

INFLUENCE OF PARENTAL SOCIALIZATION ON ADOLESCENT ALCOHOL MISUSE

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ABSTRACT

The present study examined the influence of parental socialization on adolescent alcohol misuse. The purpose of the study was to examine two models of parental socialization that included dimensions of parental demandingness and responsiveness and alcohol-specific parental practices: alcohol monitoring, negative and permissive alcohol messages and alcohol contingency messages. More specifically, the study examined the extent to which parental demandingness and responsiveness each moderated the relationships between alcohol-specific parental practices and adolescent alcohol misuse and the extent to which alcohol-specific parental practices mediated the relationships between parental demandingness and responsiveness and adolescent alcohol misuse in separate samples of White and Black adolescents. In addition, the study examined how the pattern of relationships differed by race group.

The study used three waves of data from The Context of Adolescent Substance Use Study (Context Study), which was implemented from 2002 to 2004 in three counties in North Carolina. The final analysis samples included 723 White and 379 Black adolescents and their parents. Parental socialization included parent-reported demandingness, responsiveness, alcohol-specific parental practices and parental alcohol use. Adolescent alcohol misuse was based on adolescent-reported alcohol behaviors and related social problems. Measurement equivalence was tested for White and Black race groups prior to testing the study hypotheses in the separate White and Black samples. Logistic regression

procedures were used to test the moderation model and path analysis was used to test the mediation model.

Overall, neither a moderation nor mediation model was supported as a parental socialization process that predicted adolescent alcohol misuse. There were, however, clear links between one or both parenting style dimensions and each alcohol-specific parental practice for both White and Black adolescents, with the exception of alcohol monitoring for White adolescents. In addition, alcohol contingency messages for White adolescents and permissive alcohol messages for Black adolescents significantly predicted adolescent alcohol misuse. Parental alcohol use also was an important influence on adolescent alcohol misuse for both White and Black adolescents. Future research should continue to explore the relationships between parenting style dimensions, alcohol-specific parental practices and parental alcohol use to further clarify the role of parental alcohol use in family alcohol socialization.

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CHAPTER 1: INTRODUCTION TO STUDY PURPOSE AND RESEARCH QUESTIONS

Introduction

Alcohol use is prevalent among adolescents and associated with poor social and health outcomes (Shope, 2006; Centers for Disease Control & Prevention, 2006; Johnston, O'Malley & Bachman, 2005; Shrier & Crosby, 2003; Brooks, Harris, Thrall and Woods, 2002; Maney, Hingham & Mahoney, 2002; Poulin and Graham, 2001; Cooper & Orcutt, 2000). More than three-fourths of adolescents in 2006 had tried alcohol by 12th grade, and 45% of 12th grade students reported drinking within the last 30 days, which indicates regular alcohol use. In addition, approximately 6% of 8th graders and almost 30% of 12th graders engaged in episodic heavy drinking (multiple drinks in a row) at least once in the past 30 days (Johnston, et al., 2006).

Alcohol misuse, including episodic heavy drinking, being intoxicated and experiencing alcohol-related social problems, is a complex of behaviors that reflect more serious involvement with alcohol than regular use. Adolescents who engage in episodic heavy drinking are more likely than their peers to report problems with interpersonal relationships and social situations and often experience alcohol-related problems in adulthood (Maney, et al, 2002). Alcohol misuse has been less studied, however, than initiation and progression to regular use. The purpose of this dissertation study is to examine how parental socialization influences adolescent alcohol misuse. Specifically, I examine two models of parental socialization that posit relationships between parenting style dimensions,

alcohol-specific parental practices and adolescent alcohol misuse, controlling for parental alcohol use. I test the study models in separate samples of White and Black adolescents and their parents who participated in The Context of Adolescent Substance Use Study (Context Study) from 2002 to 2004.

Parents are known to greatly influence adolescent alcohol use through their general parenting style, characterized by their demandingness and responsiveness toward their children, and their alcohol-specific parental practices, such as alcohol monitoring and communicating alcohol messages (Van der Vorst, Engels, Meeus, Dekovic, & Leeuwe, 2005 and 2006a, Simons-Morton & Chen, 2005, Borawski, Ievers-Landis, Lovegreen & Trapl, 2003; Kelly, K.J., Comello & Hunn, 2002; Scheer, Borden, & Donnermeyer, 2000; Andrews, Hops & Ary, 1993; Darling & Steinberg, 1993). Parental alcohol use also is strongly associated with adolescent alcohol use (Richter & Richter, 2001; Hawkins, Graham, et al. 1997, Chassin, Prost & Pitts, 2002; Coffelt, Forehand, Olson, Jones, et al., 2005; White, Johnson & Buyske, 2000), in part because adolescents learn family alcohol use norms by observing their parents and often imitate their parents' drinking behaviors (Yu, 2003, Beal, Ausiello & Perinin, 2001, Richter & Richter, 2001). Although fewer studies have examined adolescent alcohol misuse than less problematic alcohol use, some studies have found that dimensions of parenting style and parental alcohol monitoring are associated with alcohol misuse (Simons-Morton, 2005, Simons-Morton & Chen, 2005, DiClemente, Wingood, et al., 2001, Reifman, Barnes, et al., 1997). In addition, parental alcohol use is a strong predictor of adolescent alcohol use and misuse (Coffelt, et al., 2005; Yu, 2003; Chassin, et al., 2002; White, et al., 2001; Richter & Richter, 2001).

Researchers have conceptualized parenting style as a single construct or as a multidimensional construct that consists of demandingness and responsiveness dimensions. *Demandingness* is parents' use of rules, supervision and consequences to establish and reinforce behavioral expectations. *Responsiveness* is parents' response to their children's emotional and developmental needs through involvement and emotional support. The optimal parenting style includes high levels of parental demandingness and responsiveness, which is often called "authoritative" or "effective" parenting (Brody & Kim, 2004; Jackson, Henrikson & Dickinson, 1999; Darling & Steinberg, 1993, Baumrind, 1991).

A multidimensional approach to measuring parenting style assumes that demandingness and responsiveness have distinct effects on adolescent alcohol misuse and allows for testing such effects (Cox, 2006, Fletcher, Steinberg & Williams-Wheeler, 2004; Barnes, Reifman, Farrell, et al., 2000, Gray & Steinberg, 1999). Although not often studied, Gray and Steinberg (1999) found that high parental demandingness was most influential in reducing problem adolescent behaviors, whereas high parental responsiveness influenced a greater range of adolescent outcomes. Therefore, demandingness and responsiveness were measured as two separate dimensions of parenting style and their separate effects on adolescent alcohol misuse were examined.

Domain-specific parental practices are distinct from parenting style because they are behaviors parents use to influence their adolescents' behavior in a particular content area, such as alcohol use (Van der Vorst, et al., 2005 and 2006a; Jackson, et al., 1999, Darling & Steinberg, 1993). Parents' alcohol-specific practices include their monitoring for alcohol and communication about alcohol. Alcohol communication can include parents' messages about alcohol use rules, alcohol-related contingencies (e.g., "call home for a ride, if you do drink"),

family alcohol norms and consequences of alcohol use. Importantly, parents who have alcohol rules may or may not communicate rules to their children (Van der Vorst, et al., 2006a). Parents' reports of having alcohol rules, therefore, may reflect parental values with respect to alcohol, but are not equivalent to the parental practice of communicating alcohol rules.

