relationship between the independent variables and the dependent variable, does not require normally distributed variables, does not assume homoscedasticity, and in general has less stringent requirements. However, it does require that observations are independent and that the independent variables be linearly related to the logit of the dependent variable (i.e., the natural log of the odds of the dependent variable occurring or not occurring). This method calculates both parameter estimates (i.e., logits) and the corresponding variances in addition to odds ratios for the independent variables.

A set of five models were evaluated. Model 1 estimated the effects of the control variables on the adolescent alcohol outcomes (see Figure 3). This allowed the examination of the amount of variance in adolescent alcohol use explained by these variables. Next, a main effects model (Model 2) was estimated to assess the impact of the independent variables – peer alcohol use, peer attachment, mother alcohol, mother attachment, school alcohol, and school attachment on adolescent alcohol behaviors (see Figure 3). Model 1 and Model 2 specifically address the goals of Aim 2.

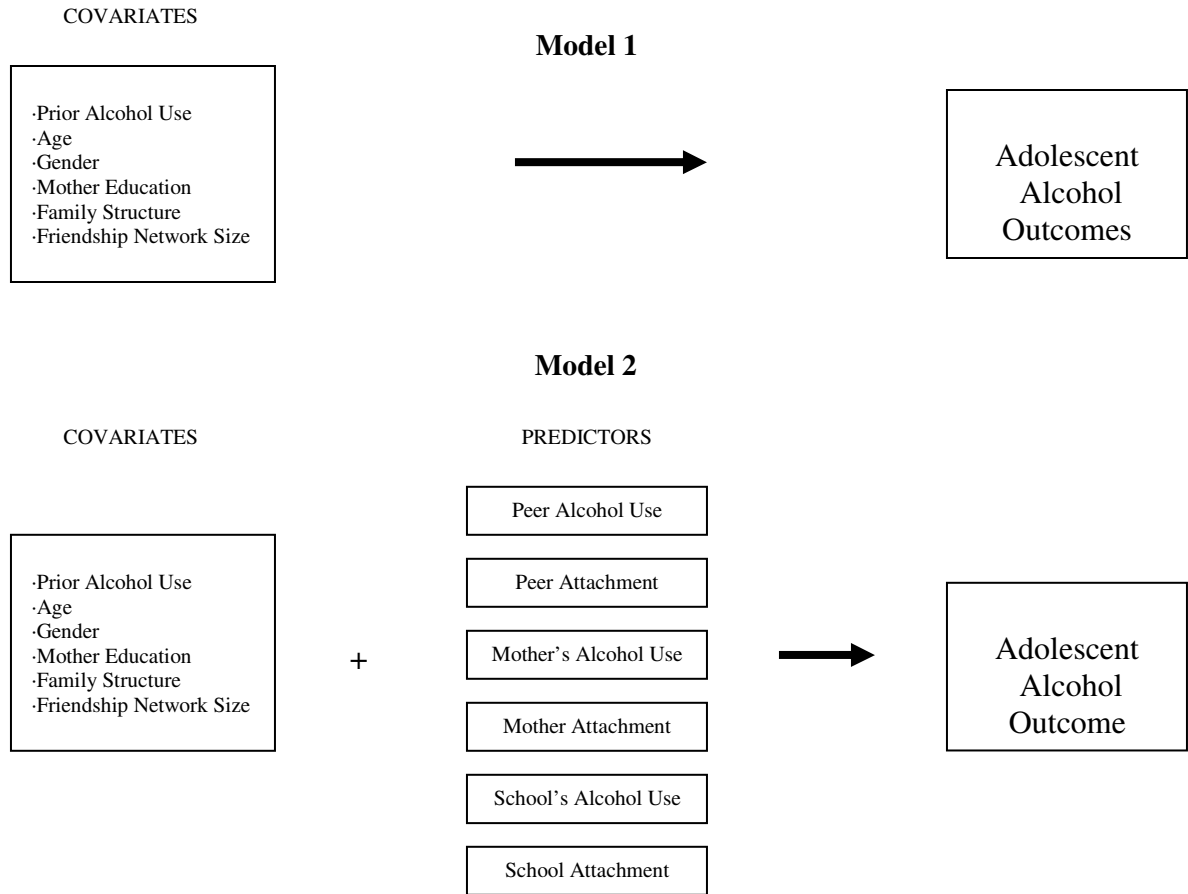


Figure 3. Model 1: Testing Control Variables and Model 2: Testing Main Effects

To examine the theoretical framework guiding the current study – Primary Socialization Theory – and whether mother/school attachments or mother/school alcohol use buffer or exacerbate the effect of peer alcohol use on adolescent alcohol use and heavy alcohol use outcomes, three additional analytic models (Models 3, 4, and 5) were constructed and evaluated. Each model consisted of a set of interactions added to the main effect model. Following from PST, Model 3 included the 2-way interactions between attachment and alcohol use in each of the three contexts. That is, Model 3 included the interactions between peer alcohol use and peer attachment, mother alcohol use and mother attachment, and school alcohol use and school attachment (see Figure 4). Model 4 added to Model 3 multiplicative

terms between peer alcohol use and mother attachment and peer alcohol use and school attachment (see Figure 5). This model assessed whether attachment to mother and/or school buffered the effect of peer alcohol use on adolescent alcohol use. Model 5 added to Model 3 the 2-way interactions between peer alcohol use and mother alcohol use and peer alcohol use and school alcohol use to determine whether exposure to alcohol use in the mother and school contexts exacerbated the effects of peer alcohol use on adolescent alcohol use (see Figure 6).

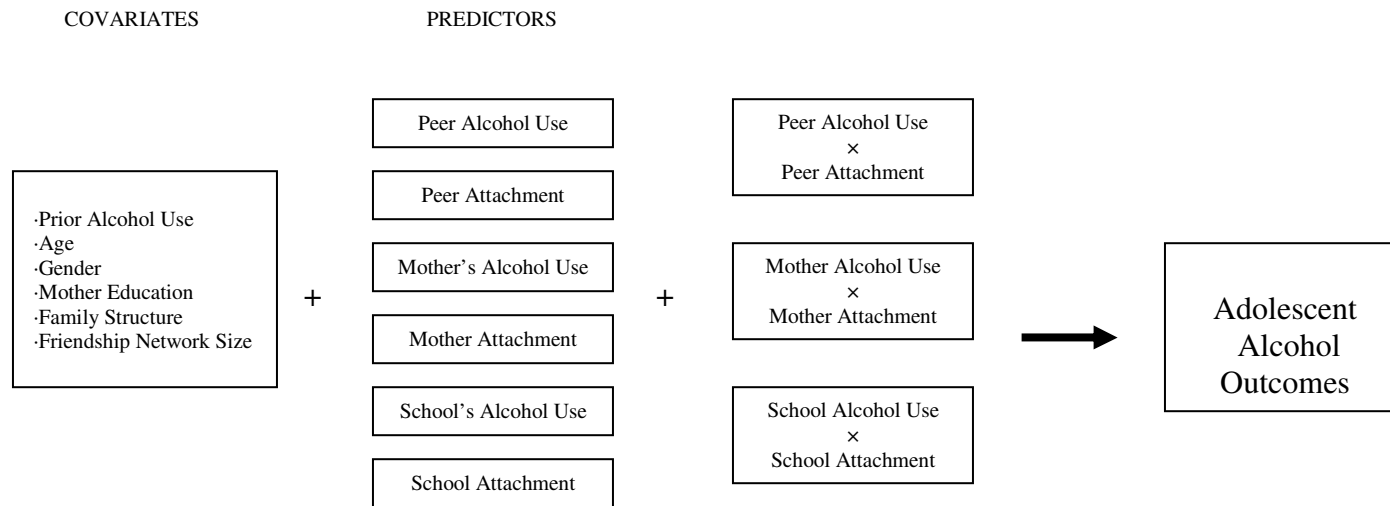


Figure 4. Model 3: Testing relationships suggest by Primary Socialization Theory

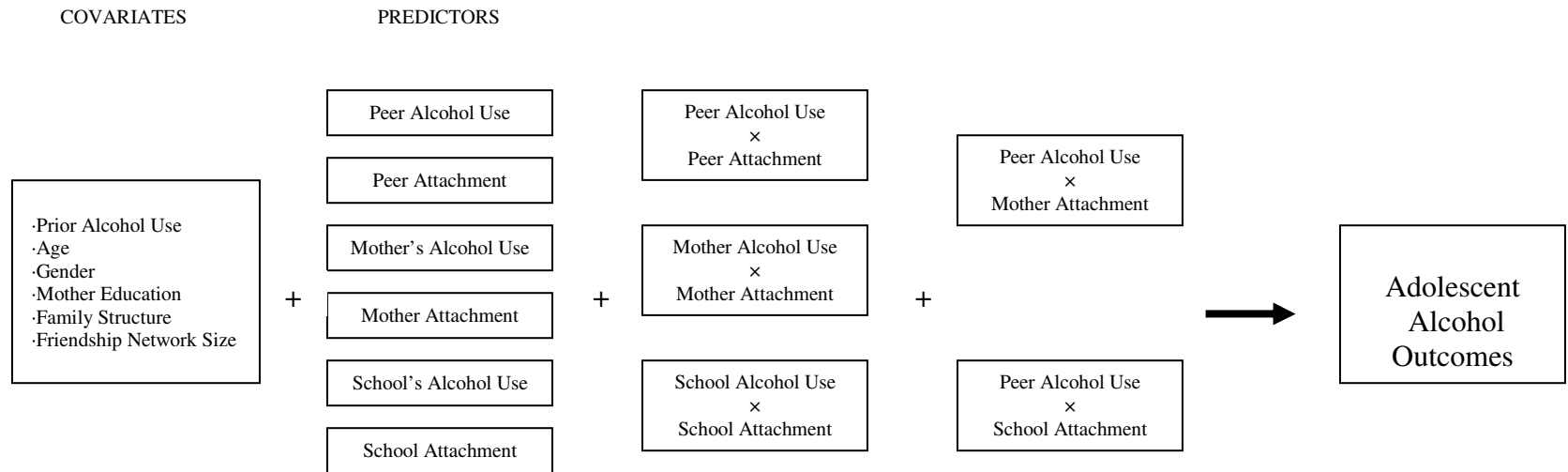


Figure 5. Model 4: Testing modifications to PST via the buffering effects of Mother Attachment and School Attachment

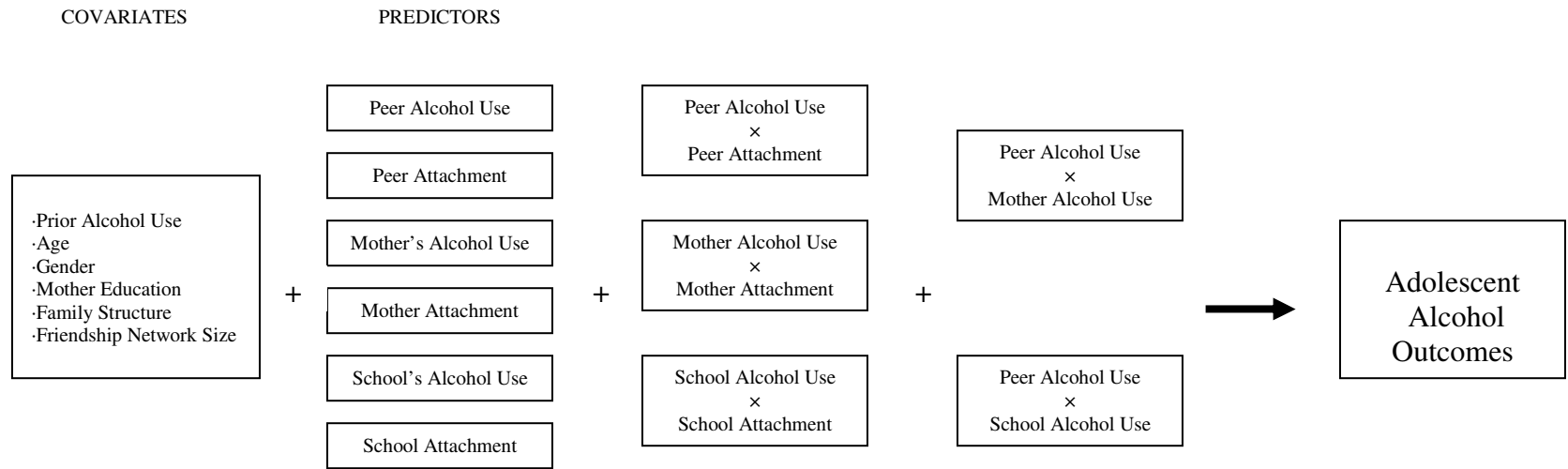


Figure 6. Model 5: Testing modifications to PST via the exacerbating effects of Mother and School Alcohol Use

The interaction terms in Models 3, 4, and 5 were tested. If an interaction term was found statistically significant, this evidenced a moderating effect. All statistically significant interactions were probed because a statistically significant interaction term does not provide an understanding of the nature of the interaction. Guidelines for probing interactions in logistic regression were adopted from Jaccard (2002). Because of the possibility of multicollinearity (very high correlation among predictor variables) during the probing of the interaction term, the predictors were centered prior to analysis (Aiken & West, 1991; Jaccard, 2002). The centered variables were used to compute the interaction terms between the predictors to determine whether mother/school attachment buffers or mother/school alcohol use exacerbates the effects of peer alcohol use on adolescent alcohol outcomes. Again, statistically significant interaction terms evidenced moderating effects and were probed according to methods outlined by Jaccard (2002).

Model fit. Three model fit statistics were provided to assess model fit: -2 Log Likelihood ratio statistic, Akaike Information Criterion (Akaike, 1974), and the pseudo R^2 . The -2 Log Likelihood ratio (-2LL) is a goodness-of-fit measure used in logistic regression that allows the researcher to assess model fit for additive (i.e., nested) models. Specifically, likelihood is a probability that the observed values of the dependent variable (here, adolescent alcohol use or heavy alcohol use) may be predicted from the observed values of the independent variables. The log of the likelihood is calculated through an iterative process using maximum likelihood estimation and is the basis for tests of a logistic model. The -2LL statistic approximates a chi-square distribution and reflects the statistical significance of the unexplained variance in the dependent variable. Generally the -2LL will decrease in magnitude as the model better fits the data. The Akaike Information Criterion (AIC) is also

reported because it is a measure of goodness-of-fit for an estimated model (Akaike, 1974). It is derived from the -2LL ratio and the number of predictors used in the model; the smaller the AIC, the better the model fit. Lastly, to provide a measure of association analogous to the ordinary least squares R^2 , which assesses the percent of variance explained in the dependent variable, a pseudo R^2 statistic is provided. The pseudo R^2 has no real meaning in logistic regression, which captures probability for binary outcomes, but is useful to the researcher who is familiar with multiple linear regression framework.

Table 2. Descriptive and analytic models used to examine adolescent alcohol use and heavy use.

Model	Descriptive Model	Analytic Model
<u>Model 1:</u> Base	Prior alcohol use + gender + age + family structure + mother education + friendship network size	$\ln(p/1-p) = \beta_0 + \beta_1 \text{prior adolescent alcohol use}_1 + \beta_2 \text{gender}_2 + \beta_3 \text{age}_3 + \beta_4 \text{family structure}_4 + \beta_5 \text{mother education}_5 + \beta_6 \text{friendship network size}_6 + \varepsilon$
<u>Model 2:</u> Main Effects	Prior alcohol use + gender + age + family structure + mother education + friendship network size + peer alcohol use + peer attachment + mother alcohol use + mother attachment + school alcohol use + school attachment	$\ln(p/1-p) = \beta_0 + \beta_1 \text{prior adolescent alcohol use}_1 + \beta_2 \text{gender}_2 + \beta_3 \text{age}_3 + \beta_4 \text{family structure}_4 + \beta_5 \text{mother education}_5 + \beta_6 \text{friendship network size}_6 + \beta_7 \text{peer alcohol use}_7 + \beta_8 \text{peer attachment}_8 + \beta_9 \text{mother alcohol use}_9 + \beta_{10} \text{mother attachment}_{10} + \beta_{11} \text{school alcohol use}_{11} + \beta_{12} \text{school attachment}_{12} + \varepsilon$
<u>Model 3:</u>	Prior alcohol use + gender + age + family structure + mother education + friendship network size + peer alcohol use + peer attachment + mother alcohol use + mother attachment + school alcohol use + school attachment + peer alcohol use × peer attachment + mother alcohol use × mother attachment + school alcohol use × school attachment	$\ln(p/1-p) = \beta_0 + \beta_1 \text{prior adolescent alcohol use}_1 + \beta_2 \text{gender}_2 + \beta_3 \text{age}_3 + \beta_4 \text{family structure}_4 + \beta_5 \text{mother education}_5 + \beta_6 \text{friendship network size}_6 + \beta_7 \text{peer alcohol use}_7 + \beta_8 \text{peer attachment}_8 + \beta_9 \text{mother alcohol use}_9 + \beta_{10} \text{mother attachment}_{10} + \beta_{11} \text{school alcohol use}_{11} + \beta_{12} \text{school attachment}_{12} + \beta_{13} \text{peer alcohol use} \times \text{peer attachment}_{13} + \beta_{14} \text{mother alcohol use} \times \text{mother attachment}_{14} + \beta_{15} \text{school alcohol use} \times \text{school attachment}_{15} + \varepsilon$
<u>Model 4:</u>	Prior alcohol use + gender + age + family structure + mother education + friendship network size + peer alcohol use + peer attachment + mother alcohol use + mother attachment + school alcohol use + school attachment + <i>peer alcohol use × peer attachment + mother alcohol use × mother attachment + school alcohol use × school attachment</i> + peer alcohol use × mother attachment + peer alcohol use × school attachment	$\ln(p/1-p) = \beta_0 + \beta_1 \text{prior adolescent alcohol use}_1 + \beta_2 \text{gender}_2 + \beta_3 \text{age}_3 + \beta_4 \text{family structure}_4 + \beta_5 \text{mother education}_5 + \beta_6 \text{friendship network size}_6 + \beta_7 \text{peer alcohol use}_7 + \beta_8 \text{peer attachment}_8 + \beta_9 \text{mother alcohol use}_9 + \beta_{10} \text{mother attachment}_{10} + \beta_{11} \text{school alcohol use}_{11} + \beta_{12} \text{school attachment}_{12} + \beta_{13} \text{peer alcohol use} \times \text{peer attachment}_{13} + \beta_{14} \text{mother alcohol use} \times \text{mother attachment}_{14} + \beta_{15} \text{school alcohol use} \times \text{school attachment}_{15} + \beta_{16} \text{peer alcohol use} \times \text{mother attachment}_{16} + \beta_{17} \text{peer alcohol use} \times \text{school attachment}_{17} + \varepsilon$
<u>Model 5:</u>	Prior alcohol use + gender + age + family structure + mother education + friendship network size + peer alcohol use + peer attachment + mother alcohol use + mother attachment + school alcohol use + school attachment <i>peer alcohol × peer attachment + mother alcohol use × mother attachment + school alcohol use × school attachment</i> + peer alcohol use × mother alcohol + peer alcohol × school alcohol	$\ln(p/1-p) = \beta_0 + \beta_1 \text{prior adolescent alcohol use}_1 + \beta_2 \text{gender}_2 + \beta_3 \text{age}_3 + \beta_4 \text{family structure}_4 + \beta_5 \text{mother education}_5 + \beta_6 \text{friendship network size}_6 + \beta_7 \text{peer alcohol use}_7 + \beta_8 \text{peer attachment}_8 + \beta_9 \text{mother alcohol use}_9 + \beta_{10} \text{mother attachment}_{10} + \beta_{11} \text{school alcohol use}_{11} + \beta_{12} \text{school attachment}_{12} + \beta_{13} \text{peer alcohol use} \times \text{peer attachment}_{13} + \beta_{14} \text{mother alcohol use} \times \text{mother attachment}_{14} + \beta_{15} \text{school alcohol use} \times \text{school attachment}_{15} + \beta_{16} \text{peer alcohol use} \times \text{mother alcohol}_{16} + \beta_{17} \text{peer alcohol use} \times \text{school alcohol}_{17} + \varepsilon$

Note: p = probability of adolescent alcohol use and heavy alcohol use at Wave 3 and 5 for separate analyses. All models include dummy variables that account for missing data.

CHAPTER IV RESULTS

Results for the preliminary and primary analyses are reported in four subsections. All analyses are presented separately for Black and White youth. For the preliminary analyses, the first subsection provides descriptive statistics on all study variables at Wave 1 and 3; statistically significant differences between Black and White youth on variable frequencies and means are reported. The next subsection provides bivariate correlations between the independent variables at Wave 1 and at Wave 3. For the primary analyses, the first subsection provides the bivariate correlations between the Wave 1 independent variables and Wave 3 alcohol use, and between the Wave 3 independent variables and Wave 5 alcohol use. The final subsection presents the results of the logistic regression analyses in which alcohol use and heavy alcohol use are regressed on the independent variables in a series of models. The Waves 3 and 5 models for Black youth are presented first, followed by the Waves 3 and 5 models for White youth.

Preliminary Analysis

Descriptive statistics

Sample background characteristics. Descriptive statistics for the demographic and friendship network size variables at Wave 1 are displayed in Table 3. Black and White

adolescents were similar with regard to gender distribution and confirmed friendship network size (approximately 4 friends). Differences existed for age, mother's education, and family structure. Specifically, Black youth were older, had mothers with lower education levels, and were less likely to reside in a two-parent household than their White counterparts.

Table 3. Sample background characteristics at Wave 1 (N = 2452).

	Total	Black N = 892	White N = 1560	
	M(<i>se</i>)	M(<i>se</i>)	M(<i>se</i>)	<i>t</i> (<i>df</i>)
Age (years) (range 12 – 17)	13.45(.02)	13.53(.03)	13.40(.02)	-2.90(2450)*
Friendship Network Size (range 0 – 5)	4.04(.03)	3.99(.05)	4.06(.03)	1.34(1679)
	Freq(%)			χ^2 (<i>df</i> =1)
Race/Ethnicity	100	36.38	63.62	–
Gender				2.31
Male	53.47	55.49	52.31	
Female	46.53	44.51	47.69	
Mom Education				33.22*
≤ High School	49.14	56.84	44.74	
> High School	50.86	43.16	55.26	
Family Structure				23.25*
Two Parents	92.70	89.35	94.62	
Other	7.30	10.65	5.38	

**p*<.05.

Table 4 presents the demographic and friendship network size variables for adolescents at Wave 3. Consistent with Wave 1 background characteristics, Black and White adolescents did not differ on gender distribution and friendship network size. Black adolescents, however, were older, had mothers with lower education levels, and less likely to reside in a two-parent household.

Table 4. Sample background characteristics at Wave 3 (N = 2452).

	Total	Black N = 892	White N = 1560	
	M(<i>se</i>)	M(<i>se</i>)	M(<i>se</i>)	t(df)
Age (years) (range 13 – 18)	14.45(.02)	14.53(.03)	14.40(.02)	-2.90(2450)*
Friendship Network Size (range 0 – 5)	3.80(.03)	3.75(.05)	3.83(.03)	1.44(1728)
	Freq(%)			χ^2 (df=1)
Race/Ethnicity	100	36.38	63.62	–
Gender				2.31
Male	53.47	55.49	52.31	
Female	46.53	44.51	47.69	
Mom Education				37.79*
≤ High School	48.41	56.61	43.72	
> High School	51.59	43.39	56.28	
Family Structure				17.44*
Two Parents	92.13	89.13	93.85	
Other	7.87	10.87	6.15	

*p<.05.

Alcohol use. Recent alcohol use and recent heavy alcohol use for Black and White youth at Waves 1, 3, and 5 are displayed in Table 5. Adolescents were similar in both alcohol behaviors at Wave 1 only. Results showed the percentage of adolescents reporting recent alcohol use and recent heavy alcohol use at Waves 3 and 5 generally increased for both Black and White adolescents. Yet, significantly smaller percentages of Black youth reported recent alcohol use and recent heavy alcohol use than White youth for Waves 3 and 5.

Table 5. Recent alcohol use and heavy alcohol use at Waves 1, 3, and 5 (N = 2452).

	Total Frequency (%)	Black N = 892 %	White N = 1560 %	χ^2 (df = 1)
Wave 1				
Recent Alcohol Use	9.62	10.76	8.97	2.09
Heavy Alcohol Use	4.20	4.04	4.29	.09
Wave 3				
Recent Alcohol Use	23.21	19.84	25.13	8.90*
Heavy Alcohol Use	10.64	7.06	12.69	18.91*
Wave 5				
Recent Alcohol Use	26.06	19.62	29.74	30.19*
Heavy Alcohol Use	15.09	10.09	17.95	27.36*

*p<.05.

Social context characteristics. Descriptive statistics for the independent variables measuring adolescents' social contexts are compared for Black and White youth at Waves 1 and 3 in Table 6. At Wave 1, White adolescents reported fewer peers drinking alcohol, greater mother attachment, a larger percentage of mothers who used alcohol, greater school attachment, and smaller proportions of school alcohol use than their Black counterparts. Both White and Black adolescents reported similar levels of peer attachment. The Wave 3 comparisons were the same except that Black and White youth did not differ on perceived number of peer alcohol drinkers.

Table 6. Social context variables at Waves 1 and 3 (N = 2452).

Variables	Total M(se)	Black N = 892 M(se)	White N = 1560 M(se)	<i>t(df)</i>	Range
Wave 1					
Peer Alcohol Use	.33(.01)	.36(.02)	.30(.02)	-2.02(1729)*	0 – 3
Peer Attachment	2.43(.01)	2.44(.02)	2.43(.01)	-1.01(1647)	0 – 3
Mom Attachment	2.47(.02)	2.31(.03)	2.56(.02)	7.26(1513)*	0 – 3
School Alcohol Use	.22(.00)	.23(.00)	.21(.00)	-3.76(2061)*	0 – 1
School Attachment	1.53(.04)	1.34(.05)	1.64(.05)	6.34(1752)*	0 – 4
Wave 3					
Peer Alcohol Use	.71(.02)	.70(.04)	.71(.02)	.29(2450)	0 – 3
Peer Attachment	2.46(.01)	2.47(.02)	2.45(.01)	-1.23(2450)	0 – 3
Mom Attachment	2.27(.02)	2.08(.03)	2.38(.02)	7.53(1550)*	0 – 3
School Alcohol Use	.48(.01)	.46(.01)	.50(.01)	3.81(1743)*	0 – 1
School Attachment	1.22(.04)	1.13(.04)	1.28(.05)	3.38(2450)*	0 – 4
	Frequency (%)	%	%	$\chi^2(df=1)$	Range
Wave 1					
Mom Alcohol Use	60.64	50.22	66.60	63.78*	0 – 1
Wave 3					
Mom Alcohol Use	64.44	50.34	72.50	121.65*	0 – 1

* $p < .05$.*Bivariate relationships*

Correlations between all Wave 1 predictor variables are shown in Table 7 and selected findings highlighted here. While formal difference tests were conducted, the correlational patterns were similar for Black and White youth, although many more correlations were significant for White than Black youth. For both Black and White youth, the strongest correlations were between the two alcohol use measures (both $r \geq .50$). The high correlation suggests that many of the predictor variables will have similar relationships

with the two alcohol outcomes. As expected, the next strongest correlations were between alcohol use measures and peer alcohol use (r 's $\geq .30$).

In examining the relationships between alcohol use measures at Wave 1 and background characteristics, similar correlation patterns were obtained for Black and White youth. Specifically, age was positively related to the alcohol use measures for both Black and White youth. In addition, family structure was positively correlated with the alcohol use measures, such that those adolescents from other than a two-parent family were more likely to report both recent and heavy alcohol use. However, the correlation was statistically significant for White youth only. Friendship network size and alcohol use were negatively correlated for White youth only, such that alcohol use was more likely for adolescents who reported a smaller number of friends

With respect to the social context variables for White youth, all of the variables except for peer attachment were significantly associated with alcohol use and heavy alcohol use at Wave 1, but the nature of the relationships varied. Peer, mother, and school alcohol use were positively correlated with adolescent alcohol use and heavy alcohol use. Mother and school attachments were negatively related to both alcohol use variables, while peer attachment was not associated with alcohol use. For Black youth, with one exception, peer, mother, and school alcohol use were all positively and significantly related to adolescent alcohol use. The exception was the correlation between school alcohol use and adolescent heavy alcohol use which was not significant. School attachment was significantly negatively correlated with both alcohol use outcomes; the relationships between peer and mother attachment and adolescent alcohol use were not statistically significant.

Relationships within each social context between alcohol use and attachment yielded similar patterns for Black and White youth except for the relationship between peer alcohol use and peer attachment. For Black youth, peer alcohol use and peer attachment was significantly negatively correlated, whereas this relationship was nonsignificant for White youth. As expected, the relationship between school use and school attachment was statistically significant and negative for both Black and White youth. In contrast, the relationship between mother's alcohol use and mother attachment was positive and significant for both Black and White youth.

The correlations between peer alcohol use and school use/attachment and peer alcohol use and mother's alcohol use/attachment were all statistically significant, as expected for both Black and White youth. That is, the correlations between peer alcohol use and mother's alcohol use and school use were positive, and the correlations between peer use and attachment to mother and school attachment were negative.

Table 7. Correlations between Wave 1 predictor variables (N = 2452).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Alcohol Use _{Wave1}	—	.50*	.03	.17*	.02	-.03	.03	.42*	.01	.14*	.00	.10*	-.08*
2. Heavy Alcohol Use _{Wave1}	.67*	—	.01	.11*	.02	-.01	-.03	.30*	-.01	.09*	-.03	.06	-.11*
3. Gender	.03	.01	—	.07*	-.04	.02	-.05	.02	-.13*	-.11*	-.05	.06	.04
4. Age	.17*	.13*	.11*	—	.03	-.03	-.04	.21*	-.01	.16*	-.09*	.49*	-.09*
5. Family Structure	.12*	.06*	.05	.02	—	-.07*	.06	.04	-.03	.06	-.06*	-.04	.04
6. Mother's Education	-.04	-.02	-.02	.04	-.12*	—	.02	.01	.03	.07*	.24*	-.01	.01
7. Friendship Network Size	-.07*	-.05*	-.08*	-.04	-.03	.05*	—	-.02	.00	.04	-.02	.02	.12*
8. Peer Alcohol Use	.49*	.46*	.06*	.24*	.05	-.03	-.08*	—	-.09*	.15*	-.08*	.15*	-.15*
9. Peer Attachment	.03	.03	-.18*	.03	-.03	.07*	.02	.01	—	.01	.12*	.04	.06
10. Mother Alcohol Use	.11*	.08*	-.04	.09*	-.05*	.13*	-.01	.12*	.02	—	.16*	.03	-.10*
11. Mother Attachment	-.11*	-.12*	-.03	-.10*	-.05*	.19*	.05	-.13*	.12*	.09*	—	-.02	.08*
12. School Alcohol Use	.15*	.15*	.02	.60*	.00	-.02	-.03	.23*	.05*	.09*	-.03	—	-.11*
13. School Attachment	-.16*	-.12*	-.02	-.11*	-.05*	.10*	.13*	-.18*	.11*	-.12*	.13*	-.17*	—

Note: Correlations for Black adolescents (N = 892) are above the diagonal and below the diagonal for White adolescents (N = 1560).

*p<.05.

Correlations between the Wave 3 predictor variables are shown in Table 8, and for the most part are similar to the pattern of correlations between the Wave 1 predictors. One difference that emerged is that gender and alcohol use were significantly correlated, such that girls were less likely to use alcohol than boys, although the relationship was significant for White youth only. Also, the correlation between peer alcohol use and peer attachment was nonsignificant for both Black and White youth, whereas at Wave 1 this relationship was negative and statistically significant for Black youth only.

Table 8. Correlations between Wave 3 predictor variables (N = 2452).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Alcohol Use _{Wave3}	—	.52*	-.06	.14*	.03	.02	-.09*	.41*	.07*	.15*	-.05	.11*	-.09*
2. Heavy Alcohol Use _{Wave3}	.66*	—	.03	.11*	.06	-.01	-.08*	.28*	.05	.05	-.04	.06	-.05
3. Gender	-.05*	-.03	—	.07*	.01	-.06	-.12*	-.03	-.13*	-.15*	-.11*	.00	.13*
4. Age	.22*	.21*	.11*	—	.07*	-.10*	-.13*	.23*	-.03	.02	-.07*	.52*	.01
5. Family Structure	.05	.08*	.08*	-.01	—	-.08*	.02	-.01	-.03	-.02	-.10*	-.02	-.02
6. Mother's Education	-.05	-.03	.00	.00	-.12*	—	.03	-.01	.03	.14*	.23*	.03	-.02
7. Friendship Network Size	-.03	-.07*	-.09*	-.07*	-.05	.01	—	-.04	-.09*	.08*	.07*	-.13*	.12*
8. Peer Alcohol Use	.54*	.51*	-.05	.28*	-.06*	-.04	-.09*	—	.01	.10*	-.08*	.19*	-.14*
9. Peer Attachment	.06*	.05*	-.19*	.02	-.04	.07*	-.09*	-.01	—	.08*	.19*	-.02	.10*
10. Mother Alcohol Use	.15*	.07*	-.10*	.00	-.09*	.12*	.03	.11*	.09*	—	.26*	.03	-.01
11. Mother Attachment	-.20*	-.18*	.01	-.12*	-.14*	.21*	.13*	-.23*	.12*	.16*	—	-.01	.12*
12. School Alcohol Use	.16*	.17*	.04	.59*	-.02	.06*	-.09*	.24*	.02	.07*	-.06*	—	-.02
13. School Attachment	-.16*	-.11*	-.01	-.01	-.08*	.12*	.03	-.17*	.10*	-.07*	.18*	-.06*	—

Note: Correlations for Black adolescents (N = 892) are above the diagonal and below the diagonal for White adolescents (N = 1560).

*p<.05.

Primary Analyses

Bivariate relationships between independent variables and alcohol outcomes

Correlations between the predictor variables (prior alcohol use, background characteristics, and social context variables) at Wave 1 and alcohol outcomes at Wave 3 are shown in Table 9, and correlations between predictor variables at Wave 3 and alcohol outcomes at Wave 5 are shown in Table 10. For both Black and White youth and for both alcohol outcomes, Wave 3 alcohol use was positively correlated with Wave 1 alcohol use, age, peer alcohol use, and mother's alcohol use, and negatively correlated with school attachment. In addition, school alcohol use was positively correlated with both alcohol outcomes for White youth and with recent alcohol use only for Black youth. Again, correlational patterns differed among Black and White youth where peer attachment was positively correlated with alcohol use for Black youth and mother attachment negatively correlated with alcohol use for White youth.

Table 9. Correlations between Wave 1 predictor variables and alcohol use outcomes at Wave 3 (N = 2452).