Alcohol-specific parental practices have not been studied to the same extent as parenting style, but research on parental practices is emerging. Parental alcohol monitoring has been studied more than other types of alcohol-specific parental practices, and has been consistently associated with lower rates of adolescent alcohol use and misuse (Van der Horst, et al., 2005; Simons-Morton & Chen, 2005, DiClemente, et al.; Reifman, et al., 1997). Parents reports of having alcohol rules, in addition, has been associated with less alcohol initiation in adolescents (Van der Horst, et al., 2006a) and reduced regular alcohol use (Van der Horst, 2005) but has not been found to directly influence adolescent alcohol misuse.

Little is known about how content other than alcohol rules is communicated by parents and how other aspects of alcohol communication, such as the context within which messages are delivered, influence adolescent alcohol use and misuse (Ennett, Bauman, Foshee, Pemberton, et al., 2001; Jaccard, Dodge & Dittus, 2002). Parents' verbal messages about alcohol are an important component of parental socialization because it is through such messages that parents communicate behavioral expectations, as well as alcohol-related contingencies such as situations that may arise when adolescents have been drinking.

In addition to these alcohol-specific parental practices, alcohol use by parents is strongly associated with adolescent alcohol use (Van der Vorst, 2005; Coffelt, et al., 2005; Yu, 2003; Chassin, et al., 2002; White, et al., 2001; Richter and Richter, 2001). Social

Learning Theory (Bandura, 1986) suggests that adolescents learn alcohol behavior norms, at least in part, by observing parents' drinking behaviors. Empirical evidence also supports the link between parental alcohol use and the onset and progression of adolescent alcohol use and misuse (Latendresse, Rose & Viken, 2007, Yu, 2003, Beal, et al., 2001, White, et al., 2001, Richter, L. & Richter, 2001). Parental alcohol use, therefore, is important in conceptualizing parental socialization related to adolescent alcohol use.

Although dimensions of parenting style, alcohol-specific parental practices and parental alcohol use have been independently associated with adolescent alcohol misuse, few studies have linked these behaviors to each other to build a model of parental socialization that explains adolescent alcohol use or misuse (Latendresse, et al., 2007; Van der Vorst 2005, 2006a, 2006b; Chassin, Presson, Rose, et al., 2005). Parental socialization models specify a process through which different types of parental behaviors, such as parenting style dimensions and domain-specific parental practices, influence adolescent behavior. To understand the process through which parental socialization affects adolescent alcohol misuse, researchers must clarify relationships between demandingness and responsiveness and alcohol-specific parental practices, as well as the pathways through which these behaviors influence adolescent alcohol misuse.

Two models of parental socialization, in particular, explain alternative pathways through which dimensions of parenting style and alcohol-specific practices may affect adolescent alcohol misuse, controlling for parental alcohol use. One model assumes that parental demandingness and responsiveness provide a context within which parents implement alcohol-specific practices, and therefore alter the effect of practices on adolescent alcohol misuse. Another model assumes that demandingness and responsiveness predict the

alcohol-specific practices parents implement, which in turn influence adolescent alcohol misuse.

Consistent with the first model, Darling and Steinberg (1993) posited that parenting style moderates the relationship between domain-specific parental practices and adolescent behavior by altering the effectiveness of such practices. Parents with high versus low levels of demandingness and responsiveness are more effective when they implement alcohol-specific practices to discourage alcohol use because their children are more open and attentive to their parents' socialization efforts. High demandingness and responsiveness also may mitigate the effects of parental practices that do not discourage alcohol use on adolescents' alcohol misuse. For example, adolescents who are told that it is "okay to drink on some occasions, like family events," would likely interpret this message within the context of their parents' generally high behavioral expectations. Darling and Steinberg's model suggests that parenting style, which parents establish early in their children's lives, is an important context within which children interpret their parent's alcohol-specific practices during adolescence.

An alternative to the parental socialization process posited by Darling and Steinberg (1993) is a model in which parental demandingness and responsiveness predict alcohol-specific parental practices, which in turn predict adolescent alcohol misuse (mediating model). A mediating model is plausible because parents who are highly demanding and responsive may adapt specific practices, such as communicating family alcohol norms or messages about avoiding alcohol dangers (e.g., riding in a car with someone who has been drinking) as a way to respond to emerging behaviors or to anticipated environmental influences. These practices would, in turn, affect adolescent alcohol misuse. Additionally,

parents with high levels of demandingness must communicate their expectations to their children and must enforce their rules. Hence, these parents may be more likely than parents with low levels of demandingness to explicitly communicate alcohol messages, and they may be more likely to take actions that reinforce their socialization goals, such as monitoring their children's behaviors and environment (e.g., checking their child's room) for alcohol use. Mediating models that explain processes that influence alcohol use are emerging in substance use literature (Latendresse, et al., 2007, Chassin, et al., 2005; Brody & Kim, 2004; Barnes, et al. 2000). Chassin, et al.(2005), for example, compared moderating and mediating models that linked parenting style and cigarette-specific parental practices. Latendresse, et al. (2007) found that parental alcohol use predicted dimensions of parenting style, which in turn predicted adolescent alcohol use. I could find no studies, however, that conceptualize dimensions of parenting style as predicting alcohol-specific practices. Although a mediating model is plausible and merits testing, there is not the same theoretical foundation for mediating pathways from dimensions of parenting style to adolescent alcohol misuse through alcohol-specific parental practices as the moderating model posited by Darling and Steinberg.

Race/ethnic group comparisons are particularly relevant to studies of parental socialization because some researchers have found that parenting behaviors and dimensions of parenting style in particular are influenced by cultural factors that differ by ethnic group (Cox, 2006, Brody, et al., 2005, Peters, 1997; McAdoo, 1997), while others have found that parenting norms in America reflect broader societal expectations that are consistent across racial groups (Steinberg, 2001, Bray, et al., 2001). Importantly, some researchers who study cultural differences have found that, while the meaning and effect of some domain-specific parental practices differ by race/ethnic groups, "effective" or "authoritative" parenting is

equally protective against the development of problem behavior across race/ethnic groups (Simons, Simons, Burt, et al., 2006; Simons, Simons and Wallace, 2004; Brody, 2002, Steinberg, 2002)

Race/ethnic group comparisons, therefore, should clarify whether the *process* of parental socialization and its effects on adolescent alcohol misuse differ by race group versus merely testing whether mean levels of parenting style and alcohol-specific parental practices differ by race group (Rowe, Vazsonyi, Flannery, 1994). Two important components of race/ethnic group comparisons are measurement equivalence and comparisons of the patterns of relationships in parental socialization models. The present study stratifies the study sample by race to descriptively compare the pattern of relationships by race group; that is the strength and direction of relationships specified in each model.

Study Purpose and Research Questions

The purpose of the study is to examine the extent to which two alternative models of parental socialization that link dimensions of parenting style and alcohol-specific parental practices affect adolescent alcohol misuse, controlling for parental alcohol use. Parenting style includes two constructs: parental demandingness and responsiveness. Alcohol-specific parental practices consist of four constructs: parental alcohol monitoring and three types of alcohol communication: negative, permissive and alcohol contingency messages. In model 1, parental demandingness and responsiveness are posited to moderate associations between alcohol-specific parental practices and adolescent alcohol misuse. In model 2, alcohol-specific parental practices are posited to mediate the relationships between parental demandingness and responsiveness and adolescent alcohol misuse. Because the focus of the study is to test two possible mechanisms through which dimensions of parenting style and

alcohol-specific practices influence adolescent alcohol misuse, parental alcohol use will be included in the model as a control variable. Although parental alcohol use could be conceptualized as a parental practice, it is not in this study because it is not likely a practice parents change in response to their expectations or concerns about their children's alcohol use. Nonetheless, parental alcohol use is recognized as an important component of parental alcohol socialization and is considered in the results and discussion.