Variables	Black N = 892		White N = 1560	
	Alcohol Use _{Wave 3}	Heavy Alcohol Use _{Wave3}	Alcohol Use _{Wave3}	Heavy Alcohol Use _{Wave3}
1. Alcohol Use _{Wave1}	.34*	.24*	.37*	.39*
2. Heavy Alcohol Use _{Wave1}	.23*	.30*	.26*	.35*
3. Gender	-.06	.03	-.05*	-.03
4. Age	.14*	.11*	.22*	.21*
5. Family Structure	.05	.03	.02	.03
6. Mother's Education	.01	.01	.00	-.01
7. Friendship Network Size	.00	.00	.01	-.03
8. Peer Alcohol Use	.26*	.14*	.32*	.34*
9. Peer Attachment	-.02	.03	.09*	.08*
10. Mother Alcohol Use	.20*	.13*	.20*	.13*
11. Mother Attachment	-.03	-.01	-.13*	-.12*
12. School Alcohol Use	.07*	.05	.15*	.18*
13. School Attachment	-.12*	-.08*	-.17*	-.12*

p<.05.

In Table 10, results showed a similar pattern of relationships for Wave 5 outcomes as for Wave 3. However, family structure was positively to alcohol use at Wave 5 for White youth and positively related to heavy alcohol use for both Black and White youth, such that youth in other than two parent families were more likely to report alcohol use.

Table 10. Correlations between Wave 3 predictors and alcohol use outcomes at Wave 5 (N = 2452).

Variables	Black N = 892		White N = 1560	
	Alcohol Use _{Wave 5}	Heavy Alcohol Use _{Wave 5}	Alcohol Use _{Wave 5}	Heavy Alcohol Use _{Wave 5}
1. Alcohol Use _{Wave 3}	.36*	.32*	.40*	.39*
2. Heavy Alcohol Use _{Wave 3}	.32*	.36*	.32*	.41*
3. Gender	-.09*	-.03	-.05	.00
4. Age	.07*	.10*	.15*	.18*
5. Family Structure	-.02	.07*	.07*	.05*
6. Mother's Education	.02	-.05	-.02	-.02
7. Friendship Network Size	-.05	-.04	-.04	-.06*
8. Peer Alcohol Use	.27*	.16*	.35*	.34*
9. Peer Attachment	.06	.03	.02	.02
10. Mother Alcohol Use	.08*	.03	.20*	.13*
11. Mother Attachment	-.02	-.06	-.13*	-.10*
12. School Alcohol Use	.08*	.04	.12*	.14*
13. School Attachment	-.06	-.03	-.13*	-.09*

p < .05.

Results for Wave 3 Black adolescent alcohol use outcomes

Wave 3 recent alcohol use for Black adolescents. Logistic regression results are presented in Table 11. Five models are presented; the dependent variable in each is adolescent alcohol use at Wave 3. All models included background variables; Models 2 – 5 included the six social context variables; and Models 3 – 5 included blocks of interaction terms to test the theoretical framework and extensions of it.

The results from Model 1 showed that prior adolescent alcohol use, being male, and older in age significantly increased the odds of adolescent alcohol use at Wave 3 for Black

youth. With the addition of the social context variables in Model 2, peer alcohol use and mother's alcohol use both increased the odds of alcohol use, while greater school attachment was associated with lower odds of use. For every unit increase in peer alcohol use, adolescents were 1.35 times more likely to report recent alcohol use and they were more than twice as likely to report use when their mothers drank alcohol. For every unit increase in school attachment, they were .83 times less likely to report recent alcohol use. For the 2-way interactions in Model 3 testing the relationships within each context between behavior and attachment suggested by PST, the interaction between mother's alcohol use and mother attachment was found statistically significant ($\beta = .58(.23)$, $p < .05$). Probing the interaction showed that adolescents who reported mother's alcohol use regardless of reported attachment to mother were at greatest risk for alcohol use (Figure 7). Moreover, Black adolescents who reported mother alcohol use and low attachment to his/her mother were almost 23% likely to report recent alcohol use, but showed a decrease of almost 5% in reports of recent alcohol use if his/her mother drank alcohol and reported greater attachment to mother. This is almost 100% difference for Black adolescents who report no mother's use of alcohol and low mother attachment for Wave 3 recent alcohol use. Black adolescents who reported no use of alcohol by mother and high levels of attachment were least at risk for recent alcohol use at Wave 3 (almost 3%). Model 4 added the two 2-way interactions testing if attachments to mother and school buffered the effects of peer alcohol use on adolescent alcohol use. Neither of these interactions was statistically significant. Model 5 added the 2-way interactions testing if alcohol use by mother and school mates exacerbated the effects of peer alcohol use on adolescent alcohol use. Neither interaction was statistically significant.

When examining model fit statistics for Models 3 – 5, the calculated -2LL ratio statistic or the AIC for the models do not suggest a superior model to best fit the available data. In addition, the pseudo R^2 values corresponding to each of the models suggest that almost 15% of the variance in the recent alcohol use for Black youth is accounted for by each of the hypothesized relationships.

Table 11. Logistic regression for Wave 1 variables predicting adolescent alcohol use at Wave 3 for Black adolescents (N = 892).

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Alcohol Use at Wave 1	1.01* (.13)	7.55 (4.48 - 12.72)	.83* (.15)	5.23 (2.93 - 9.34)	.82* (.15)	5.20 (2.90 - 9.32)	.81* (.15)	5.07 (2.83 - 9.08)	.85* (.15)	5.46 (3.01 - 9.90)
Gender	-.24* (.08)	.62 (.45 - .87)	-.19* (.09)	.69 (.49 - .98)	-.20* (.09)	.67 (.47 - .96)	-.20* (.09)	.67 (.47 - .97)	-.20* (.09)	.67 (.46 - .96)
Age	.23* (.09)	1.26 (1.06 - 1.50)	.13 (.12)	1.14 (.90 - 1.44)	.13 (.12)	1.41 (.90 - 1.44)	.13 (.12)	1.14 (.90 - 1.44)	.13 (.12)	1.14 (.89 - 1.44)
Family Structure	.16 (.15)	1.39 (.78 - 2.47)	.16 (.15)	1.38 (.75 - 2.54)	.13 (.16)	1.29 (.70 - 2.38)	.13 (.16)	1.30 (.71 - 2.40)	.14 (.16)	1.31 (.71 - 2.44)
Family Structure (missing values)	.34 (.27)	1.97 (.70 - 5.57)	.53 (.31)	2.87 (.86 - 9.63)	.58 (.31)	3.18 (.94 - 10.71)	.60 (.32)	3.30 (.94 - 11.56)	.58 (.31)	3.20 (.93 - 10.95)
Mom Education	.08 (.09)	1.17 (.81 - 1.68)	.05 (.11)	1.11 (.73 - 1.70)	.06 (.11)	1.21 (.73 - 1.72)	.06 (.11)	1.12 (.73 - 1.73)	.06 (.11)	1.13 (.73 - 1.74)
Friendship Network Size	-.02 (.07)	.98 (.85 - 1.13)	.04 (.08)	1.04 (.90 - 1.20)	.03 (.08)	1.03 (.89 - 1.19)	.02 (.07)	1.03 (.89 - 1.19)	.03 (.07)	1.03 (.89 - 1.19)
Main Effects										
Peer Alcohol Use			.30* (.12)	1.35 (1.06 - 1.72)	.31* (.12)	1.36 (1.07 - 1.74)	.38* (.12)	1.46 (1.15 - 1.86)	.07 (.23)	1.07 (.69 - 1.67)
Peer Alcohol Use (missing values)			.52 (.32)	2.80 (.81 - 9.66)	.53 (.33)	2.88 (.79 - 10.44)	.53 (.33)	2.88 (.78 - 10.57)	.53 (.34)	2.87 (.76 - 10.91)
Peer Attachment			.12 (.20)	1.12 (.76 - 1.66)	.15 (.21)	1.16 (.77 - 1.74)	.14 (.21)	1.15 (.76 - 1.74)	.18 (.21)	1.19 (.79 - 1.80)
Peer Attachment (missing values)			.62 (.45)	3.48 (.60 - 20.10)	.55 (.51)	3.00 (.40 - 22.31)	.52 (.54)	2.85 (.35 - 23.45)	.62 (.52)	3.46 (.45 - 26.32)
Mother's Alcohol Use			.45* (.15)	2.46 (1.37 - 4.40)	.41* (.14)	2.25 (1.28 - 3.95)	.40* (.14)	2.22 (1.26 - 3.90)	.40* (.14)	2.24 (1.28 - 3.92)
Mother's Alcohol Use (missing values)			.15 (.19)	1.34 (.63 - 2.85)	.11 (.19)	1.24 (.59 - 2.60)	.09 (.61)	1.21 (.58 - 2.53)	.11 (.19)	1.26 (.60 - 2.63)
Mother Attachment			-.27 (.14)	.76 (.58 - 1.01)	-.66* (.19)	.52 (.36 - .75)	-.65* (.19)	.52 (.36 - .76)	-.63* (.19)	.53 (.37 - .77)
Mother Attachment (missing values)			-.53 (.31)	.35 (.10 - 1.18)	-.94* (.32)	.15 (.04 - .54)	-.92* (.35)	.16 (.04 - .61)	-.86* (.33)	.18 (.05 - .64)
School Alcohol Use			-.24 (.121)	.79 (.07 - 8.49)	-.09 (.117)	.92 (.09 - 9.02)	-.27 (.117)	.76 (.08 - 7.52)	-.25 (.126)	.78 (.07 - 9.15)
School Attachment			-.19* (.07)	.83 (.72 - .95)	-.20* (.07)	.82 (.71 - .94)	-.22* (.07)	.81 (.70 - .93)	-.21* (.07)	.81 (.70 - .93)
School Attachment (missing values)			-.91* (.46)	.16 (.03 - 1.00)	-.94* (.45)	.15 (.03 - .87)	-.92* (.46)	.16 (.03 - .96)	-.94* (.44)	.15 (.03 - .84)

*p<.05.

Table 11. Logistic regression for Wave 1 variables predicting adolescent alcohol use at Wave 3 for Black adolescents (N = 892; continued).

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	B (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					-.12 (.21)	.89 (.59 – 1.35)	-.15 (.21)	.86 (.56 – 1.30)	-.11 (.22)	.90 (.58 – 1.38)
Mother's Alcohol Use \times Mother Attachment					.58* (.23)	1.78 (1.14 – 2.79)	.58* (.23)	1.79 (1.14 – 2.81)	.58* (.23)	1.78 (1.14 – 2.79)
School Alcohol Use \times School Attachment					.01 (.81)	1.01 (.21 – 4.97)	-.38 (.90)	.68 (.12 – 4.00)	.07 (.85)	1.07 (.20 – 5.67)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.00 (.12)	1.00 (.79 – 1.27)		
Peer Alcohol Use \times School Attachment							.16 (.09)	1.18 (.99 – 1.40)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									.28 (.25)	1.33 (.81 – 2.18)
Peer Alcohol Use \times School Alcohol Use									1.50 (1.30)	4.50 (.36 – 57.06)
Model Summary										
- 2 Log L (df)		793.46(7)		747.69(18)		743.19(21)		741.24(23)		740.67(23)
AIC		809.46		785.69		787.19		789.24		788.67
pseudo R^2		.10		.15		.15		.15		.15
% of Black adolescents who report recent alcohol use at Wave 3						19.84				

* $p < .05$.

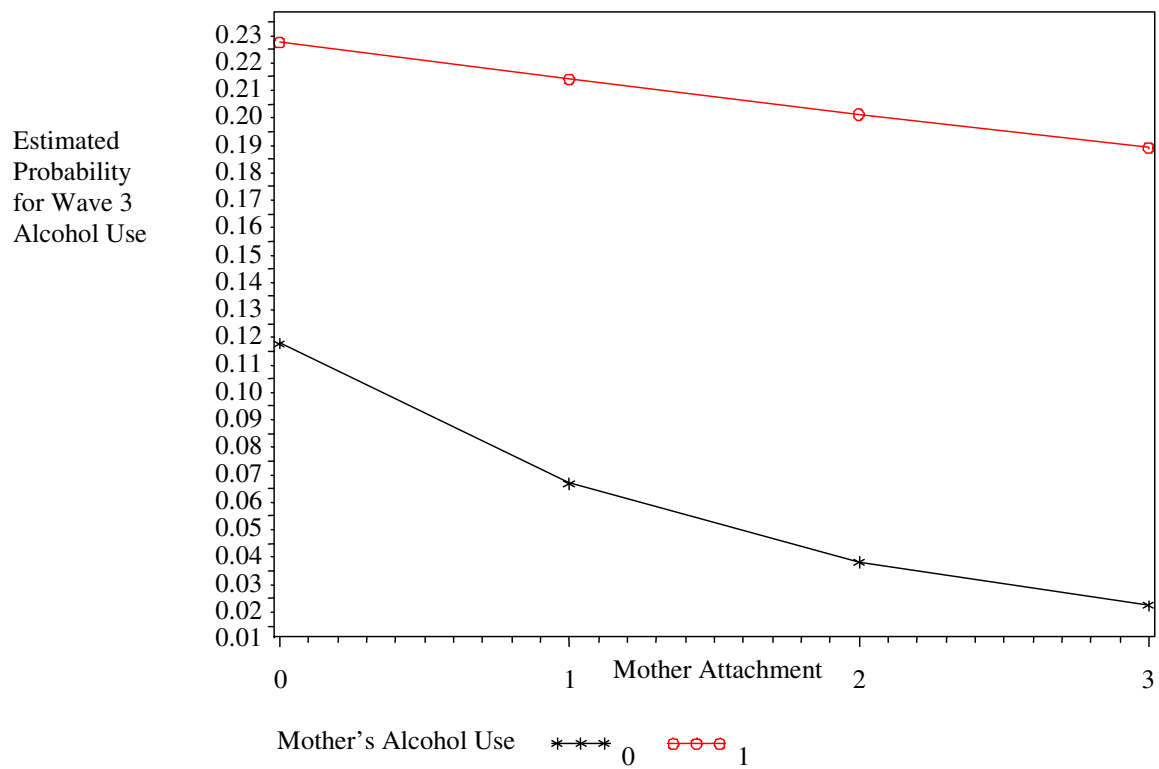


Figure 7. Model 3: Interaction between Mother Attachment and Mother's Alcohol Use for Black youth at Wave 3

Wave 3 recent heavy alcohol use for Black adolescents. Logistic regression results are presented in Table 12. Five models are presented; the dependent variable in each is adolescent heavy alcohol use at Wave 3. All models included background variables; Models 2 – 5 included the six social context variables; and Models 3 – 5 included blocks of interaction terms to test the theoretical framework and/or extensions of it.

The results from Model 1 showed that prior heavy alcohol use and being older significantly increased the odds of adolescent heavy alcohol use at Wave 3. With the addition of the social context variables in Model 2, peer attachment and mother's alcohol use were both positively related to increased odds of heavy alcohol use, while greater school attachment was associated with lower odds of use. For every increment in peer attachment, adolescents were 2.04 times more likely to report recent heavy alcohol use and they were more than twice as likely to report use when their mothers drank alcohol. For every one unit increase in school attachment, they were .79 times less likely to report recent alcohol use. Neither of the 2-way interactions in Model 3 testing the relationships between behavior and attachment suggested by PST was found statistically significant. Model 4 added the two 2-way interactions testing whether attachment to mother and school buffered the effects of peer alcohol use on adolescent heavy alcohol use. The interaction between peer alcohol use and school attachment was statistically significant ($\beta = .32(.13)$, $p < .05$). Probing the interaction showed that adolescents who perceived more of their friends drank alcohol and reported being highly attached to his/her school environment were at greatest risk for alcohol use (Figure 8). Counterintuitive to the *a priori* hypothesis, results suggested those at the greatest risk for heavy alcohol use were Black adolescents who perceived most friends drinking alcohol and reported the greatest levels of school attachment. This group comprised more

than 60% of Black adolescents who reported heavy alcohol use at Wave 3. Model 5 added the 2-way interactions testing if alcohol use by mother and school mates exacerbated the effects of peer alcohol use on adolescent heavy alcohol use. Results for the interaction between peer alcohol use and school use was found statistically significant ($\beta = -3.81(1.93)$, $p < .05$). Probing the interaction showed that adolescents in schools where the proportion of students drinking alcohol was near zero were most at risk for heavy alcohol use at Wave 3, regardless of how many peers the adolescent perceived to drink alcohol (Figure 9). Almost 80% of Black youth who reported heavy alcohol use at Wave 3 perceived most of their friends drank alcohol when there was decreased school alcohol use. Overall, this group of Black youth was most at risk for recent heavy alcohol use.

Table 12. Logistic regression for Wave 1 predicting adolescent heavy alcohol use at Wave 3 for Black adolescents (N = 892).