The study will specifically address the following research questions:

Research Question 1 (Moderation Model): Do parental demandingness and responsiveness each moderate the relationships between alcohol-specific parental practices and adolescent alcohol misuse?

Research Question 2 (Mediation Model): Are the relationships between parental demandingness and responsiveness and adolescent alcohol misuse mediated by alcohol-specific parental practices, such that demandingness and responsiveness each predict alcohol-specific parental practices, which in turn each predict adolescent alcohol misuse?

Research Question 3: Do the patterns of relationships specified in the models differ by race group?

CHAPTER 2: LITERATURE REVIEW

Adolescent Alcohol Use in the United States

Alcohol is the most common substance used by adolescents in the United States, and the percentage of adolescents who have tried alcohol greatly increases throughout high school years (Johnston, et al., 2006; Centers for Disease Control & Prevention, 2006). Although lifetime alcohol use and 30-day prevalence among middle and high school students declined overall from 1996 to 2006, middle school years (7th and 8th grade) remain the peak period for alcohol initiation. Approximately 40% of 8th grade and 75% of 12th grade students have tried alcohol (lifetime use), and almost half of 12th graders in 2006 reported they used alcohol during the last 30 days. In addition, 6% of 8th grade and 30% of 12th grade students in 2006 reported being drunk at least once during the past 30 days, and more than 10% of 8th grade and one-quarter of 12th grade students reported having five or more drinks in a row during the past two weeks.

Adolescent alcohol use is associated with myriad health and social problems (Maney, et al., 2002). Adolescents are more likely to experience motor vehicle crashes and non-intentional injuries after consuming alcohol (Shope, 2006; Linberg, et al., 2000). Alcohol use also is associated with intentional injuries, such as suicide attempts and interpersonal violence and early predictors of violence including aggression and behavior problems in school (Miller, et al., 2007; Linberg, et al., 2000). Further, adolescents are less likely to use

condoms during sexual intercourse and more likely to experience coercive sexual behavior after consuming alcohol (Shrier & Crosby, 2003; Maney, et al., 2002).

Adolescents who misuse alcohol experience health and social problems to a greater extent than their peers who engage in less problematic alcohol use and are more likely to encounter alcohol problems in adulthood (Miller, et al., 2007, Merline, et al., 2004, Maney, et al., 2002). Therefore, adolescent alcohol misuse is an important focus within adolescent health research.

Continuum of Alcohol Involvement

Adolescent alcohol use is measured along a continuum from ever having a sip of alcohol to clinically diagnosed alcohol use disorders (Johnston, et al., 2006, Centers for Disease Control & Prevention, 2006; DeWitt, Adlaf, Offord, et al., 2000). *Lifetime alcohol use* (e.g., ever used within the lifetime) is one way to measure any alcohol use. Adolescent alcohol initiation, sometimes measured by lifetime alcohol use, has been a major focus of alcohol research in recent years. Researchers have consistently found that young people who initiate alcohol use before age 14 are more likely to have alcohol problems in adolescence and adulthood than later initiators (DeWitt, et al, 2000; Hawkins, et al., 1992, 1997).

Current alcohol use refers to recent alcohol consumed and is often reported as the quantity and frequency used during the past 30 days, three months or 12 months (Johnston, et al., 2006; Simons-Morton and Chen, 2005; Centers For Disease Control & Prevention, 2006). Current alcohol use can indicate a progression from trying alcohol (i.e., initiation) to an established behavior of using alcohol. Studies of current alcohol use

among adolescents have established that, as the quantity and frequency of alcohol use increases, adolescents experience more social and health problems (Maney, et al., 2002).

Alcohol misuse, the focus of my dissertation, includes episodic heavy use (“binge drinking”), drinking to intoxication and alcohol-related social problems. Episodic heavy use is drinking multiple alcoholic beverages in a short period. Measures for episodic heavy use in adolescent populations have included drinking three, four or five drinks (Johnston, et al., 2006; Centers for Disease Control & Prevention, 2006; Tucker, Orlando, Ellickson, 2003; Barnes, et al., 1997; Shope, et al, 1994). Drinking to intoxication is adolescents’ report of being drunk in a recent period. In addition, interpersonal problems, such as physical fights and trouble with parents after using alcohol, may indicate more serious alcohol misuse and longer-term problem alcohol use (Merline, et al., 2004; Maney, et al., 2002).

Alcohol misuse among middle and high school adolescents has not been studied as extensively as alcohol initiation and progression to regular use (e.g., consuming alcohol once week). (Reifman & Barnes, 1998; Barnes, et al., 1997; Ellickson, McGuigan, Adams, Bell, et al., 1996). Some studies have found, however, that adolescents who engage in episodic heavy drinking and report recently being intoxicated are more likely to have interpersonal problems, do something they regret or become physically ill from alcohol, than their peers (Maney, et al., 2002; Swahn & Donavan, 2002).

Adolescents who misuse alcohol are at greater risk than peers with less problematic alcohol use for the health and social problems described above (Miller, et al., 2007; Merline, et al., 2004; Maney, et al., 2002). In addition, adolescents who engage in episodic heavy drinking are more likely than peers to have poor academic achievement

and drop out of high school and to experience alcohol problems in adulthood (Maney, et al., 2002).

Race/Ethnic Differences in Adolescent Alcohol Involvement

White adolescents initiate alcohol use earlier, drink more frequently and are more involved in episodic heavy alcohol use than most other adolescent ethnic groups including Black adolescents (Johnston, et al, 2006; Centers for Disease Control & Prevention, 2006; Foley, Altman, Durant, et al., 2004). White adolescents have reported more regular alcohol use than Black adolescents over the past three decades (Faden, 2006; Johnston, et al., 2006, Centers for Disease Control & Prevention, 2006). In 2006, 47% White versus 37% Black 12th grade students reported they used alcohol at least once during the past 30 days (Johnston, et al., 2006, Centers for Disease Control & Prevention, 2006). In addition, White versus Black adolescents are more likely to have three or more drinks in a row and report recent intoxication. Some researchers have found, however, that despite comparable or lower rates of substance use (including alcohol use) among Black versus White adolescents, Black adolescents experience substance use social problems more than their White peers (Wallace & Muroff, 2002; Bachman & Wallace, 1991; Welte & Barnes, 1987). Therefore, alcohol use and misuse can lead to serious health and social problems for both White and Black adolescents, despite overall lower rates of alcohol use among Black youth.

Individual and Environmental Influences on Alcohol Involvement

Alcohol researchers have examined numerous individual and social factors that influence adolescent alcohol use and misuse. Alcohol misuse among adolescents increases with age and differs by gender (Johnston, 2006; Centers for Disease Control &

Prevention, 2005). Older adolescents drink alcohol more frequently, in greater quantities and are more likely to engage in episodic heavy drinking than younger adolescents. Boys initiate alcohol use earlier and drink more than girls and are more likely than girls to misuse alcohol throughout adolescence.