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Heavy Alcohol Use at Wave 1	1.25* (.19)	12.19 (5.80 – 25.59)	1.07* (.23)	8.47 (3.48 – 20.62)	1.06* (.23)	8.38 (3.43 – 20.47)	1.12* (.23)	9.34 (3.77 – 23.18)	1.10* (.23)	8.97 (3.60 – 22.37)
Gender	.12 (.16)	1.27 (.69 – 2.33)	.21 (.16)	1.53 (.83 – 2.81)	.21 (.16)	1.53 (.82 – 2.87)	.22 (.16)	1.56 (.83 – 2.95)	.19 (.16)	1.46 (.78 – 2.72)
Age	.30* (.11)	1.34 (1.09 – 1.66)	.27 (.15)	1.31 (.97 – 1.76)	.29 (.15)	1.34 (.99 – 1.80)	.26 (.16)	1.30 (.95 – 1.78)	.32* (.15)	1.38 (1.02 – 1.86)
Family Structure	.14 (.20)	1.31 (.59 – 2.93)	.17 (.22)	1.42 (.60 – 3.34)	.18 (.22)	1.42 (.60 – 3.40)	.18 (.23)	1.43 (.58 – 3.50)	.20 (.22)	1.48 (.63 – 3.50)
Family Structure (missing values)	-.07 (.52)	.87 (.11 – 6.64)	.28 (.58)	1.74 (.18 – 16.71)	.27 (.57)	1.72 (.19 – 16.05)	.30 (.59)	1.82 (.18 – 18.54)	.28 (.56)	1.75 (.20 – 15.58)
Mom Education	.05 (.13)	1.10 (.66 – 1.83)	-.03 (.14)	.94 (.54 – 1.63)	-.03 (.14)	.95 (.55 – 1.64)	-.01 (.15)	.97 (.55 – 1.74)	-.02 (.14)	.97 (.56 – 1.68)
Friendship Network Size	.05 (.10)	1.05 (.86 – 1.29)	.09 (.10)	1.10 (.90 – 1.34)	.10 (.10)	1.10 (.90 – 1.34)	.09 (.10)	1.09 (.89 – 1.34)	.10 (.11)	1.11 (.90 – 1.37)
Main Effects										
Peer Alcohol Use			.15 (.20)	1.17 (.79 – 1.73)	.15 (.20)	1.16 (.79 – 1.72)	.27 (.20)	1.31 (.88 – 1.95)	.11 (.35)	1.11 (.56 – 2.23)
Peer Alcohol Use (missing values)			-.31 (.92)	.54 (.02 – 20.04)	-.34 (.95)	.51 (.01 – 20.74)	-.30 (.93)	.55 (.01 – 21.20)	.34 (.99)	.51 (.01 – 24.30)
Peer Attachment			.71* (.34)	2.04 (1.05 – 3.95)	.65* (.32)	1.92 (1.03 – 3.60)	.61 (.33)	1.84 (.97 – 3.50)	.63 (.34)	1.88 (.98 – 3.63)
Peer Attachment (missing values)			1.37 (.85)	15.47 (.56 – 430.99)	1.45 (.88)	18.34 (.59 – 567.68)	1.32 (1.00)	13.88 (.28 – 696.24)	1.43 (.94)	17.58 (.44 – 708.69)
Mother's Alcohol Use			.45* (.20)	2.45 (1.13 – 5.32)	.45* (.20)	2.46 (1.12 – 5.38)	.43* (.20)	2.38 (1.08 – 5.26)	.46* (.20)	2.51 (1.14 – 5.54)
Mother's Alcohol Use (missing values)			.10 (.28)	1.23 (.41 – 3.62)	.10 (.28)	1.21 (.41 – 3.59)	.08 (.29)	1.18 (.38 – 3.61)	.13 (.27)	1.31 (.45 – 3.82)
Mother Attachment			-.31 (.20)	.74 (.50 – 1.08)	-.33 (.32)	.72 (.39 – 1.33)	-.27 (.32)	.76 (.41 – 1.43)	-.37 (.31)	.69 (.38 – 1.26)
Mother Attachment (missing values)			-1.16 (.67)	.10 (.01 – 1.37)	-1.15 (.70)	.10 (.01 – 1.55)	-.97 (.72)	.15 (.01 – 2.40)	-1.24 (.77)	.09 (.00 – 1.72)
School Alcohol Use			-.81 (1.86)	.45 (.01 – 17.04)	-.86 (1.72)	.43 (.01 – 12.44)	-.94 (1.79)	.39 (.01 – 13.21)	-.69 (2.56)	.50 (.02 – 10.57)
School Attachment			-.24* (.12)	.79 (.63 – .99)	-.27* (.12)	.77 (.61 – .97)	-.33* (.12)	.72 (.57 – .91)	-.24* (.12)	.79 (.63 – .99)
School Attachment (missing values)			-6.63* (.24)	.00 (.00 – .00)	-6.68* (.23)	.00 (.00 – .00)	-6.52* (.23)	.00 (.00 – .00)	-6.59* (.23)	.00 (.00 – .00)

*p<.05.

Table 12. Logistic regression for Wave 1 predicting adolescent heavy alcohol use at Wave 3 for Black adolescents (N = 892) (continued).

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					.13 (.28)	1.14 (.66 – 1.96)	.05 (.30)	1.06 (.59 – 1.90)	.13 (.30)	1.14 (.64 – 2.05)
Mother's Alcohol Use \times Mother Attachment					.04 (.37)	1.04 (.51 – 2.13)	-.05 (.37)	.95 (.46 – 1.98)	.03 (.36)	1.03 (.51 – 2.08)
School Alcohol Use \times School Attachment					.99 (.91)	2.69 (.45 – 15.97)	.37 (1.09)	1.45 (.17 – 12.37)	.48 (.96)	1.62 (.25 – 10.74)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.15 (.22)	1.16 (.75 – 1.80)		
Peer Alcohol Use \times School Attachment							.32* (.13)	1.38 (1.08 – 1.77)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									.15 (.40)	1.16 (.53 – 2.54)
Peer Alcohol Use \times School Alcohol Use									-3.81* (1.93)	.02 (.00 – .98)
Model Summary										
- 2 Log L (df)		406.81(7)		381.89(18)		380.93(21)		376.16(23)		376.32(23)
AIC		422.81		419.89		424.93		424.16		424.32
pseudo R^2		.05		.08		.08		.09		.08
% of Black adolescents who report recent heavy alcohol use at Wave 3						7.06				

* $p < .05$.

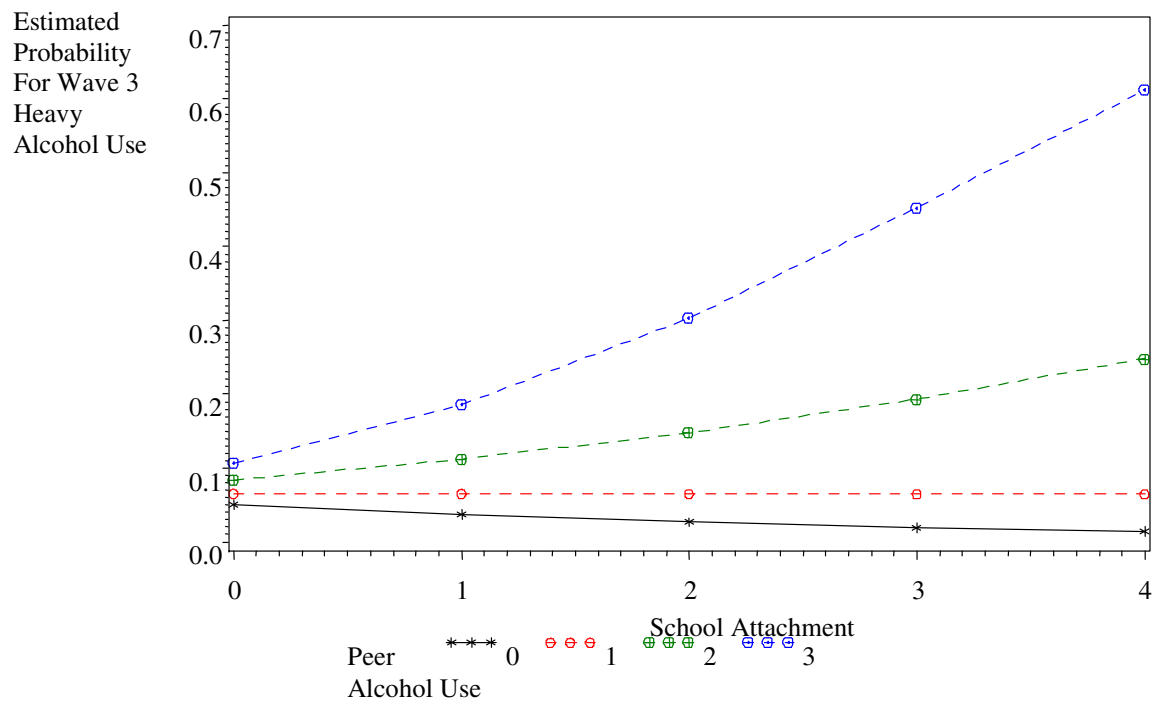


Figure 8. Model 4: Interaction between Peer Alcohol Use and School Attachment for Black youth at Wave 3

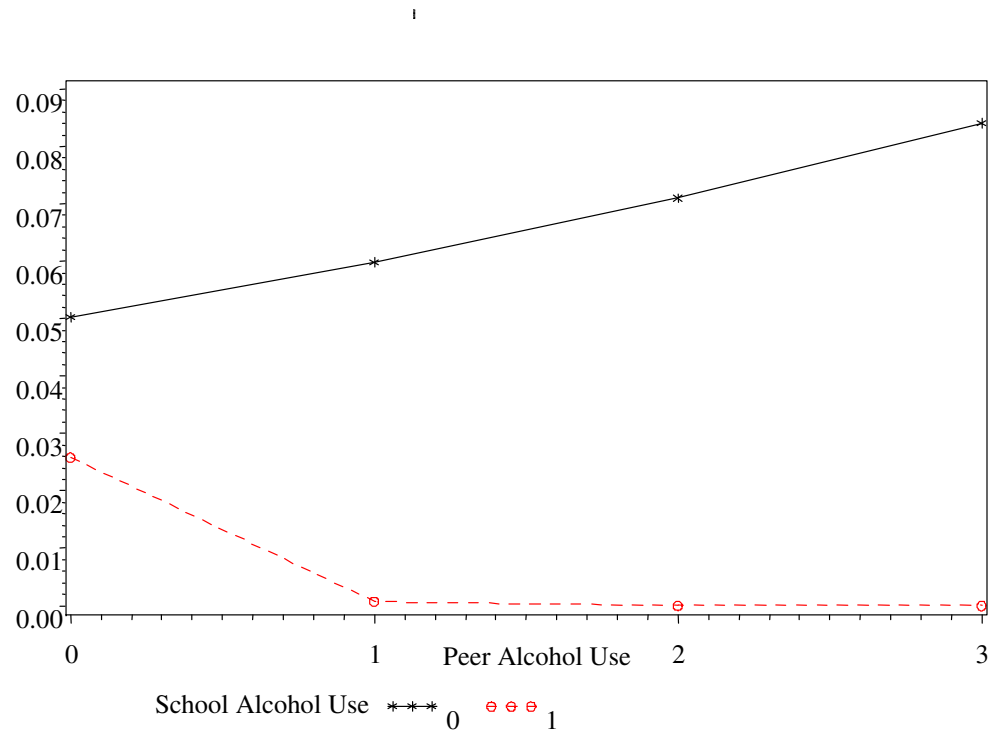


Figure 9. Model 5: Interaction between Peer Alcohol Use and School Alcohol Use for Black youth at Wave 3

Results for Wave 5 Black adolescent alcohol use outcomes

Wave 5 recent alcohol use for Black adolescents. Logistic regression results are presented in Table 13. Five models are presented; the dependent variable in each is adolescent alcohol use at Wave 5. All models included background variables; Models 2 – 5 included the six social context variables; and Models 3 – 5 included blocks of interaction terms to test the theoretical framework and/or extensions of it.

The results from Model 1 showed that prior alcohol use and being male significantly increased the odds of adolescent alcohol use at Wave 5. With the addition of the social context variables in Model 2, peer alcohol use, increased the odds of alcohol use. For every one unit increment in peer alcohol use, adolescents were 1.45 times more likely to report recent alcohol use. The 2-way interactions in Model 3 testing the relationships between behavior and attachment suggested by PST did not statistically significantly predict the probability of adolescent alcohol use. Model 4 added the two 2-way interactions testing whether attachments to mother and school buffered the effects of peer alcohol use on adolescent alcohol use. Again, neither interaction was statistically significant. Model 5 added the 2-way interactions testing whether alcohol use by mother and school mates exacerbated the effects of peer alcohol use on adolescent alcohol use. Neither interaction was significant.

Table 13. Logistic regression for Wave 3 predicting adolescent alcohol use at Wave 5 for Black adolescents (N = 892).

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Prior Alcohol Use at Wave 3	.93* (.10)	6.36 (4.31 – 9.39)	.74* (.11)	4.14 (2.86 – 6.83)	.74* (.11)	4.40 (2.82 – 6.88)	.72* (.12)	4.26 (2.71 – 6.69)	.75* (.11)	4.45 (2.86 – 6.93)
Gender	-.22* (.09)	.65 (.45 – .93)	-.19 (.10)	.69 (.46 – 1.02)	-.19 (.10)	.69 (.46 – 1.03)	-.20 (.10)	.68 (.45 – 1.01)	-.19 (.10)	.68 (.46 – 1.02)
Age	.07 (.08)	1.07 (.91 – 1.25)	-.05 (.10)	.95 (.76 – 1.17)	-.05 (.11)	.95 (.77 – 1.17)	-.05 (.11)	.95 (.77 – 1.17)	-.05 (.11)	.95 (.77 – 1.17)
Family Structure	-.14 (.15)	.75 (.41 – 1.35)	-.12 (.15)	.79 (.44 – 1.43)	-.12 (.15)	.79 (.43 – 1.44)	-.11 (.15)	.81 (.44 – 1.47)	-.11 (.15)	.80 (.44 – 1.44)
Family Structure (missing values)	-.01 (.20)	.98 (.44 – 2.19)	.12 (.24)	1.27 (.50 – 3.24)	.11 (.24)	1.25 (.49 – 3.19)	.11 (.24)	1.25 (.50 – 3.15)	.11 (.24)	1.24 (.47 – 3.23)
Mom Education	.04 (.10)	1.08 (.73 – 1.60)	.00 (.10)	1.01 (.68 – 1.51)	.01 (.10)	1.02 (.68 – 1.51)	.00 (.10)	1.01 (.68 – 1.50)	.01 (.10)	1.01 (.68 – 1.51)
Friendship Network Size	-.04 (.06)	.96 (.86 – 1.07)	-.06 (.06)	.94 (.83 – 1.07)	-.06 (.06)	.95 (.84 – 1.07)	-.06 (.06)	.94 (.83 – 1.07)	-.06 (.06)	.94 (.83 – 1.07)
Main Effects										
Peer Alcohol Use			.37* (.10)	1.45 (1.20 – 1.75)	.37* (.10)	1.45 (1.20 – 1.76)	.41* (.10)	1.51 (1.23 – 1.85)	.53* (.16)	1.71 (1.26 – 2.31)
Peer Alcohol Use (missing values)			-.30 (.63)	.55 (.05 – 6.49)	-.32 (.63)	.52 (.04 – 6.17)	-.30 (.61)	.55 (.05 – 5.98)	-.35 (.64)	.50 (.04 – 6.06)
Peer Attachment			.22 (.21)	1.24 (.82 – 1.88)	.21 (.21)	1.23 (.81 – 1.87)	.19 (.22)	1.21 (.80 – 1.85)	.20 (.22)	1.22 (.80 – 1.87)
Peer Attachment (missing values)			-.13 (.60)	.77 (.07 – 8.04)	-.08 (.59)	.86 (.09 – 8.74)	-.20 (.61)	.67 (.06 – 7.37)	-.05 (.63)	.90 (.08 – 10.46)
Mother's Alcohol Use			.09 (.12)	1.20 (.75 – 1.92)	.09 (.13)	1.20 (.73 – 1.97)	.09 (.13)	1.20 (.73 – 1.96)	.13 (.13)	1.29 (.76 – 2.17)
Mother's Alcohol Use (missing values)			.11 (.15)	1.25 (.69 – 2.27)	.13 (.15)	1.30 (.72 – 2.32)	.13 (.15)	1.30 (.72 – 2.36)	.13 (.15)	1.29 (.71 – 2.35)
Mother Attachment			-.17 (.16)	.84 (.62 – 1.15)	-.18 (.22)	.84 (.54 – 1.30)	-.17 (.21)	.85 (.56 – 1.28)	-.14 (.23)	.86 (.55 – 1.35)
Mother Attachment (missing values)			-.40 (.26)	.45 (.16 – 1.25)	-.43 (.32)	.42 (.12 – 1.46)	-.41 (.30)	.44 (.13 – 1.45)	-.41 (.32)	.44 (.12 – 1.54)
School Alcohol Use			.25 (.47)	1.29 (.51 – 3.25)	.17 (.48)	1.18 (.47 – 3.01)	.13 (.49)	1.14 (.44 – 2.94)	.24 (.46)	1.27 (.52 – 3.12)
School Attachment			.00 (.08)	1.00 (.85 – 1.18)	.00 (.08)	1.00 (.85 – 1.18)	-.02 (.08)	.98 (.83 – 1.15)	.00 (.08)	1.00 (.85 – 1.18)
School Attachment (missing values)			.12 (.25)	1.28 (.49 – 3.36)	.14 (.25)	1.32 (.50 – 3.50)	.14 (.24)	1.32 (.52 – 3.36)	.14 (.25)	1.32 (.49 – 3.53)

*p<.05.

Table 13. Logistic regression for Wave 3 predicting adolescent alcohol use at Wave 5 for Black adolescents (N = 892). (continued)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					.04 (.17)	1.04 (.75 – 1.45)	.01 (.17)	1.01 (.72 – 1.42)	.03 (.18)	1.03 (.73 – 1.46)
Mother's Alcohol Use \times Mother Attachment					.02 (.28)	1.02 (.59 – 1.77)	-.02 (.27)	.98 (.58 – 1.67)	-.03 (.28)	.97 (.56 – 1.67)
School Alcohol Use \times School Attachment					-.43 (.36)	.65 (.32 – 1.31)	-.65 (.42)	.52 (.23 – 1.20)	-.44 (.37)	.65 (.31 – 1.33)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.07 (.09)	1.08 (.91 – 1.28)		
Peer Alcohol Use \times School Attachment							.15 (.10)	1.16 (.96 – 1.41)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									-.27 (.18)	.77 (.54 – 1.09)
Peer Alcohol Use \times School Alcohol Use									-.18 (.33)	.83 (.44 – 1.59)
Model Summary										
- 2 Log L (df)		775.50(7)		755.44(18)		754.06(21)		750.18(23)		751.57(23)
AIC		791.50		793.44		798.06		798.18		799.57
pseudo R^2		.11		.13		.13		.14		.14
% of Black adolescents who report recent alcohol use at Wave 5						19.62				

*p<.05.