Most important among family factors associated with adolescent alcohol use are family structure (i.e., one vs. two parents) and parental education level (Blum, Beuhring, Shew, Bearinger, et al., 2000; Cookston, 1999; Brody, et al., 1993). Adolescents who live in two-parent homes are less likely to use alcohol than adolescents who live in single-parent homes. In addition, adolescents whose parents have greater than a high school education are less likely to use alcohol than youth with parents who have no more than a high school education (Goodman & Huang, 2002).

In addition, adolescents with siblings who use alcohol are more likely than their peers to use alcohol (Trim, Leuthe & Chassin, 2006; Windle, 2000; McGue, Sharma & Benson, 1996). Siblings may model alcohol use behaviors. Siblings close in age, in particular, are similar to peers, and adolescents with siblings who use alcohol are more likely to also use alcohol than those with non-drinking siblings (McGue, et al., 1996). In addition, older siblings' problem behavior in general and substance use in particular can influence younger siblings substance use (Bullock & Dishion, 2002). Therefore, older siblings' use of substances other than alcohol may influence younger siblings' alcohol misuse, not only through direct modeling of alcohol use but also through general modeling of problem substance use behavior.

Parental Influences on Adolescent Alcohol Involvement

In addition to characteristics of the family environment, such as family structure and parent education, factors related to how parents socialize their children in general and specifically related to alcohol use are important influences on adolescent alcohol use and misuse. Parents, for example, influence adolescent alcohol use through parenting style, typically measured by parental demandingness and responsiveness, and alcohol-specific parental practices, such as monitoring for alcohol use and communicating alcohol messages (Simons-Morton and Chen, 2005; Borawski, et al., 2003; Kelly, et al., 2002; Scheer, et al., 2000, Andrews, et al., 1993; Darling & Steinberg, 1993). Parental alcohol use also is strongly associated with adolescent alcohol use (Coffelt, et al., 2005; Yu, 2003; Chassin, et al., 2002; White, et al., 2001; Richter & Richter, 2001; Hawkins, et al. 1997), in part because adolescents learn family alcohol use norms by observing their parents drinking behaviors and imitating their parents drinking behaviors.

Parenting Style

Parenting style refers to how parents socialize their children to family and socio-cultural norms by establishing behavioral expectations and creating an emotional environment within which children develop (Jackson, Henrikson, & Dickinson, 1999; Darling & Steinberg, 1993; Baumrind, 1991). Baumrind (1991) posited that parents establish their parenting style early in their children's life and maintain a constant or similar style throughout the child's adolescence. Parenting style is derived from parents' overall belief systems and reflects broad socialization goals parents have for their children. Ideally, parents' goals aim to foster their children's competencies to participate

in their family and other social groups by developing prosocial and avoiding antisocial behaviors (Darling & Steinberg, 1993; Baumrind, 1991). Parents' belief systems remain relatively stable over time, and, therefore the general behaviors they enact to socialize their children, or parenting style, also endures throughout adolescence.

Some researchers have used demandingness and responsiveness dimensions to conceptualize parenting style. *Demandingness* is parents' use of rules, supervision and consequences to establish and reinforce behavioral expectations. *Responsiveness* is parents' response to their children's needs and behaviors through involvement and emotional support. The optimal parenting style includes high levels of parental demandingness and responsiveness and is sometimes called "authoritative parenting." Authoritative parenting style has been associated with better adolescent academic achievement and health outcomes when compared with parenting styles that include either low demandingness or responsiveness or both (Fletcher, et al., 2004; Wood, et al., 2004; Gray & Steinberg, 1999).

Some researchers have combined demandingness and responsiveness to create a single parenting style construct. One approach, the parenting style typology, crosses high and low categories for demandingness and responsiveness to create four distinct parenting styles (Darling and Steinberg, 1993, Baumrind, 1991). Another approach combines indicators of demandingness and responsiveness to create a single latent factor of parenting style (Cleveland, Gibbons, et al., 2005, Kim & Brody, 2005, Darling & Steinberg, 1993). Although the typology approach allows researchers to compare parenting styles with different levels of demandingness and responsiveness (i.e., high and low), the typology does not allow for testing the separate effects of demandingness and

responsiveness. Similarly, the latent factor approach combines the effects of demandingness and responsiveness and does not even allow for comparison of high and low demandingness and responsiveness categories.

A multidimensional approach to measuring parenting style assumes that demandingness and responsiveness have distinctive effects on adolescent alcohol misuse and allows for testing such effects (Cox, 2006, Fletcher, Steinberg & Williams-Wheeler, 2004; Barnes, et al., 2000, Gray & Steinberg, 1999). Among the few studies to examine the dimensions separately, Gray and Steinberg (1999) found that high parental demandingness was most influential in reducing problem adolescent behaviors, whereas high parental responsiveness influenced a greater range of adolescent outcomes.

Demandingness

Demandingness includes parental behaviors intended to generally influence adolescent behavior by setting rules and supervision and is not specific to a particular content area (Cox, 2006, Jackson, et al., 1999, Darling & Steinberg, 1993). Parental supervision includes parents' efforts to gain information, either from their children or other sources, about children's activities and to supervise activities (e.g., being present at social events) (Barnes, et al. 2005; Simons-Morton & Chen, 2005; Van der Horst, et al., 2005; Rai, Stanton, Wu, Li, et al. 2003; Barnes, Farrell, et al., 2000, Beck, et al., 1999, Reifman, Barnes, et al., 1998, Barnes & Farrell, 1992, Baumrind, 1991). Rule setting and supervision are ways in which parents exert behavioral control over adolescents because they establish parents' behavioral expectations and enforce expectations through supervision and consequences.

High levels of parental supervision have been consistently associated with less alcohol use and misuse in general populations of adolescents (Barnes, Welte, et al. 2005, Simons-Morton & Chen, 2005, Van Der Horst, Engels, et al, 2005, Rai, Stanton, et al., 2003, Barnes, Farrell, et al., 2000, Li, Stanton & Feigelman, 2000; Beck, Boyle and Boekeloo, 2004. Beck, et al. 1999; Reifman, et al., 1998; Barnes and Farrell, 1992; Baumrind, 1991). Conversely, low parental supervision or “neglectful” parenting has been associated with increased alcohol misuse in both clinical and community populations of adolescents (Clark, Thatcher, Maisto, 2005). Although parents’ supervision of adolescents’ social activities has not been well researched, one study found that adolescents who had negotiated with their parents for unsupervised time reported greater alcohol misuse than their peers who did not have specified unsupervised time (Borawski, et al., 2003).

Responsiveness

Responsiveness refers to parental behaviors that demonstrate love, nurturance, involvement and acceptance (Darling & Steinberg, 1993; Barnes & Farrell, 1992; Baumrind, 1991). Responsiveness includes parents’ attention to adolescents’ emotional and developmental needs (Jackson, et al., 1999), and during adolescence this likely includes parents’ attention to substance use issues such as alcohol exposure and use. Researchers have used various measures within the domain of responsiveness, such as parental involvement and parents’ efforts to provide encouragement, praise, active listening and feedback, although they have not always explicitly conceptualized such measures as part of parenting style (Barnes & Farrell, 1992; Barnes, et al, 2000; Jackson, et al., 1999; Darling & Steinberg, 1993). Research on the effect of parental

responsiveness, therefore, includes studies that measure one or more parental behaviors within the responsiveness domain.

High levels of parental responsiveness have been associated with less adolescent alcohol use and misuse (Barnes & Farrell, 1994; Hawkins, et al., 1992; Windle, 1992). In longitudinal studies, high parental responsiveness, as indicated by involvement and support, has predicted lower rates of progression from alcohol abstinence or experimentation to alcohol misuse (Simons-Morton and Chen, 2005; Wood, et al., 2004; Barnes, et al., 2000). These studies support that parental responsiveness influences adolescent alcohol use even after adolescents have initiated drinking alcohol.

Alcohol-Specific Parental Practices

Domain-specific parental practices are distinct from parenting style because they are behaviors parents use to influence adolescent behavior in a particular content area, such as alcohol misuse. Parents' alcohol-specific practices include alcohol monitoring, communication about alcohol rules and enforcing alcohol rules through consequences (i.e., discipline). Although each of these parental practices may have significant effects on adolescent alcohol misuse, less is known about the influence of alcohol-specific practices on adolescent alcohol misuse, compared with parenting style. Parental socialization research, therefore, must examine the effects of both parenting style and alcohol-specific parental practices.

Parental Alcohol Monitoring

Although parental alcohol monitoring has not been as well studied as general parental supervision (i.e., demandingness), the few existing studies on alcohol-specific

monitoring have consistently found a strong negative association between monitoring for alcohol and adolescent alcohol misuse. (Simons-Morton & Chen; Diclemente, et al., 2001; Reifman, et al., 1997). Simons-Morton & Chen (2005) included alcohol-specific monitoring as an indicator of general parental supervision. Nonetheless, the study found that higher levels of supervision including alcohol monitoring were associated with less alcohol use.

Parental Alcohol Communication

Alcohol communication has not been widely studied, and existing studies have mixed findings. Jackson, et al, (1999) found that perceived alcohol rules were not significantly associated with alcohol use in younger children. Van der Horst, et al (2006) found that parent reports of having alcohol rules were negatively associated with alcohol initiation in adolescents, but were only indirectly associated with later adolescent alcohol use and misuse through prior adolescent alcohol use. In a separate study, Van der Horst, et al., (2005) found that strict rules reported by adolescents were negatively associated with adolescent alcohol use.

Rules indicate parents' permissiveness or strictness with respect to their children using alcohol by conveying specific behavioral expectations about avoiding alcohol, for example, or using alcohol within certain limits (Van der Horst, et al., 2006; Van der Horst, 2005). Importantly, parents who have alcohol rules may or may not communicate rules to their children (Van der Horst, 2006). Parents' reports of having alcohol rules, therefore, may reflect parental values with respect to alcohol, but are not equivalent to parental practice of communicating alcohol rules.

Parents likely communicate alcohol messages to impart family norms and behavioral expectations (i.e., alcohol rules) and respond to potential safety concerns (e.g., riding in a car with someone who has been drinking). They also may communicate reasons for avoiding alcohol, such as loss of control or potential negative health consequences, or acceptable alcohol use, for example, sips in front of the parent. Adolescents' perceptions that their parents would permit them to have a certain number of alcoholic drinks or have alcohol within a particular context has been associated with higher rates of adolescent alcohol use (Van der Vorst, 2005) and misuse (Wood, et al., 2004), suggesting that adolescents drink more when they believe their parents are permissive with respect to alcohol use.

Another aspect of parental communication about alcohol is the context within which parents deliver alcohol-related messages including rules, alcohol-related behavior (e.g., riding in a car with someone who has been drinking), family alcohol norms and consequences of alcohol use (Jaccard, Dodge & Dittus, 2002, Ennett, 2001). The effect of parental alcohol communication on adolescent alcohol use may depend on the family context in which messages are delivered and adolescents' understanding and attention to such messages. This context includes parental levels of demandingness and responsiveness, which are indicators of the general family environment, as well as parental alcohol use.

Parent Alcohol Use

Parental alcohol use is an important component of parental socialization related to adolescent alcohol misuse. Social Learning Theory posits that children learn behavioral standards and are socialized by observing behaviors of family members and others with

whom they identify (observational learning) (Bandura, 1986). Parents are usually the most important behavior models throughout childhood and remain important models through adolescence, even as peers become more influential to adolescent alcohol use (Steinberg, 2001, Wood, et al., 2004). Empirical evidence also supports the link between parental alcohol use and the onset and progression of adolescent alcohol use (Yu, 2003, White, et al., 2001, Richter, L. & Richter, 2001). Parental alcohol problems including alcohol dependence and alcohol-related social problems are particularly important predictors of adolescent alcohol misuse (Coffelt, et al., 2005, Chassin, et al., 2002, White, et al., 2001).

While parental alcohol use is a component of parents' alcohol use socialization, whether it is a parental practice is debatable. One distinction may be whether parents intentionally change their alcohol use in an attempt to influence their children's alcohol use. Some parents, for example, may moderate their alcohol use in an effort to model appropriate alcohol behaviors or choose to not drink in front of their children to limit their children's exposure to alcohol-related behaviors. Other parents, however, may not alter their drinking behavior in anticipation of any effects on their children. In either case, inclusion of parental alcohol use as a covariate is important when testing models of parental alcohol socialization.

Influence of Parental Socialization on Adolescent Alcohol Misuse

The importance of parental socialization continues through adolescence, even as the peer context becomes more influential to adolescent behavior in general and alcohol use in particular (Steinberg, 2001). Different types of parental behaviors may influence each other as well as adolescent alcohol misuse. Parental demandingness and

responsiveness could be the general context within which alcohol-specific practices are implemented by parents and interpreted by adolescence, or they could predict the types of alcohol-specific practices parents choose to implement. To understand the process through which parental socialization affects adolescent alcohol misuse, researchers must clarify relationships between dimensions of parenting style and alcohol-specific parental practices, as well as the pathways through which these behaviors influence adolescent alcohol misuse. Two alternative models of parental socialization explain different pathways through which demandingness and responsiveness and alcohol-specific practices influence adolescent alcohol misuse.

Moderating Model

Darling and Steinberg (1993) posited that parenting style moderates the relationship between content-specific parental practices and adolescent behavior by altering the effectiveness of such practices. Parents with high levels of demandingness and responsiveness are more likely than parents with other styles to establish family behavioral norms and adapt responses to their children's needs and behaviors early in their children's lives. Hence, children who develop in families with highly demanding and responsive parents are more likely than their peers in other family environments to pay attention to their parents' rules and expectations when they reach adolescence. This includes adolescents' recognition that behavioral expectations are in place and their willingness to adhere to such expectations across various content areas, such as alcohol and other substance use.

A moderating model suggests that parenting style that includes high levels of demandingness and responsiveness would enhance the effects of alcohol-specific

practices on adolescent alcohol use, such that practices are more likely to influence adolescents to avoid alcohol use. Parenting style that includes either or both low demandingness or responsiveness (or low on both) may diminish the effects of parental alcohol practices or may have an antagonistic effect (Frazier, Tix & Baron, 2004) where the interaction between parenting style and parental alcohol practices causes an increase in adolescent alcohol use. In both cases, adolescents may reject their parents' efforts to monitor alcohol use or the alcohol messages parents communicate because their parents have not established general family norms and responses that reinforce behavioral expectations.