Wave 5 recent heavy alcohol use for Black adolescents. Logistic regression results are presented in Table 14. Five models are presented; the dependent variable in each is adolescent heavy alcohol use at Wave 5. All models included background variables; Models 2 – 5 included the six social context variables; and Models 3 – 5 included blocks of interaction terms to test the theoretical framework and/or extensions of it.

The results from Model 1 showed that prior heavy alcohol use significantly increased the odds of adolescent heavy alcohol use at Wave 5. With the addition of the social context variables in Model 2, results provided evidence that adolescents' social contexts did not influence heavy alcohol use at Wave 5 for Black youth. In addition, results of the interactions testing the theoretical framework and modification to the framework did not show any statistically significant relationships. In fact, model fit statistics for Model 2 – 5 were not superior to Model 1, further suggesting that adolescent contexts did not influence heavy alcohol use at Wave 5 for Black youth.

Table 14. Logistic regression for Wave 3 predicting adolescent heavy alcohol use at Wave 5 for Black adolescents (N = 892).

*p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Heavy Alcohol Use at Wave 3	1.24* (.16)	11.86 (6.39 – 21.98)	1.15* (.17)	9.99 (5.16 – 19.36)	1.13* (.17)	9.62 (4.95 – 18.71)	1.12* (.17)	9.47 (4.87 – 18.44)	1.13* (.17)	9.66 (5.03 – 18.56)
Gender	-.22 (.13)	.65 (.40 – 1.06)	-.19 (.14)	.68 (.40 – 1.17)	-.20 (.14)	.67 (.39 – 1.16)	-.22 (.14)	.65 (.37 – 1.13)	-.21 (.14)	.66 (.38 – 1.16)
Age	.21 (.12)	1.24 (.98 – 1.56)	.20 (.14)	1.22 (.93 – 1.61)	.21 (.14)	1.23 (.93 – 1.62)	.21 (.15)	1.23 (.93 – 1.64)	.19 (.15)	1.22 (.91 – 1.62)
Family Structure	.25 (.17)	1.65 (.85 – 3.21)	.25 (.17)	1.66 (.85 – 3.26)	.25 (.17)	1.67 (.85 – 3.28)	.28 (.17)	1.76 (.90 – 3.45)	.27 (.17)	1.70 (.87 – 3.34)
Family Structure (missing values)	.17 (.22)	1.42 (.60 – 3.35)	.17 (.26)	1.39 (.50 – 3.89)	.15 (.27)	1.35 (.48 – 3.82)	.14 (.27)	1.33 (.46 – 3.84)	.13 (.27)	1.29 (.45 – 3.69)
Mom Education	-.12 (.13)	.79 (.48 – 1.31)	-.12 (.14)	.78 (.46 – 1.33)	-.12 (.14)	.79 (.46 – 1.34)	-.12 (.13)	.79 (.47 – 1.35)	-.12 (.14)	.79 (.46 – 1.35)
Friendship Network Size	-.03 (.07)	.97 (.85 – 1.12)	-.03 (.08)	.97 (.84 – 1.13)	-.03 (.08)	.97 (.84 – 1.13)	-.03 (.08)	.97 (.84 – 1.13)	-.03 (.08)	.97 (.83 – 1.12)
Main Effects										
Peer Alcohol Use			.21 (.12)	1.24 (.98 – 1.57)	.21 (.12)	1.23 (.98 – 1.56)	.23 (.12)	1.26 (1.00 – 1.58)	.39* (.18)	1.48 (1.04 – 2.12)
Peer Alcohol Use (missing values)			-7.53* (.46)	.00 (.00 – .00)	-7.42* (.45)	.00 (.00 – .00)	-7.44* (.44)	.00 (.00 – .00)	-7.55* (.46)	.00 (.00 – .00)
Peer Attachment			.21 (.27)	1.23 (.72 – 2.10)	.16 (.27)	1.17 (.70 – 1.97)	.15 (.27)	1.16 (.69 – 1.95)	.16 (.27)	1.17 (.69 – 1.97)
Peer Attachment (missing values)			.67 (.52)	3.81 (.50 – 29.08)	.57 (.51)	3.11 (.41 – 23.41)	.48 (.52)	2.61 (.35 – 19.77)	.65 (.52)	3.68 (.48 – 28.30)
Mother's Alcohol Use			-.01 (.17)	.99 (.50 – 1.96)	-.01 (.19)	.97 (.47 – 2.03)	-.01 (.19)	.98 (.47 – 2.07)	.03 (.18)	1.06 (.52 – 2.18)
Mother's Alcohol Use (missing values)			-.13 (.22)	.77 (.33 – 1.82)	-.12 (.22)	.79 (.33 – 1.86)	-.10 (.22)	.82 (.35 – 1.91)	-.13 (.23)	.77 (.31 – 1.90)
Mother Attachment			-.25 (.17)	.78 (.56 – 1.09)	-.34 (.33)	.71 (.38 – 1.35)	-.29 (.32)	.75 (.40 – 1.41)	-.30 (.33)	.74 (.39 – 1.40)
Mother Attachment (missing values)			-.17 (.28)	.72 (.24 – 2.15)	-.27 (.42)	.58 (.11 – 2.96)	-.26 (.42)	.59 (.12 – 3.03)	-.22 (.41)	.65 (.13 – 3.22)
School Alcohol Use			-.37 (.57)	.69 (.23 – 2.12)	-.41 (.58)	.66 (.21 – 2.07)	-.42 (.61)	.66 (.20 – 2.18)	-.16 (.61)	.85 (.26 – 2.83)
School Attachment			-.01 (.10)	1.01 (.83 – 1.22)	.01 (.10)	1.01 (.83 – 1.23)	-.04 (.10)	.96 (.78 – 1.17)	.01 (.10)	1.01 (.83 – 1.23)
School Attachment (missing values)			.10 (.31)	1.23 (.36 – 4.19)	.12 (.32)	1.27 (.36 – 4.45)	.14 (.31)	1.32 (.39 – 4.48)	.13 (.32)	1.30 (.36 – 4.62)

Table 14. (continued)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	B (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment	.17 (.19)				1.19 (.83 – 1.72)		.13 (.18)	1.14 (.81 – 1.60)	.15 (.18)	1.16 (.81 – 1.67)
Mother's Alcohol Use \times Mother Attachment	.15 (.44)				1.16 (.49 – 2.77)		.11 (.43)	1.11 (.48 – 2.60)	.08 (.43)	1.08 (.47 – 2.52)
School Alcohol Use \times School Attachment	-.27 (.38)				.76 (.36 – 1.60)		-.48 (.45)	.62 (.26 – 1.48)	-.34 (.39)	.71 (.33 – 1.54)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							-.04 (.11)	.96 (.78 – 1.19)		
Peer Alcohol Use \times School Attachment							.22 (.12)	1.25 (.99 – 1.56)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									-.30 (.23)	.74 (.47 – 1.16)
Peer Alcohol Use \times School Alcohol Use									-.49 (.48)	.61 (.24 – 1.58)
Model Summary										
- 2 Log L (df)		502.56(7)		491.24(18)		490.06(21)		485.62(23)		487.09(23)
AIC		518.56		529.24		534.06		533.62		535.09
pseudo R^2		.09		.10		.10		.10		.10
% of Black adolescents who report recent heavy alcohol use at Wave 5						10.09				

*p<.05.

Results for Wave 3 White adolescent alcohol use outcomes

Wave 3 recent alcohol use for White adolescents. Logistic regression results for White youth are presented in Table 15. Five models are presented; the dependent variable in each is adolescent alcohol use at Wave 3. All models included background variables; Models 2 – 5 included the six social context variables; and Models 3 – 5 included blocks of interaction terms to test the theoretical framework and/or extensions of it.

The results from Model 1 showed that adolescent alcohol use at Wave 1, being male, and older in age significantly increased the odds of adolescent alcohol use at Wave 3. With the addition of the social context variables in Model 2, peer alcohol use, peer attachment, and mother's alcohol use were positively related to increased odds of alcohol use, while greater mother and school attachment were associated with lower odds of use. For every increment in peer alcohol use, adolescents were 1.56 times more likely to report recent alcohol use; almost twice as likely to report use when they felt close to peers; and they were more than three as likely to report use when their mothers' drank alcohol. With the addition of the 2-way interactions in Model 3 testing the relationships between behavior and attachment suggested by PST, the interaction between mother's alcohol use and mother attachment was statistically significant ($\beta = .50(.23)$, $p < .05$). Further probing of the interaction suggested that White adolescents who reported his/her mother drank regardless of the level of attachment to mother were at greater risk of recent alcohol use – almost 27% likely to report recent alcohol use at Wave 3, but these same adolescents showed a incremental decrease of 12% for reports of recent alcohol use if they reported greater levels of attachment to mother (Figure 10). For Model 4 which added the two 2-way interactions testing if attachments to mother and school buffered the effects of peer alcohol use on adolescent alcohol use, neither

of the interactions was found statistically significant. Likewise, Model 5 added the 2-way interactions testing if alcohol use by mother and school mates exacerbated the effects of peer alcohol use on adolescent alcohol use and neither interaction was found statistically significant. The interaction between mother's alcohol use and mother attachment from Model 3 was found statistically significant in Model 5. After probing this interaction, results yielded findings consistent with those found in Model 3 - adolescents who reported mother alcohol use and low attachment to mother were at greater risk of recent alcohol use whereas adolescents who reported mothers drank and highly attached to one's mother were at lower risk for recent alcohol use. The same pattern resulted for adolescents who reported that his/her mother did not consume alcohol and self-reported levels of attachment to mother.

For Models 3 – 5, the pseudo R^2 statistic suggested that approximately 20% of the variation in recent alcohol use by White adolescents could be explained by the covariates, main effects, and interaction terms.

Table 15. Logistic regression for Wave 1 variables predicting adolescent alcohol use at Wave 3 for White adolescents (N = 1560).

*p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Alcohol Use at Wave 1	1.26* (.11)	12.42 (7.96 – 19.38)	.95* (.12)	6.68 (4.12 – 10.85)	.95* (.12)	6.63 (4.07 – 10.80)	.97* (.13)	6.93 (4.17 – 11.49)	.95* (.13)	6.62 (4.05 – 10.83)
Gender	-.21* (.08)	.65 (.48 - .88)	-.16* (.08)	.73 (.54 - .99)	-.16* (.08)	.73 (.54 - .99)	-.16* (.08)	.73 (.53 - .99)	-.15* (.08)	.73 (.53 - .99)
Age	.48* (.06)	1.61 (1.43 – 1.82)	.43* (.08)	1.54 (1.32 – 1.80)	.43* (.08)	1.54 (1.32 – 1.80)	.43* (.08)	1.54 (1.32 – 1.80)	.43* (.08)	1.54 (1.31 – 1.81)
Family Structure	-.16 (.14)	.73 (.42 – 1.26)	-.12 (.15)	.79 (.44 – 1.40)	-.12 (.15)	.79 (.44 – 1.42)	-.11 (.15)	.80 (.45 – 1.41)	-.11 (.15)	.80 (.45 – 1.43)
Family Structure (missing values)	-.25 (.48)	.60 (.09 – 3.87)	-.24 (.52)	.62 (.08 – 4.70)	-.29 (.52)	.56 (.07 – 4.22)	-.26 (.48)	.59 (.09 – 3.88)	-.28 (.51)	.57 (.08 – 4.19)
Mom Education	-.01 (.05)	.98 (.79 – 1.21)	.00 (.06)	1.00 (.80 – 1.25)	.01 (.06)	1.01 (.81 – 1.27)	.01 (.06)	1.02 (.81 – 1.27)	.01 (.06)	1.01 (.81 – 1.27)
Friendship Network Size	.07 (.06)	1.08 (.95 – 1.21)	.12* (.06)	1.13 (1.00 – 1.28)	.12* (.06)	1.13 (1.00 – 1.28)	.12* (.06)	1.13 (1.00 – 1.27)	.12* (.06)	1.13 (1.00 – 1.28)
Main Effects										
Peer Alcohol Use			.44* (.11)	1.56 (1.26 – 1.92)	.46* (.11)	1.58 (1.28 – 1.95)	.45* (.11)	1.56 (1.25 – 1.95)	.35 (.25)	1.42 (.87 – 2.32)
Peer Alcohol Use (missing values)			.41 (.36)	2.28 (.55 – 9.38)	.37 (.37)	2.08 (.49 – 8.90)	.38 (.36)	2.13 (.52 – 8.67)	.38 (.37)	2.13 (.49 – 9.21)
Peer Attachment			.62* (.20)	1.85 (1.26 – 2.72)	.60* (.19)	1.82 (1.25 – 2.63)	.60* (.19)	1.83 (1.26 – 2.64)	.59* (.19)	1.81 (1.25 – 2.63)
Peer Attachment (missing values)			.38 (.64)	2.15 (.17 – 26.45)	.39 (.63)	2.17 (.19 – 25.43)	.39 (.60)	2.17 (.20 – 23.13)	.38 (.63)	2.12 (.18 – 24.90)
Mother's Alcohol Use			.58* (.14)	3.22 (1.88 – 5.51)	.57* (.13)	3.14 (1.87 – 5.27)	.58* (.13)	3.20 (1.89 – 5.42)	.58* (.13)	3.16 (1.87 – 5.34)
Mother's Alcohol Use (missing values)			.21 (.17)	1.52 (.78 – 2.99)	.19 (.17)	1.46 (.75 – 2.85)	.19 (.17)	1.48 (.75 – 2.91)	.19 (.17)	1.47 (.75 – 2.85)
Mother Attachment			-.37* (.10)	.69 (.57 - .84)	-.77* (.21)	.46 (.31 - .70)	-.75* (.21)	.47 (.31 - .71)	-.77* (.21)	.46 (.31 - .70)
Mother Attachment (missing values)			-.19 (.28)	.68 (.23 – 2.02)	-.65* (.32)	.27 (.08 - .95)	-.58* (.30)	.31 (.10 - .99)	-.64* (.31)	.28 (.08 - .94)
School Alcohol Use			-1.13 (.90)	.32 (.06 – 1.90)	-.91 (.89)	.40 (.07 – 2.31)	-.92 (.87)	.40 (.07 – 2.22)	-.90 (.93)	.41 (.07 – 2.49)
School Attachment			-.26* (.07)	.77 (.67 - .89)	-.26* (.07)	.77 (.67 - .89)	-.25* (.07)	.78 (.68 - .89)	-.26* (.07)	.77 (.67 - .89)
School Attachment (missing values)			-.22 (.42)	.65 (.13 – 3.32)	-.23 (.42)	.64 (.13 – 3.26)	-.22 (.39)	.65 (.14 – 2.97)	-.22 (.41)	.64 (.13 – 3.16)

Table 15. (continued)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					.08 (.23)	1.08 (.69 – 1.68)	.11 (.19)	1.11 (.77 – 1.62)	.07 (.24)	1.07 (.66 – 1.72)
Mother's Alcohol Use \times Mother Attachment					.50* (.23)	1.64 (1.05 – 2.58)	.43 (.23)	1.54 (.98 – 2.41)	.49* (.23)	1.64 (1.05 – 2.57)
School Alcohol Use \times School Attachment					.75 (.63)	2.13 (.62 – 7.25)	.92 (.64)	2.51 (.72 – 8.75)	.74 (.64)	2.10 (.60 – 7.36)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.20 (.13)	1.22 (.95 – 1.56)		
Peer Alcohol Use \times School Attachment							-.10 (.09)	.91 (.76 – 1.09)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									.13 (.27)	1.14 (.68 – 1.93)
Peer Alcohol Use \times School Alcohol Use									-.07 (.78)	.93 (.20 – 4.26)
Model Summary										
- 2 Log L (df)		1514.73(7)		1406.40(18)		1401.33(21)		1397.70(23)		1401.06(23)
AIC		1530.73		1444.40		1445.33		1445.70		1449.06
pseudo R^2		.14		.20		.20		.21		.21
% of White adolescents who report recent alcohol use at Wave 3						25.13				

* $p < .05$.

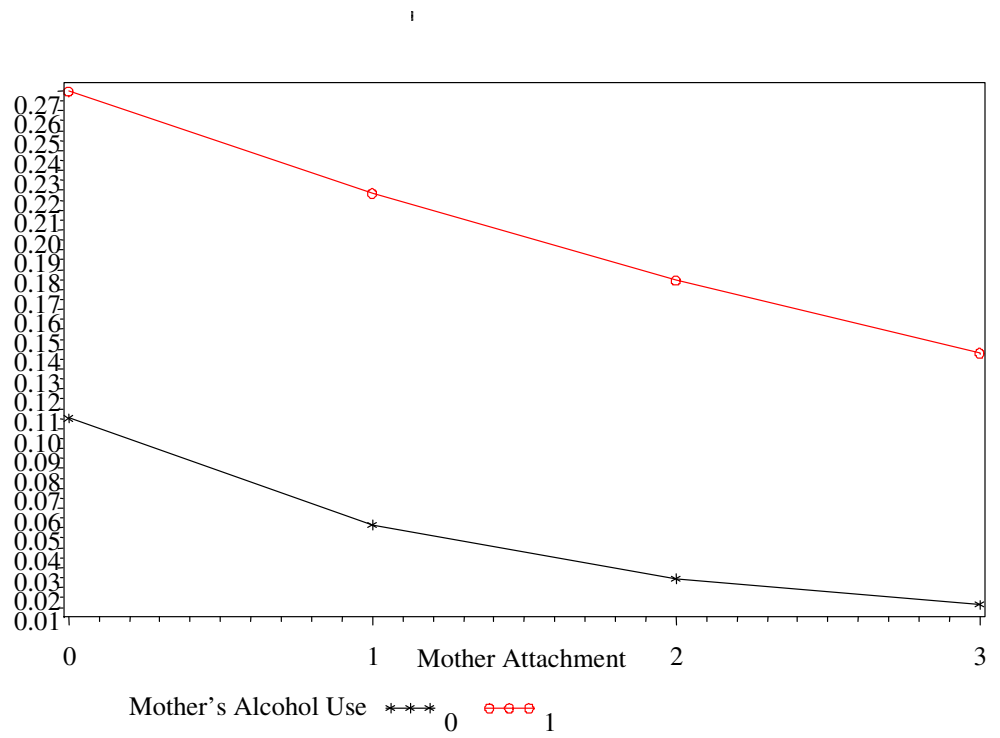


Figure 10. Model 3: Interaction between Mother Attachment and Mother's Alcohol Use for White youth at Wave 3

Wave 3 recent heavy alcohol use for White adolescents. Logistic regression results are presented in Table 16. For White youth, being older was a statistically significant predictor of heavy alcohol use for White youth. The addition of the social context variables in Model 2 showed that peer and mother alcohol use and attachment predicted recent heavy alcohol use at Wave 3. For every unit increase in peer alcohol use, peer attachment, and mother alcohol use, White adolescents were 2 to 2.5 times more likely to report recent alcohol use. For every unit increase in mother attachment, they were .70 times less likely to report recent alcohol use. Also, the school context was not associated with recent heavy alcohol use at Wave 3.

With the addition of the three 2-way interactions testing the PST theoretical framework, results showed the interaction between mother's alcohol use and mother attachment was statistically significant ($\beta = 1.19(.29)$, $p < .05$). Consistent with previously reported results for this interaction, adolescents who reported mother alcohol use regardless of attachment to mother were at greatest risk of recent heavy alcohol use at Wave 3 (Figure 11). The 2-way interactions testing modifications to PST in Models 4 and 5 yielded a statistically significant interaction between peer alcohol use and school alcohol use in Model 5 such that adolescents' perceptions of greater peer alcohol use and decreased school alcohol use predicted recent heavy alcohol use at Wave 3 for nearly 50% of White youth (Figure 12). This finding was counterintuitive to *a priori* hypothesis for this relationship.

Table 16. Logistic regression for Wave 1 predicting adolescent heavy alcohol use at Wave 3 for White adolescents (N = 1560).

*p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Heavy Alcohol Use at Wave 1	1.39* (.16)	16.07 (8.55 – 30.23)	.88* (.18)	5.87 (2.92 – 11.81)	.92* (.17)	6.27 (3.16 – 12.43)	.94* (.17)	6.49 (3.27 – 12.88)	.92* (.17)	6.30 (3.24 – 12.26)
Gender	-.19* (.09)	.69 (.49 – .97)	-.13 (.09)	.77 (.54 – 1.08)	-.14 (.09)	.76 (.53 – 1.08)	-.14 (.09)	.76 (.53 – 1.09)	-.13 (.09)	.78 (.55 – 1.11)
Age	.61* (.08)	1.85 (1.59 – 2.14)	.46* (.10)	1.59 (1.29 – 1.95)	.46* (.10)	1.58 (1.29 – 1.94)	.46* (.10)	1.58 (1.29 – 1.94)	.43* (.10)	1.54 (1.26 – 1.89)
Family Structure	.02 (.17)	1.04 (.53 – 2.03)	.04 (.18)	1.08 (.53 – 2.22)	.04 (.18)	1.09 (.54 – 2.22)	.05 (.18)	1.11 (.55 – 2.12)	.05 (.18)	1.09 (.55 – 2.19)
Family Structure (missing values)	-1.17 (.74)	.10 (.01 – 1.75)	-1.20 (.71)	.09 (.01 – 1.48)	-1.32 (.75)	.07 (.00 – 1.35)	-1.27 (.73)	.08 (.00 – 1.41)	-1.38 (.88)	.06 (.00 – 1.97)
Mom Education	-.02 (.08)	.96 (.69 – 1.34)	.00 (.09)	1.00 (.70 – 1.44)	.02 (.09)	1.03 (.72 – 1.48)	.02 (.09)	1.04 (.72 – 1.48)	.00 (.09)	.99 (.70 – 1.41)
Friendship Network Size	-.04 (.08)	.96 (.83 – 1.11)	-.01 (.08)	.99 (.85 – 1.16)	-.01 (.08)	.99 (.85 – 1.16)	-.01 (.08)	.99 (.85 – 1.15)	.00 (.08)	1.01 (.86 – 1.17)
Main Effects										
Peer Alcohol Use			.61* (.10)	1.86 (1.52 – 2.27)	.66* (.10)	1.93 (1.58 – 2.36)	.63* (.11)	1.87 (1.50 – 2.35)	.85* (.32)	2.35 (1.25 – 4.41)
Peer Alcohol Use (missing values)			-.23 (.57)	.64 (.07 – 6.07)	-.42 (.66)	.43 (.03 – 5.70)	-.40 (.64)	.45 (.04 – 5.60)	-.43 (.65)	.43 (.03 – 5.39)
Peer Attachment			.73* (.25)	2.08 (1.26 – 3.42)	.80* (.22)	2.23 (1.44 – 3.44)	.79* (.22)	2.21 (1.43 – 3.39)	.79* (.22)	2.20 (1.42 – 3.39)
Peer Attachment (missing values)			.80 (.85)	4.94 (.18 – 138.14)	.79 (.92)	4.85 (.13 – 178.30)	.79 (.89)	4.81 (.15 – 155.20)	.81 (.92)	5.03 (.14 – 185.88)
Mother's Alcohol Use			.45* (.18)	2.44 (1.21 – 4.91)	.48* (.17)	2.63 (1.34 – 5.19)	.50* (.18)	2.69 (1.36 – 5.35)	.50* (.18)	2.71 (1.34 – 5.47)
Mother's Alcohol Use (missing values)			.20 (.22)	1.48 (.62 – 3.50)	.15 (.21)	1.36 (.58 – 3.15)	.16 (.22)	1.38 (.59 – 3.22)	.15 (.23)	1.36 (.56 – 3.29)
Mother Attachment			-.36* (.14)	.70 (.54 – .92)	-1.33* (.25)	.27 (.16 – .43)	-1.32* (.25)	.27 (.17 – .43)	-1.33* (.25)	.26 (.16 – .43)
Mother Attachment (missing values)			-.13 (.34)	.77 (.21 – 2.89)	-1.18* (.34)	.09 (.03 – .36)	-1.12* (.33)	.11 (.03 – .38)	-1.21* (.36)	.09 (.02 – .36)
School Alcohol Use			.29 (1.07)	1.34 (.17 – 10.91)	.46 (1.05)	1.59 (.20 – 12.49)	.50 (1.04)	1.65 (.21 – 12.66)	1.22 (1.08)	3.38 (.41 – 27.76)
School Attachment			-.16 (.09)	.86 (.72 – 1.02)	-.14 (.09)	.87 (.72 – 1.04)	-.12 (.09)	.89 (.74 – 1.06)	-.13 (.09)	.88 (.73 – 1.06)
School Attachment (missing values)			-.42 (.30)	.43 (.13 – 1.41)	-.43 (.29)	.42 (.13 – 1.33)	-.43 (.32)	.42 (.12 – 1.50)	-.46 (.31)	.40 (.12 – 1.35)

Table 16. (continued)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					-.25 (.30)	.78 (.44 – 1.39)	-.22 (.28)	.80 (.46 – 1.39)	-.21 (.26)	.81 (.49 – 1.36)
Mother's Alcohol Use \times Mother Attachment					1.19* (.29)	3.28 (1.86 – 5.81)	1.12* (.30)	3.07 (1.71 – 5.50)	1.19* (.30)	3.30 (1.85 – 5.89)
School Alcohol Use \times School Attachment					.13 (.77)	1.14 (.25 – 5.10)	.26 (.76)	1.30 (.30 – 5.71)	-.20 (.80)	.82 (.17 – 3.96)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.11 (.14)	1.12 (.86 – 1.47)		
Peer Alcohol Use \times School Attachment							-.10 (.10)	.91 (.75 – 1.10)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									-.13 (.34)	.88 (.45 – 1.70)
Peer Alcohol Use \times School Alcohol Use									-1.79* (.82)	.17 (.03 – .82)
Model Summary										
- 2 Log L (df)		1013.47(7)		940.21(18)		925.73(21)		924.16(23)		920.99(23)
AIC		1029.47		978.21		969.73		972.16		968.99
pseudo R^2		.11		.15		.15		.16		.16
% of White adolescents who report recent heavy alcohol use at Wave 3						12.69				

* $p < .05$.

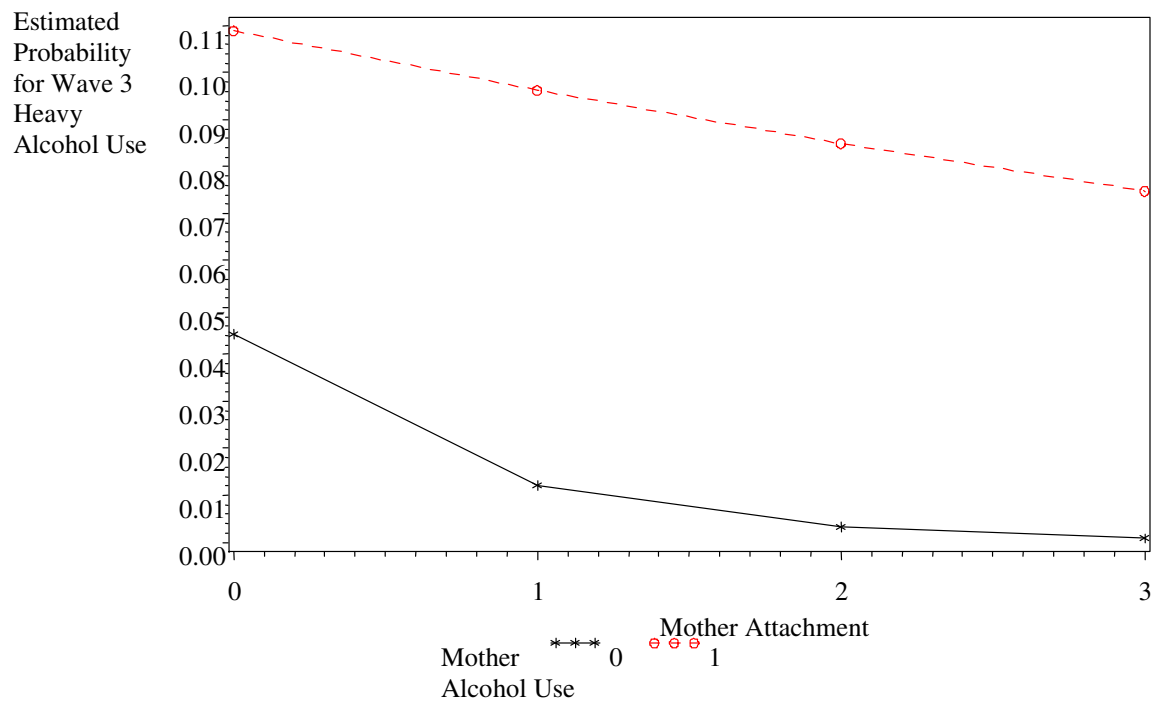


Figure 11. Model 3: Interaction between Mother Attachment and Mother's Alcohol Use for White youth at Wave 3

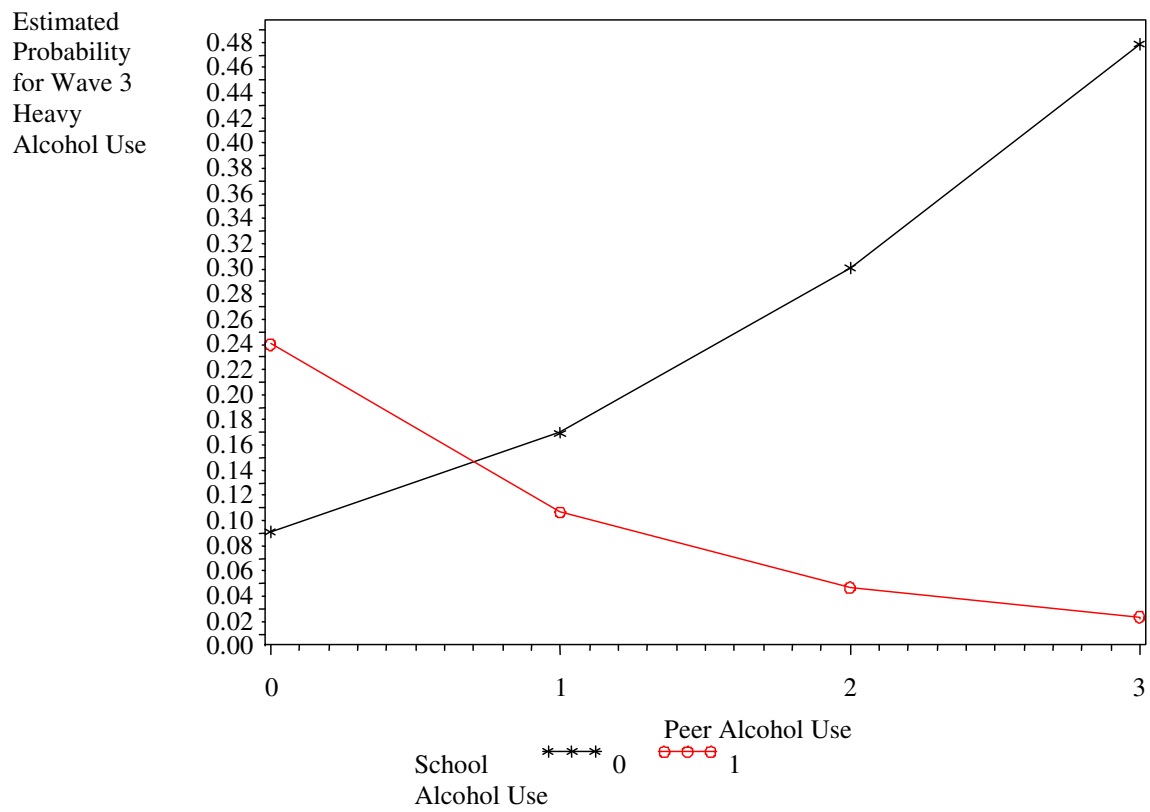


Figure 12. Model 5: Interaction between Peer Alcohol Use and School Alcohol Use for White youth at Wave 3

Results for Wave 5 White adolescent alcohol use outcomes

Wave 5 recent alcohol use for White adolescents. Logistic regression results are presented in Table 17. For White youth, results showed both that family structure and mother's alcohol use were associated with recent alcohol use at Wave 5. White youth who did not have two parents in the household were almost two times more likely to drink alcohol at Wave 5. In addition, White adolescents were three times more likely to report recent alcohol use if they reported his/her mother drank alcohol. While the results did not support the interactions testing the theoretical framework for White youth in Model 3, the results did provide support for the modification of the theoretical framework in Model 4 for White youth. The addition of the two 2-way interactions testing whether attachment to mother and school buffered the effects of peer alcohol use on adolescent alcohol use yielded a statistically significant regression coefficient ($\beta = .29(.07)$, $p < .05$). Probing the interaction showed White adolescents who perceived most peers drank alcohol and possessed the greatest attachment to mother were almost 90% more likely to report recent alcohol use at Wave 5 (Figure 13).

Table 17. Logistic regression for Wave 3 predicting adolescent alcohol use at Wave 5 for White adolescents (N = 1560).