Although Darling and Steinberg's model is theoretically plausible, few studies have tested whether parenting style moderates the relationship between substance use-specific parental practices and adolescent outcomes (Chassin, et al., 2005; Van der Horst, et al., 2006). Chassin, et al. (2005) tested whether parenting style moderated the effects of smoking-specific parental practices on adolescent smoking. They found that adolescent-reported parenting style did not moderate the effect of smoking-specific discipline and communication on adolescent smoking probably due to the lack of associations between the parenting style and adolescent smoking. Van der Horst, et al., (2006) examined the relationships between two aspects of parenting style, attachment (related to responsiveness) and control (related to demandingness) in a longitudinal study of adolescent alcohol use. They found that increased parental attachment did not moderate the negative effect of control on the early development of adolescent alcohol use. Additional studies are needed in alcohol-specific socialization to better understand

whether parenting style dimensions alter the effectiveness of alcohol-specific practices on adolescent alcohol misuse.

Mediating Model

An alternative to the model posited by Darling and Steinberg is one in which parental demandingness and responsiveness influence alcohol-specific practices, which in turn influence adolescent alcohol use (mediating model). A mediating model is plausible because parents who are highly demanding and responsive may implement specific practices, such as communicating family alcohol norms or messages about avoiding alcohol dangers (e.g., riding in a car with someone who has been drinking) because they expect their children will be exposed to alcohol through peers and other sources. Alcohol-specific parental practices would, in turn, affect adolescent alcohol use. Additionally, parents who are highly demanding must communicate their expectations to their children and must enforce their rules. Hence, these parents may be more likely than parents with low demandingness to explicitly communicate alcohol messages, and they may be more likely to take actions that reinforce their socialization goals, such as monitoring their children's behaviors and environment (e.g., checking their child's room) for alcohol use.

Although mediating models that explain processes that influence alcohol use are emerging in substance use literature (Chassin, et al., 2005, Barnes, et al., 2000), many studies in this area focus on how parenting style affects intermediate adolescent characteristics that predict alcohol use, such as risk perceptions (Cleveland, Gibbons, Gerrard, et al. 2005), self efficacy to resist peer pressure (Watkins, Howard-Barr, Rienzo, Pigg & James, 2006, Cleveland, et al. 2005) self-regulation (Kim & Brody, 2004), and

peer selection (Brown, Mounts, Lambourn, & Steinberg, 1993). There is little empirical support for a mediating model that links parental demandingness and responsiveness to alcohol-specific parental practices. However, a direct comparison between a moderation and mediation model, as proposed in this study, will contribute to a conceptual clarification about the causal mechanism through which parental socialization influences adolescent alcohol misuse.

Race Group Comparisons of Parental Socialization

Although cross-race/ethnic studies of parental socialization and adolescent substance use are extremely limited, their findings are somewhat consistent. Studies that have included parenting style and other family factors (e.g., family cohesion, decision-making) have found that high parental demandingness and responsiveness similarly predicted lower adolescent alcohol use across Black (African-American), White and Latino adolescent subgroups (Goldstein, et al., 2005, Bray, et al., 2001, Griffin, et al., 2000) In addition, within-group studies of parental socialization in Black families have found significant negative associations between “effective parenting,” which included high responsiveness, and reduced adolescent alcohol use (Brody & Kim, 2004).

Research on parental socialization and adolescent outcomes other than alcohol use is less consistent than within alcohol research. Some researchers have found few differences in the effects of parental socialization on adolescent problem behaviors across ethnic groups (Vazsonyi & Pickering, 2003; Thomas, Farrell, & Barnes, 1996), while others have found very different effects of parental socialization on adolescent behaviors (Cox, 2006, Patcher, Auinger, Plamer & Weitzman, 2006; Huebner & Howell, 2003; Walker-Barnes & Mason, 2001). For example, Cox (2006) found that maternal

demandingness predicted increased likelihood of condom use among African-American adolescents, but decreased likelihood of condom use among White adolescents. In addition, some researchers who study cultural differences across families have found that, while the meaning and effect of some parental practices differ by race/ethnic groups, “effective parenting,” is equally protective against the development of problem behavior across race/ethnic groups (Simons, Simons, Burt, et al., 2006; Simons, Simons and Wallace, 2004; Brody, 2002, Steinberg, 2002).

Inconsistent findings may be due in part to differences in variables used in parental socialization models. There also may be greater race/ethnic group differences in how parental socialization affects certain adolescent outcomes, such as sexual behaviors, but fewer race/ethnic group differences in how it affects adolescent alcohol misuse.

Many questions about cross-race/ethnic differences in parental socialization and adolescent outcomes remain unanswered. A paradigm shift in developmental research, during the past twenty years, has increasingly emphasized the study of developmental and socialization *processes* over group mean-level comparisons to infer causal relationships about ethnic group differences (Steinberg & Fletcher, 1998; Rowe, et al., 1994; Bronfenbrenner & Crouter, 1986). Therefore, cross-race/ethnic group comparisons must clarify whether or not the parental socialization process differs across race groups. By stratifying the sample in the present study by race group, race is conceptualized as a context within which parental socialization occurs, versus an effect that should be controlled for (Steinberg & Fletcher, 1998; Bronfenbrenner & Crouter, 1986).

CHAPTER 3: CONCEPTUAL MODELS

Study Purpose

The purpose of the study was to test two models of parental socialization that include dimensions of parenting style demandingness and responsiveness and alcohol-specific parental practices, alcohol monitoring and negative, permissive and alcohol contingency messages, while controlling for the effects of parental alcohol use. In particular, the study examined the extent to which:

- a) parental demandingness and responsiveness each *moderated* the relationships between alcohol-specific parental practices and adolescent alcohol misuse (Model 1),
- b) alcohol-specific parental practices *mediated* the relationships between parental demandingness and responsiveness and adolescent alcohol misuse (Model 2), and
- c) the patterns of relationships in each model differed by race group.