*p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Alcohol Use at Wave 3	.91* (.06)	6.13 (4.77 – 7.89)	.63* (.08)	3.56 (2.64 – 4.80)	.63* (.08)	3.54 (2.62 – 4.79)	.62* (.08)	3.46 (2.58 – 4.65)	.63* (.08)	3.53 (2.61 – 4.78)
Gender	-.11 (.06)	.81 (.64 – 1.02)	-.05 (.06)	.91 (.71 – 1.16)	-.05 (.06)	.91 (.71 – 1.16)	-.05 (.06)	.91 (.71 – 1.17)	-.05 (.06)	.91 (.71 – 1.17)
Age	.20* (.08)	1.22 (1.05 – 1.42)	.16 (.09)	1.17 (.98 – 1.40)	.16 (.09)	1.17 (.98 – 1.40)	.15 (.09)	1.16 (.97 – 1.40)	.16 (.09)	1.17 (.98 – 1.40)
Family Structure	.29* (.13)	1.77 (1.05 – 2.99)	.33* (.14)	1.95 (1.15 – 3.31)	.33* (.14)	1.93 (1.14 – 3.29)	.37* (.13)	2.09 (1.25 – 3.50)	.34* (.14)	1.97 (1.16 – 3.34)
Family Structure (missing values)	-.05 (.17)	.90 (.46 – 1.73)	.12 (.18)	1.26 (.61 – 2.60)	.11 (.19)	1.24 (.60 – 2.57)	.11 (.19)	1.25 (.60 – 2.58)	.09 (.18)	1.21 (.59 – 2.49)
Mom Education	.02 (.07)	1.04 (.80 – 1.34)	-.01 (.07)	.98 (.74 – 1.30)	-.01 (.07)	.98 (.75 – 1.30)	-.01 (.07)	.99 (.75 – 1.31)	-.01 (.07)	.99 (.75 – 1.31)
Friendship Network Size	-.05 (.05)	.95 (.86 – 1.04)	-.02 (.05)	.98 (.88 – 1.08)	-.03 (.05)	.98 (.88 – 1.08)	-.02 (.05)	.98 (.89 – 1.10)	-.03 (.05)	.97 (.88 – 1.08)
Main Effects										
Peer Alcohol Use			.36* (.07)	1.44 (1.25 – 1.65)	.36* (.07)	1.44 (1.25 – 1.65)	.45* (.07)	1.57 (1.37 – 1.80)	.28 (.18)	1.33 (.94 – 1.88)
Peer Alcohol Use (missing values)			.30 (.46)	1.83 (.30 – 11.15)	.30 (.46)	1.82 (.30 – 10.95)	.19 (.43)	1.46 (.27 – 7.99)	.30 (.45)	1.81 (.31 – 10.57)
Peer Attachment			.01 (.13)	1.01 (.79 – 1.29)	.00 (.13)	1.00 (.78 – 1.28)	.05 (.13)	1.05 (.82 – 1.35)	.01 (.13)	1.01 (.79 – 1.29)
Peer Attachment (missing values)			.01 (.57)	1.02 (.11 – 9.34)	.06 (.55)	1.01 (.12 – 8.80)	.13 (.51)	1.29 (.18 – 9.37)	.03 (.54)	1.06 (.13 – 8.64)
Mother's Alcohol Use			.60* (.14)	3.31 (1.89 – 5.81)	.59* (.14)	3.26 (1.85 – 5.75)	.58* (.15)	3.16 (1.77 – 5.65)	.60* (.14)	3.33 (1.89 – 5.86)
Mother's Alcohol Use (missing values)			.16 (.17)	1.38 (.72 – 2.66)	.15 (.16)	1.35 (.71 – 2.57)	.13 (.17)	1.30 (.67 – 2.50)	.16 (.16)	1.39 (.73 – 2.64)
Mother Attachment			-.25* (.10)	.78 (.64 – .95)	-.34 (.25)	.71 (.43 – 1.17)	-.39 (.25)	.67 (.42 – 1.09)	-.38 (.26)	.69 (.41 – 1.15)
Mother Attachment (missing values)			-.47* (.21)	.39 (.17 – .90)	-.56 (.32)	.32 (.09 – 1.14)	-.42 (.31)	.43 (.13 – 1.45)	-.57 (.32)	.32 (.09 – 1.11)
School Alcohol Use			-.20 (.37)	.82 (.40 – 1.68)	-.20 (.37)	.82 (.40 – 1.69)	-.25 (.38)	.78 (.37 – 1.63)	-.28 (.39)	.75 (.35 – 1.60)
School Attachment			-.08 (.07)	.93 (.81 – 1.05)	-.08 (.07)	.93 (.81 – 1.05)	-.09 (.07)	.91 (.79 – 1.05)	-.08 (.07)	.93 (.81 – 1.05)
School Attachment (missing values)			.24 (.28)	1.62 (.54 – 4.83)	.24 (.28)	1.61 (.54 – 4.77)	.23 (.26)	1.59 (.58 – 4.33)	.22 (.27)	1.57 (.53 – 4.59)

Table 17. Logistic regression for Wave 3 predicting adolescent alcohol use at Wave 5 for White adolescents (N = 1560; continued).
 *p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					.02 (.09)	1.02 (.85 – 1.22)	-.06 (.09)	.94 (.79 – 1.13)	.01 (.09)	1.01 (.84 – 1.21)
Mother's Alcohol Use \times Mother Attachment					.11 (.28)	1.11 (.65 – 1.92)	.07 (.27)	1.07 (.62 – 1.83)	.14 (.29)	1.15 (.65 – 2.02)
School Alcohol Use \times School Attachment					.04 (.26)	1.04 (.63 – 1.72)	-.16 (.29)	.86 (.48 – 1.50)	.06 (.27)	1.06 (.63 – 1.78)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.29* (.07)	1.34 (1.17 – 1.53)		
Peer Alcohol Use \times School Attachment							.10 (.06)	1.10 (.97 – 1.25)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									.09 (.18)	1.09 (.76 – 1.56)
Peer Alcohol Use \times School Alcohol Use									.26 (.32)	1.30 (.70 – 2.43)
Model Summary										
- 2 Log L (df)		1643.48(7)		1557.23(18)		1557.02(21)		1533.80(23)		1556.00(23)
AIC		1659.48		1595.23		1601.02		1581.80		1604.00
pseudo R^2		.15		.20		.20		.21		.20
% of White adolescents who report recent alcohol use at Wave 5					29.74					

Estimated
Probability
for Wave 5
Alcohol Use

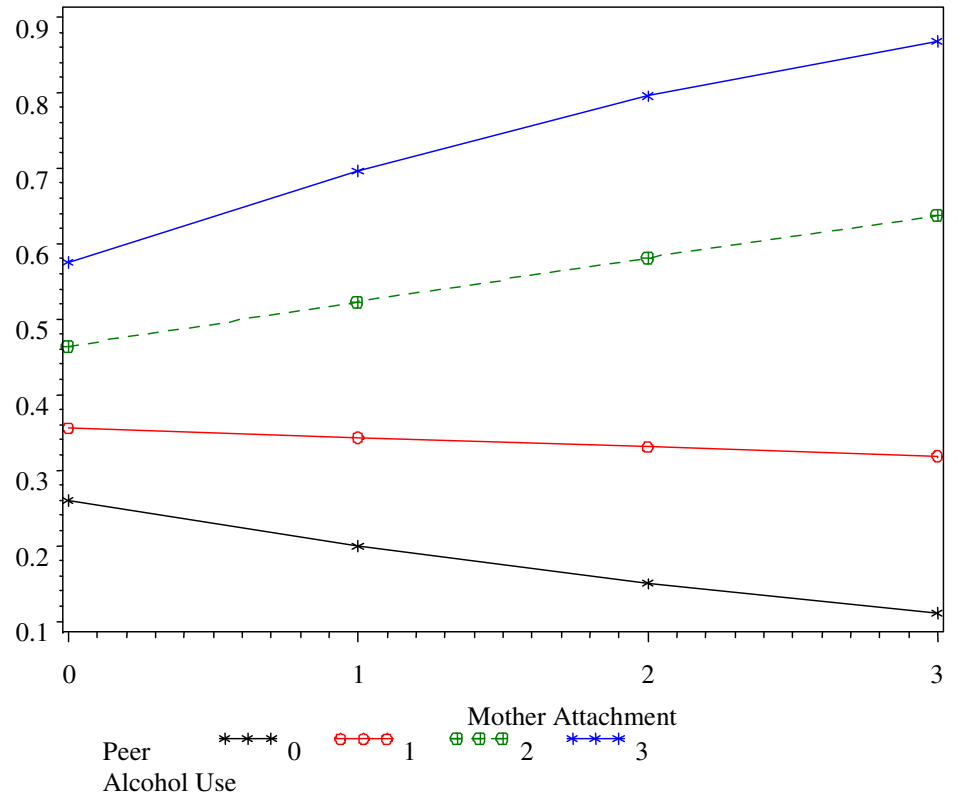


Figure 13. Model 4: Interaction between Peer Alcohol Use and Mother Attachment for White youth at Wave 5

Wave 5 recent heavy alcohol use for White adolescents. Logistic regression results are presented in Table 18. Model 1 showed that prior heavy alcohol use and being older significantly increased the odds of adolescent heavy alcohol use at Wave 5 for White youth. With the addition of the social context variables in Model 2, peer alcohol use and mother's alcohol use were both positively related to increased odds of heavy alcohol use. For every one unit increment in peer alcohol use, adolescents were 1.47 times more likely to report recent heavy alcohol use. For every unit increase in mother's alcohol use, White youth were almost 2 times more likely to report recent heavy alcohol use. The 2-way interactions in Model 3 testing the relationships between behavior and attachment suggested by PST did not yield statistically significant moderating effects. However, in Model 4, the two 2-way interactions testing if attachments to mother and school buffered the effects of peer alcohol use on adolescent heavy alcohol use showed a statistically significant interaction between peer alcohol use and mother attachment ($\beta = .28(.08)$, $p < .05$). Probing the interaction ironically showed White adolescent who perceived more peers drank alcohol and had increased attachment to his/her mother were at greater risk for heavy alcohol use (Figure 14).

Table 18. Logistic regression for Wave 3 predicting adolescent heavy alcohol use at Wave 5 for White adolescents (N = 1560).

*p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Covariates										
Heavy Alcohol Use at Wave 3	1.09* (.08)	8.87 (6.61 – 11.91)	.83* (.09)	5.22 (3.68 – 7.39)	.82* (.09)	5.11 (3.63 – 7.19)	.84* (.09)	5.38 (3.79 – 7.62)	.81* (.09)	5.08 (3.62 – 7.13)
Gender	.01 (.08)	1.03 (.76 – 1.39)	.07 (.08)	1.16 (.84 – 1.60)	.08 (.08)	1.17 (.85 – 1.61)	.08 (.08)	1.18 (.86 – 1.64)	.08 (.08)	1.17 (.85 – 1.62)
Age	.34* (.07)	1.40 (1.23 – 1.60)	.28* (.09)	1.32 (1.10 – 1.59)	.27* (.10)	1.31 (1.08 – 1.58)	.26* (.10)	1.30 (1.07 – 1.57)	.27* (.10)	1.32 (1.09 – 1.59)
Family Structure	.14 (.15)	1.32 (.74 – 2.35)	.21 (.15)	1.53 (.86 – 2.70)	.20 (.15)	1.49 (.84 – 2.65)	.24 (.14)	1.60 (.93 – 2.77)	.21 (.15)	1.52 (.86 – 2.69)
Family Structure (missing values)	.12 (.17)	1.27 (.65 – 2.49)	.36 (.19)	2.06 (.98 – 4.35)	.33 (.19)	1.94 (.93 – 4.04)	.31 (.19)	1.87 (.89 – 3.90)	.31 (.19)	1.85 (.87 – 3.94)
Mom Education	-.01 (.07)	.97 (.74 – 1.28)	-.05 (.07)	.90 (.68 – 1.20)	-.05 (.07)	.91 (.69 – 1.21)	-.04 (.07)	.92 (.69 – 1.22)	-.04 (.07)	.92 (.69 – 1.22)
Friendship Network Size	-.05 (.05)	.95 (.85 – 1.06)	-.04 (.06)	.96 (.86 – 1.07)	-.04 (.06)	.96 (.86 – 1.07)	-.04 (.06)	.97 (.86 – 1.08)	-.05 (.06)	.95 (.86 – 1.07)
Main Effects										
Peer Alcohol Use			.38* (.09)	1.47 (1.24 – 1.74)	.39* (.09)	1.47 (1.24 – 1.75)	.45* (.09)	1.57 (1.32 – 1.86)	.30 (.20)	1.35 (.91 – 2.02)
Peer Alcohol Use (missing values)			.04 (.71)	1.09 (.07 – 17.57)	.03 (.68)	1.06 (.07 – 15.39)	-.05 (.73)	.90 (.05 – 15.56)	.03 (.68)	1.06 (.07 – 15.32)
Peer Attachment			-.02 (.12)	.98 (.77 – 1.25)	-.08 (.13)	.93 (.72 – 1.19)	-.02 (.13)	.98 (.75 – 1.29)	-.06 (.13)	.94 (.73 – 1.21)
Peer Attachment (missing values)			-.33 (.81)	.51 (.02 – 12.45)	-.34 (.74)	.50 (.03 – 9.34)	-.25 (.78)	.60 (.03 – 12.89)	-.32 (.74)	.53 (.03 – 9.57)
Mother's Alcohol Use			.37* (.15)	2.08 (1.18 – 3.68)	.35* (.15)	1.99 (1.10 – 3.63)	.33* (.16)	1.92 (1.04 – 3.55)	.35* (.15)	2.03 (1.12 – 3.67)
Mother's Alcohol Use (missing values)			-.04 (.16)	.92 (.49 – 1.72)	-.09 (.17)	.83 (.42 – 1.63)	-.10 (.17)	.81 (.41 – 1.60)	-.07 (.17)	.86 (.45 – 1.65)
Mother Attachment			-.12 (.12)	.88 (.70 – 1.12)	-.45 (.36)	.64 (.32 – 1.29)	-.50 (.35)	.61 (.30 – 1.21)	-.50 (.37)	.61 (.30 – 1.25)
Mother Attachment (missing values)			-.42 (.28)	.43 (.14 – 1.32)	-.75 (.47)	.22 (.04 – 1.39)	-.56 (.46)	.32 (.05 – 1.95)	-.78 (.48)	.21 (.03 – 1.36)
School Alcohol Use			-.11 (.43)	.89 (.38 – 2.08)	-.09 (.43)	.92 (.39 – 2.14)	-.13 (.43)	.88 (.37 – 2.05)	-.26 (.47)	.77 (.30 – 1.94)
School Attachment			-.08 (.07)	.93 (.80 – 1.07)	-.08 (.07)	.93 (.80 – 1.07)	-.10 (.08)	.91 (.78 – 1.06)	-.08 (.07)	.92 (.80 – 1.06)
School Attachment (missing values)			.10 (.37)	1.22 (.29 – 5.18)	.09 (.37)	1.21 (.29 – 5.06)	.10 (.34)	1.22 (.32 – 4.68)	.09 (.36)	1.19 (.29 – 4.90)

Table 18. (continued)

*p<.05.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)	β (se)	OR (95% CI)
Interactions testing PST										
Peer Alcohol Use \times Peer Attachment					.10 (.11)	1.11 (.89 – 1.38)	.04 (.11)	1.04 (.84 – 1.29)	.09 (.11)	1.10 (.88 – 1.37)
Mother's Alcohol Use \times Mother Attachment					.36 (.36)	1.44 (.71 – 2.92)	.27 (.36)	1.31 (.64 – 2.65)	.41 (.38)	1.50 (.72 – 3.14)
School Alcohol Use \times School Attachment					.19 (.32)	1.21 (.64 – 2.29)	.05 (.36)	1.05 (.52 – 2.14)	.22 (.33)	1.25 (.65 – 2.39)
Interactions testing buffering effects of attachment										
Peer Alcohol Use \times Mother Attachment							.28* (.08)	1.32 (1.13 – 1.55)		
Peer Alcohol Use \times School Attachment							.07 (.06)	1.07 (.94 – 1.21)		
Interactions testing exacerbating effects of alcohol										
Peer Alcohol Use \times Mother's Alcohol Use									.08 (.22)	1.09 (.71 – 1.67)
Peer Alcohol Use \times School Alcohol Use									.35 (.36)	1.42 (.70 – 2.89)
Model Summary										
- 2 Log L (df)		1242.78(7)		1189.22(18)		1186.89(21)		1171.50(23)		1185.62(23)
AIC		1258.78		1227.22		1230.89		1219.50		1233.62
pseudo R^2		.13		.16		.17		.17		.17
% of White adolescents who report recent heavy alcohol use at Wave 5					17.95					

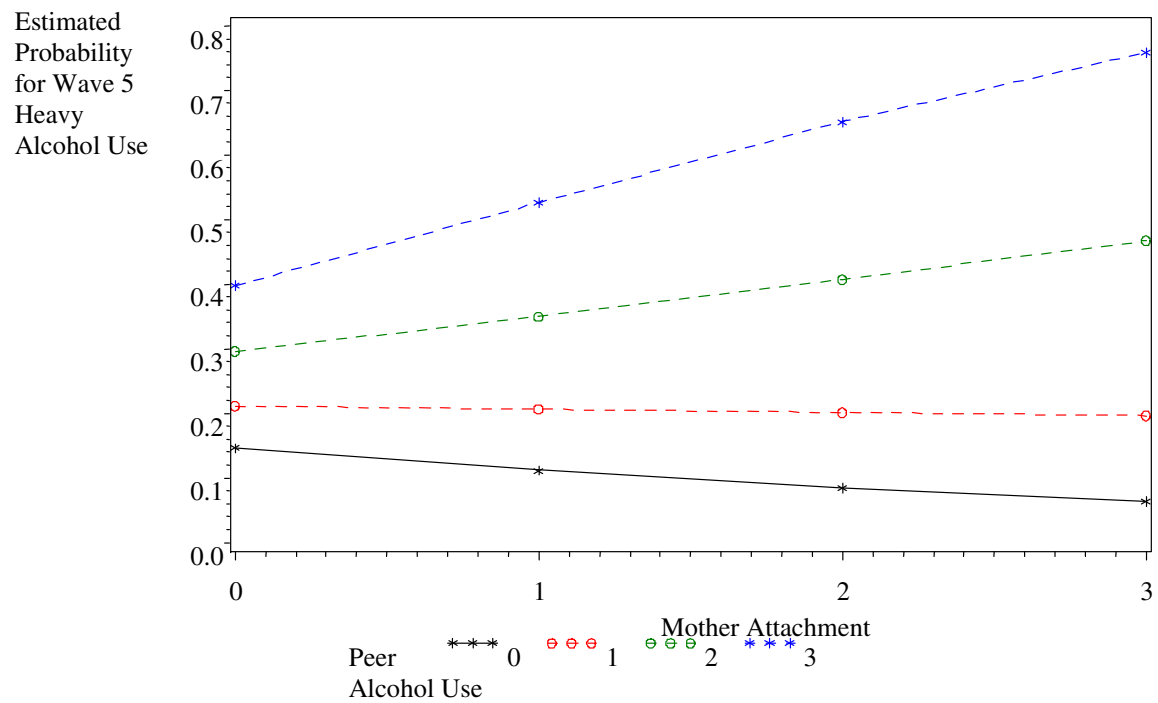


Figure 14. Model 4: Interaction between Peer Alcohol Use and Mother Attachment for White youth at Wave 5

Missing data

For the most, the dummy variables for cases with missing data on variables did not significantly impact the outcomes. For recent alcohol use at Wave 3, the missing variables did not yield statistically significant regression coefficients except for mother attachment in Models 3 – 5 for Black and White youth and school attachment in Models 2 – 5 for Black youth. These statistically significant results suggest that adolescents with missing values on these variables show a decrease in the predictive probability for adolescent alcohol use when other variables are held constant in the model.