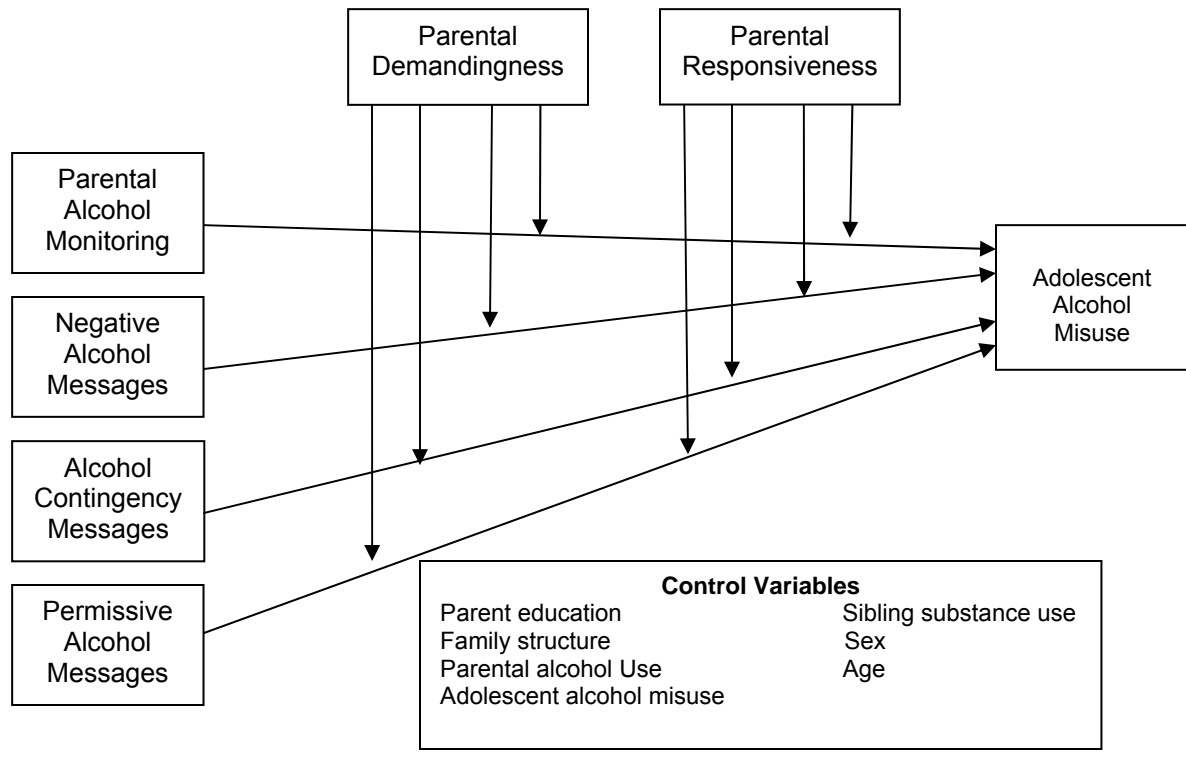
Research Questions and Hypotheses

To achieve the study purpose, I addressed the following research questions:

Research Question 1 (Moderation Model)

Do parental demandingness and responsiveness each moderate the relationships between alcohol-specific parental practices and adolescent alcohol misuse? (Figure 3.1)

Figure 3.1 Moderation Model with Control Variables (Model 1)



Hypotheses 1 and 2

Darling and Steinberg (1993) posited that parental demandingness and responsiveness moderate the relationships between domain-specific parental practices and adolescent outcomes. Model 1 tests Darling and Steinberg’s moderation hypothesis. Parental demandingness and responsiveness, therefore, were expected to moderate the relationships between parental alcohol-specific practices and adolescent alcohol misuse such that:

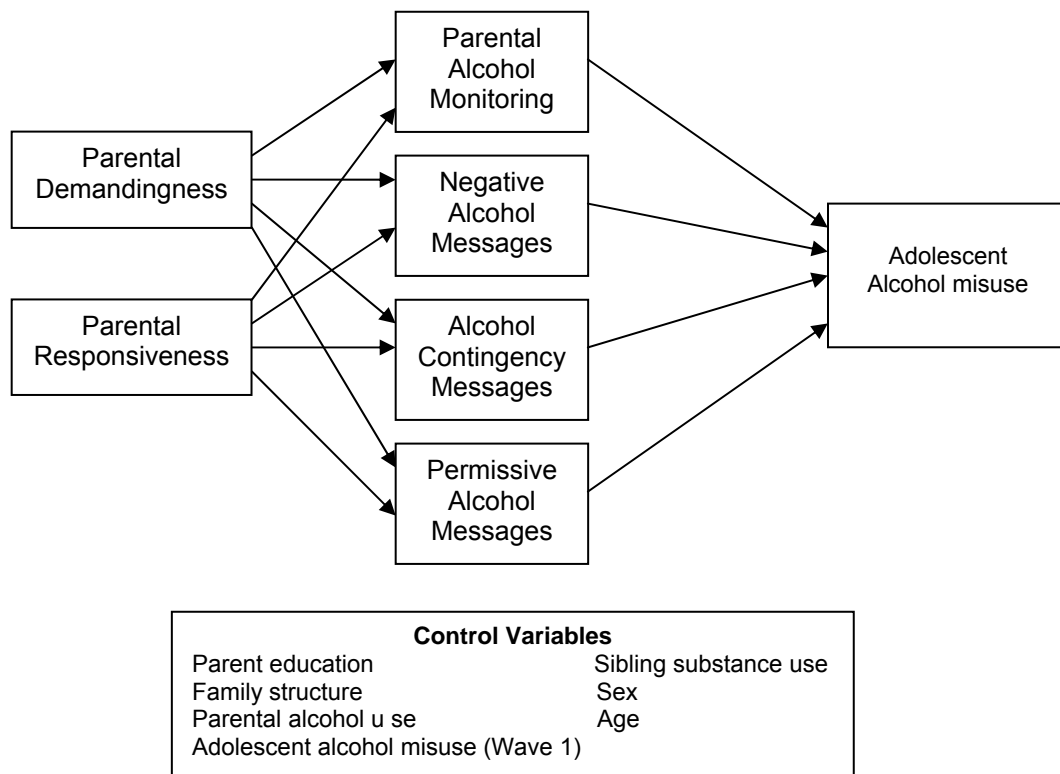
H1: The negative associations between alcohol monitoring, negative alcohol messages and alcohol contingency messages and adolescent alcohol misuse will increase as demandingness and responsiveness each increases.

H2: The positive association between permissive alcohol messages and adolescent alcohol misuse will decrease as parental demandingness and responsiveness each increases.

Research Question 2 (Mediation Model)

Are the relationships between parental demandingness and responsiveness mediated by alcohol-specific parental practices, such that demandingness and responsiveness each predict alcohol-specific parental practices, which in turn each predict adolescent alcohol misuse? (Figure 3.2)

Figure 3.2 Mediation Model with Control Variables (Model 2)



Hypotheses 3-6

The mediation model posited that parents with high demandingness and high responsiveness would be more likely to implement certain alcohol-specific parental practices than parents who were low on these dimensions. Parents likely implement alcohol-specific practices because they anticipate their children will be exposed to alcohol and will face decisions about alcohol use during adolescence. However, there may be differences in the strength of relationships between demandingness and responsiveness and each alcohol-specific parental practice. Parental alcohol monitoring is likely more of an extension of parental demandingness than responsiveness because alcohol monitoring is a form of parental supervision and a way for parents to garner information about whether their children are adhering to behavioral expectations. In addition, negative messages such as “alcohol is not healthy” and “can lead to alcoholism” may be communicated by parents as a rationale for behavioral rules about alcohol, particularly if parents have strict rules that emphasize no acceptable alcohol use. Therefore, negative messages may be more of an extension of demandingness than responsiveness.

Alcohol contingency messages, which include information about contingent events such as, “if you ever drink, you should call home for a ride,” may be more of an extension of parents’ responsiveness to their children’s potential exposure to danger than an extension of demandingness. Permissive messages are different than other alcohol-specific parental practices because parents with high responsiveness but low demandingness may communicate these messages. Some parents, for example, may communicate permissive messages, such as “if s/he ever wants to have a drink s/he can

have sips in front of you,” if they believe that allowing their children to drink at home is a safer alternative to drinking elsewhere (responsiveness). In contrast, parents who have strict behavioral expectations probably have rules about avoiding alcohol and therefore would be much less likely to convey permissive messages than parents who may have inconsistent or non-specific behavioral expectations. Nonetheless, permissive alcohol messages are probably more a function of responsiveness than demandingness because they reflect parents’ conscious efforts to be supportive of their children by influencing how and when their children drink versus establishing strict rules about alcohol use.

Alcohol-specific parental practices, therefore, were hypothesized to mediate the relationships between parental demandingness and responsiveness and adolescent alcohol misuse, such that:

H3: As parental demandingness and responsiveness each increases, parental alcohol monitoring, alcohol contingency messages and negative alcohol messages will increase, which in turn will predict lower odds of adolescent alcohol misuse.