For recent heavy alcohol use at Wave 3, the dummy-coded variable for missing school attachment in Models 2 – 5 was statistically significant for Black youth, while the variable for missing mother attachment in Models 3 – 5 was statistically significant for White youth. Both school and mother attachment were negatively associated to recent heavy alcohol use. Moreover, the results suggested adolescents with missing values on these variables showed a decrease in the predictive probability for adolescent heavy alcohol use when other variables are held constant in the model.

For Wave 5 alcohol use, the dummy coded variables did not yield statistically significant regression coefficients for any of the models predicting recent alcohol use for Black youth. However, a statistically regression significant coefficient was found for missing mother attachment in Model 2 for White youth. The statistically significant result for mother attachment suggested adolescents with missing values on this variable showed a decrease in the predictive probability for adolescent heavy alcohol use when other variables

are held constant in the model. However, the overall statistically nonsignificant results suggest that adolescents with missing values were not significantly different than adolescents with observed data when alcohol outcomes were regressed on the variables of interest.

For recent heavy alcohol use at Wave 5, the dummy-coded variable for missing peer alcohol use was significantly associated with the outcome for Black youth only. Hence, results showed Black adolescents with missing peer alcohol use values were different from adolescents with observed data when alcohol outcomes were regressed on the variables of interest. Dummy-coded variables used in the analyses for White youth did not yield statistically significant regression coefficients. This indicated that White adolescents with missing values did not significantly differ from Black adolescents who had observed data for this same variable.

CHAPTER V DISCUSSION

Primary socialization theory guided the current study's investigation of the influences of family (mother), peer, and school contexts on alcohol use and heavy alcohol use among Black and White youth. The contextual variables examined were behavioral norms and bonds, specifically, peer alcohol use, peer attachment, mother alcohol use, mother attachment, school alcohol use, and school attachment. The study had three primary aims: to provide descriptive information about adolescent alcohol use behaviors and the social contexts; to examine relationships suggested by primary socialization theory between the alcohol outcomes and peer, mother, and school context variables; and to extend the theory by testing interactions between peer alcohol use and mother/school attachment and mother/school alcohol use. For all three aims, a common goal was to highlight similarities for Black and White adolescents. Formal tests of significance were provided for preliminary results addressing Aim 1; however, they were not conducted for bivariate relationships or primary analyses addressing Aims 2 and 3. Where formal tests of significance are not provided, the patterns of results for Black and White adolescents are discussed.

Aim 1

Findings relevant to the first aim showed that Black adolescents reported lower levels of alcohol use at Waves 1, 3, and 5. This was consistent with finding from prior studies of

adolescent alcohol use (e.g., Monitoring the Future, National Household Survey on Drug Abuse). For Wave 1 social context alcohol use variables, White youth were more likely to report mother's alcohol, while Black youth reported significantly more school alcohol use and perceived more peers drank. In contrast to the lower alcohol use reports from Black youth, their perception of peer alcohol use was greater. For the attachment variables at Wave 1, White youth reported greater attachment to both mother and school context. Results showed Black and White youth did not differ in reported peer attachment.

Aim 2

The current study yielded several results when addressing Aim 2 and 3; however, findings relevant to the theoretical framework and modifications of it are highlighted. Primarily, results conducted for Waves 3 and 5 recent alcohol and heavy alcohol use for both Black and White youth are presented. These results provided support for the importance of the adolescent social contextual influences as well as for promoting greater insight into understanding racial/ethnic differences and/or similarities that exist for adolescent alcohol use.

Results for Model 3 from each logistic regression model were specifically related to Primary Socialization Theory (PST). At Waves 3 and 5 for recent alcohol use and heavy alcohol use, the theoretical framework was generally not supported for Black adolescents. Interactions between alcohol use and attachment in the peer and school contexts were not found to be associated with the outcomes. However, an interaction between mother attachment and mother's alcohol use was found to be positively associated with recent alcohol use at Wave 3 only. Probed results suggested Black adolescents who reported that

their mothers drank were at greatest risk for recent alcohol use at Wave 3 regardless of the reported attachment to his/her mother. However, the probability of alcohol use for these adolescents decreased for levels of greater attachment until a 5% point decrease was seen when Black adolescents reported being ‘very close’ to mother. In support of the *a priori* hypothesis suggesting the strength of the bond with the social context would impact the influence from the alcohol use of the social context, the interaction between mother attachment and mother’s alcohol use for Black youth provides evidence of a buffering effect at Wave 3 recent alcohol use.

For White youth, PST was not supported for recent alcohol use at Waves 3 and 5 or recent heavy alcohol use at Wave 5. Yet, results for White youth at Wave 3 recent heavy alcohol use supported PST. Results for White youth at Wave 3 recent alcohol use showed an interaction between mother attachment and mother’s alcohol use. Again, White adolescents who reported mothers drank alcohol were at greatest risk for alcohol use regardless of the reported attachment to mother. For White youth, increased levels of attachment decreased the probability of adolescent recent alcohol use at Wave 3. In fact, results suggested a decrease of almost 13% points. Model fit statistics also provided evidence in support of PST for White youth at Wave 3 recent heavy alcohol use. Specifically, the interaction between mother attachment and mother’s alcohol use was positively associated with the outcome. Similar to the results for any alcohol use, adolescents who reported mothers drank were 11% more like to heavily drink when they reported no attachment to mother versus 8% likely when mother’s drank but reported ‘very close’ to mother. The decrease of 3 percent points appears minimal; however, for a non-normative behavior like heavy alcohol use which is infrequent among this adolescent population (about 13% for study sample), the decrease is

significant when considering intervention for the heavy alcohol use. Further relationships supporting PST or interactions specifically related to supporting PST between other contexts were not found for White youth at Wave 3 or 5 outcomes. Results for the interaction between mother attachment and mother's alcohol use further suggest parent behavior (in this case mother's alcohol use) may influence adolescent alcohol behaviors more than communication about the behaviors as suggested by Social Learning Theory. These results highlight the alignment with the guiding theoretical framework; it appears that the strength of a primary social bond does have the ability to attenuate adolescent alcohol behaviors.

Aim 3

Findings relevant to the third aim showed the modifications to the PST framework were supported for White youth at Wave 5 for recent alcohol and heavy alcohol use. Despite the limited results in favor of support for the framework or its modifications, several significant interactions between the social contexts were found to increase the probability of both Black and White youth engagement in alcohol behaviors at Waves 3 and/or 5.

Modifications to PST were found in Models 4 and 5 of the results. Model 4 tested if the addition of interactions between peer alcohol use and mother/school attachment significantly predicted adolescent alcohol use such that attachment to mother or school buffered the influence of peer alcohol use. The interactions between peer alcohol use and mother/school alcohol use were tested in Model 5 to verify if the behavior of the context exacerbated the effect of peer alcohol use on adolescent alcohol outcomes. For Black youth, the relationships testing modifications to PST were not supported for any alcohol use at Wave 3 or 5; however, the interactions between peer alcohol use and school attachment; and

peer alcohol use and school alcohol use at Wave 3 recent heavy alcohol use were significant. For Black youth, the interaction between peer alcohol use and school attachment did not evidence a buffering effect as hypothesized. Contrary to expectations, results showed Black adolescents who perceive that more than 1 peer drank were at greatest risk for recent heavy alcohol use at Wave 3. In fact, the probability for Black adolescents to heavily at Wave 3 was 60% if he/she reported greater school attachment and perceived ‘most’ peers drank, but decreased to 20% when adolescents perceived ‘a few’ peers drank. Ironically, a buffering effect was supported for Black adolescents at Wave 3 recent heavy alcohol use when adolescents reported no friends drank and ‘very’ attached to the school environment – a decrease of 3% in behavior. However, this latter finding suggests the strength of the school bond is important if adolescents don’t perceive peer alcohol use. This could be trivial for intervention, but significant if intervention programs equipped adolescents with more accurate perceptions of his/her peer behavior. Because literature does suggest that adolescents over report peer behavior and current study findings suggest overestimating peer behavior places adolescent at greater risk, providing adolescents with a mechanism to better capture behavior of peers could possibly decrease the probability that Black adolescents would engage in the heavy alcohol use. Another explanation for this contradiction to PST could be related to the non-normative behavior (i.e., heavy alcohol use) that extends beyond the bond strength’s ability to buffer the behavior for a very small percent of population (about 7% of study population).

The interaction between peer alcohol use and school alcohol use for Black youth at Wave 3 recent heavy alcohol use was also found to be negatively associated to the outcome. Probing this interaction provided further evidence showing the hypothesized relationship was

contradicted (if peers drink and context drinks then alcohol behavior will be worse). Black youth attending schools with greater alcohol use were at the lowest risk regardless of the number of peers he/she perceived drank (i.e., 0 – 3% likely to report heavy alcohol use at Wave 3). Black youth who attended schools with decreased alcohol use and had perception of ‘most’ peers drinking alcohol were 8% likely to report heavy alcohol use.

Results from model fit statistics suggested modifications to PST were not supported for White youth at Wave 3 recent alcohol and heavy alcohol use; however, the interaction between peer alcohol use and school alcohol use at Wave 3 recent heavy alcohol use was found. But, modifications to PST were supported at Wave 5 recent alcohol and heavy alcohol use for White youth. White youth exhibited similar patterns to Black youth at Wave 3 recent heavy alcohol use except that White youth who attended schools with greater alcohol use and perceived no peers drank were at greater risk for heavy alcohol use than their counterparts who attended schools with no alcohol use. For White youth, the latter is consistent with PST theory suggesting alcohol use of the context places the adolescent at greater risk

For White youth at wave 5 recent alcohol use and heavy alcohol use, model fit statistics suggested support for the modification to PST with the addition of the 2-way interactions. Specifically, the interaction between peer alcohol use and mother attachment was positively associated to the outcomes. However, a buffering effect was not suggested except slightly when adolescents reported greater attachments to mother and perceived only one peer drank alcohol (2% point decrease) and even more so when mother attachment was greatest and adolescent perceived ‘no’ peers drank (14% point decrease). Converse to this finding, the probability for adolescents recent alcohol use at Wave 5 was associated with

perceptions of ‘a few’ or ‘most or all’ peers drinking alcohol and increased reports of attachment to mother was 54% and 88%, respectively.

At Wave 5 recent heavy alcohol use, the modification to PST was also supported for White youth. Similar to results from Wave 5 recent alcohol use, the interaction between peer alcohol use and mother attachment showed mother attachment buffered the effects of peer alcohol use on adolescent recent heavy alcohol use if adolescent perceived ≤ 1 peer drank alcohol. Again, consistent with theory the strength of the bond decreases the probability when adolescents perceive fewer peers engaging in heavy alcohol use.

Difference between and within Waves 3 and 5 outcomes

Testing PST and modifications of it produced findings for Wave 3 and Wave 5 that were not similar for recent alcohol and heavy alcohol use. In fact, the relationships found for Wave 3 outcomes were not found for Wave 5 outcomes for both Black and White youth. An possible explanation for this difference could be developmental in nature as related to age. Adolescents at Wave 1 were almost one year younger than those at Wave 3, and at Wave 3 were one year younger than Wave 5.

Results suggested similar patterns of interaction terms testing the theoretical framework and modifications to it for Wave 3 recent and heavy alcohol use. Specifically, the interaction between mother attachment and mother’s alcohol use was exhibited for Black and White youth at Wave 3 recent alcohol use and Wave 3 recent heavy alcohol use for White youth. In addition, the interaction between peer alcohol use and school alcohol use was significant for both Black and White youth at Wave 3 recent heavy alcohol use. A similarity for Wave 5 recent alcohol and heavy alcohol use was found for White youth only. At both

outcomes, the interaction between peer alcohol use and mother attachment emerged as a significant predictor. Similarities within Wave could be attributed to cohort effects.

Patterns for Black and White youth

While formal significance test were not conducted, similar patterns were seen for both Black and White adolescents. For example, the interactions between mother attachment and mother's alcohol use at Wave 3 recent alcohol use and the interaction between peer alcohol use and school alcohol use at Wave 3 heavy alcohol use were found for both Black and White youth. This finding suggests that for both Black and White youth being attached to one's mother is important. Formal significance test would need to be conducted to further test findings in the research that suggest stronger familial bonds exist for Black youth over their White counterparts (Newcomb & Bentler, 1989). However, the overall pattern evidenced for both Black and White youth was found to be consistent with literature suggesting low mother attachment increased risk behavior (Doherty & Allen, 1994). Findings for the interaction between peer alcohol use and school use were similar for Black and White youth in that no school use and greater peer use were associated with the lowest predicted probabilities of recent heavy alcohol use. For example, when no school use was present, peer alcohol use increased probability for Black and White youth. Yet, the inverse relationship was found between recent heavy alcohol use and school use is baffling. PST would have suggested school alcohol use to be positively associated to recent heavy alcohol use, but this may not have been a finding because the deviant behavior could have surpassed the school context influence on the outcome. In addition, school alcohol use was captured as a predictor for recent heavy alcohol use. Not using school heavy alcohol use could have biased the results.

Study limitations

The Context data set is uniquely designed to capture various aspects of adolescents' lives. However, it is important to note the limitations that exist for the current research. First, the data set was drawn from adolescents living in three rural North Carolina counties. These adolescents in the sample do not reflect the US adolescent population. Because perceived adolescent reports for both peer alcohol use and mother alcohol use were used, adolescents may have over-estimated the use of these contexts. Lastly, students were limited to 5 school friends during the friendship nomination. Adolescents may have more friends than this which prevents an accurate measure of their peer network. Also, out of school friends cannot be captured in the adolescent's peer network.

Future directions and implications for intervention

Past and current studies consistently report lower rates of alcohol consumption for Black adolescents than their White counterparts. However, Blacks are more likely to suffer adverse health consequences as a result of alcohol consumption (Jones-Webb, 1998; Ford & Goode, 1994). This provides support that alcohol consumption is wide and varied, but the research examining it does not provide an extensive overview of alcohol in an ethnic or social context. The current study aimed to address both these voids. Albeit, the findings do highlight areas where emphasis should be focused in prevention program development, the findings also suggest that additional research is necessary to disentangle counterintuitive results for Black and White adolescents.

Future research could include direct peer and mother reports of alcohol use. Because adolescents nominated other students in the school, it is possible to create friendship groups

and self-reports of use from these groups. Direct measures of parent alcohol use can be obtained from the parents; however, the current analytic sample would be significantly reduced since 1663 parents participated in the interview at Wave 1 and N = 1372 parent interviews at Wave 3.

The school context did not impact the alcohol outcomes as anticipated. Because attachment to school includes academic engagement as well as social involvement in the school community, it may be important to examine grades or control for academic success or failure in future analyses to verify if school attachment will have an increased impact on the prediction of adolescent alcohol use (Henry & Slater, 2007).

For intervention, the peer influence is an essential program component; however, mother and school contexts are important for adolescent development. Primary Socialization Theory does not explicitly highlight relationships suggested; however, testing relationships between social contexts show promising direction. In addition, the current examination highlights where relationships exist – a first step in identifying where to intervene for adolescent alcohol use. These relationships further suggest both the mother and school contexts impact adolescent alcohol outcomes. More importantly, results show the influence is present and justify inclusion into alcohol intervention programs. Lastly, research has suggested that reliable findings of racial/ethnic differences are critical to intervention and prevention program development (Alvidrez, Azocar, & Miranda, 1996).

APPENDICES

CODEBOOK FOR CONTEXT STUDY VARIABLES

VARIABLE CODE	VARIABLE NAME	VALUES	Meaning
Schcode	school code	1 – 19	Unique School Identification
NBHBLK1	Neighborhood geo-code		Geo-code from US Census on location of Adolescent Residence
ID	student id		Unique Adolescent identification
Race	Race	0, 1	1=black; 0=white
Gender	Gender	0,1	1=female; 0=male
C1_age	Age at Wave 1	12 – 17	Adolescent's age at time of survey calculated from Date of Birth reported
C3_age	Age at Wave 3	13 – 18	Adolescent's age at time of survey calculated from Date of Birth reported
C1_oneparent	Family structure at Wave 1	0,1	0=two parent; 1=other
C3_oneparent	Family structure at Wave 3	0,1	0=two parent; 1=other
Momed1	Social Economic Status at Wave 1	0,1	1=mother has education beyond high school; 0=mother has high school or below education
Momed3	Social Economic Status at Wave 3	0,1	1=mother has education beyond high school; 0=mother has high school or below education
Network1	Friendship Network Size at Wave 1	1 – 5	Number of peers identified by adolescent who are his/her friends
Network3	Friendship Network Size at Wave 3	1 – 5	Number of peers identified by adolescent who are his/her friends
Dreq#	Adolescent alcohol use	0 - 5	Adolescent alcohol use in prior 3 months to survey where 0=none; 1= yes
Hdrink#	Adolescent heavy alcohol use	0,1	Heavy adolescent alcohol use (3-4 drinks in a row in past 3 months of survey) where 0=no heavy alcohol use where 1=heavy alcohol use
Peeralc#	Peer Alcohol Use	0 - 3	Perceived number of peers who drink alcohol (0 = none; 1 = one; 2= a few; 3 = most all)
Peeratt#	Peer Attachment	0 - 3	Average level of attachment reported by the target adolescent

Momalc#	Mother's alcohol use	0,1	1=adolescent reports mother does drink; 0= adolescent reports mother does not drink
Matt#	Mother Attachment	0 – 3	Average level of attachment adolescent reports to his/her mother
Schalc#	School alcohol use	0 - 5	Average alcohol consumption per school
Schatt#	School Attachment	0 - 4	Average level of attachment target adolescent reports to his/her school environment

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