H4: As parental demandingness decreases and responsiveness increases, permissive alcohol messages will increase, which in turn will predict higher odds of adolescent alcohol misuse.

H5: Demandingness will be a stronger predictor of alcohol monitoring and negative messages than responsiveness.

H6: Responsiveness will be a stronger predictor of alcohol contingency messages and permissive alcohol messages than demandingness.

Research Question 3

Do the patterns of relationships specified in the models differ by race group?

Hypothesis 7

Parental demandingness and responsiveness have been associated with adolescent alcohol use across race/ethnic groups. Some studies show that mean levels of parental demandingness and responsiveness differ by race group. Few studies, however, have examined whether the direction and strength of the relationships between parenting style dimensions, alcohol-specific practices and adolescent alcohol misuse differ.

Developmental research increasingly emphasizes the study of developmental and socialization *processes* over group mean-level comparisons to infer causal relationships about race group differences (Steinberg & Fletcher, 1998, Rowe, et al., 1994, Bronfenbrenner & Crouter, 1986). Rowe, et al. (1994), for example, have shown that strength and direction of the relationships between adolescent individual traits and health outcomes in adolescents are similar for different race/ethnic groups, even when mean levels of such traits or outcomes differ by race/ethnic group. Further, empirical evidence on parenting style dimensions and adolescent alcohol use do not support race group differences in how parental socialization influences adolescent alcohol misuse.

Therefore, I expect the pattern of relationships between the parenting variables to be similar across race group.

H7: The overall pattern of associations among parental demandingness, responsiveness, alcohol monitoring and negative, permissive and alcohol contingency messages will not differ by race group.

CHAPTER 4: METHODS

Data Source and Study Design

The study was a secondary analysis of data collected by the *Context of Adolescent Substance Use* (Context Study) from Spring 2002 to Spring 2004. The Context Study is a longitudinal study of middle and high school students and their parents that was designed to examine the development and interrelationships among adolescent risk behaviors and the contribution of individual and contextual factors to development of those behaviors (Ennett, et al., 2006). The study was funded by the National Institute on Drug Abuse (R01 DA13459). The study's multiple data collection waves and linked adolescent and parent samples (also called the core sample) ideally suited the study's aims.

Institutional Review Board Approval and Participant Consent

The present study was exempted from Institutional Review Board (IRB) review because it is a secondary analysis of Context Study data, and all Context protocols were approved by the UNC-CH Public Health IRB and the Wake Forest University School of Medicine IRB. A Determination of IRB Approval (waiver) was submitted to the UNC-CH Public Health IRB.

For the Context Study, a waiver of written parental consent was approved. Parents were notified about the study by letter (first class postage mailed and sent home with the child) each academic year and could refuse their child's participation by returning a postage-paid signed form or by calling a toll-free number. Contact information for

parents was obtained each academic year from the participating school systems. Students enrolling mid-year were consented for the spring data collection. Adolescents provided written assent for participation at each wave of data collection. Parents provided verbal consent for their own participation in the telephone interview at each data collection wave.

Adolescent Sample and School-based Data Collection

The Context Study was conducted in three North Carolina counties, and all public schools with grades 6 – 12 were included in the study (i.e., middle schools, high schools, K-8, and alternative schools). There were five waves of data collection. At Wave 1, students were in grades 6, 7, and 8 in 13 schools, and 88% of eligible students (5,220 of 5,906) completed the survey. At Wave 5, students were in grades 8, 9, and 10, and 76% of eligible students (4,676 of 6,161) completed the survey. New students were able to enter the study at each wave, which explains the variation in eligible students from Wave 1 to Wave 5 (5,906 to 6,161). At each Wave, all adolescents at the grade levels targeted were eligible for the study except for those in self-contained classrooms for Exceptional Children (EC) and those with insufficient English language reading skills to complete the questionnaire in English. The racial background of students at Wave 1 included: 56% White, 37% Black, 1% Hispanic, 6% other race/ethnicity.

School-based data collection was scheduled in advance and at least one make up day for absentee students was scheduled each wave at each school. Trained data collectors followed a written protocol for describing the study, obtaining assent, and giving instructions for completing the adolescent questionnaires. Adolescents completed

the self-administered questionnaire in classrooms or larger group settings (e.g., cafeteria) in approximately one hour.

Parent Sample and Phone Interviews

The Context Study randomly sampled approximately one-third of parents (N=2,053) whose children completed Wave 1 surveys, and 81% of sampled parents (N=1,663) completed the Wave 1 phone survey. Parents were invited to participate in the annual phone survey for three Waves of data collection that corresponded with Wave 1, Wave 3 and Wave 5 of the school-based data collection. The Wave 3 response rate was 83% of the Wave 1 sample. Trained data collectors administered the parent telephone interviews. The interview lasted approximately 25 minutes. By design, in the majority of cases (96%), the mother or mother surrogate was the parent interviewed.

Core Sample

The core sample is the sub-sample for which both adolescent and parent data are available (N=1,663). These data are available for Waves 1, 3 and 5, although some cases were missing for either or both Waves 3 and 5.

Study Sample

The sample for the current study included 1,102 of the 1,663 families (66%) from the core sample of adolescents and parents. Eligible families (i.e., adolescent and parent pairs) included those with a parent who completed a Wave 1 phone survey *and* an adolescent who completed a Wave 5 survey (n=1,265), those adolescents with no missing data on the dependent variable, adolescent alcohol misuse (n=1,173), and those adolescents who reported their race/ethnicity as Black (n=419) or White (n=754). Analysis was restricted to Black and White adolescents and parent groups because there

are insufficient numbers in other race/ethnic groups for the analysis. Among the 1,265 adolescents who completed a Wave 5 survey, 92 (7%) were excluded because they were missing data on all 12 indicators of alcohol misuse, and 71 (6%) also were excluded because they were a race other than White or Black. The final analysis sample included 723 White and 379 Black adolescent and parent pairs.

Study Measures

Context Pilot Studies

The Context pilot studies were conducted in Forsyth County, North Carolina. The first pilot was conducted with students and parents in a single middle school, and the second pilot was conducted with students only in a second middle school. The purpose of the pilots was to refine the study instruments and data collection procedures. Particularly relevant to my dissertation study, the Context pilot studies tested the full Authoritative Parenting Style scale, developed by Jackson, Henrickson & Foshee (1998), to identify sub-scales for responsiveness and demandingness that had adequate reliability and a satisfactory number of items (i.e., at least three items) to allow demandingness and responsiveness to be measured as latent factors in a structural equation modeling analysis approach. Reduced scales were used because of the large number of variables measured in the Context Study questionnaires.

The current study uses Context's Waves 1 and 3 for parent measures and Waves 1 and 5 for adolescent measures. Adolescent alcohol misuse at Wave 1 is included in the models as a control variable and alcohol misuse at Wave 5 is the dependent or outcome variable. Adolescent alcohol misuse is predicted at Wave 5 (grades 8-10) instead of

earlier waves because adolescent alcohol misuse is more frequent during high school than middle school years.

Predictor Variables

As described in the Analysis Strategy section, confirmatory factor analyses were conducted to assess whether each set of scale items adequately measured the corresponding latent factor (predictor variable) and to examine whether the measurement structures of all predictor variables were equivalent across White and Black race groups. Cronbach alphas also were generated for each set of scale items and compared by race group. These preliminary analyses confirmed that the measures used in the study were equivalent across race group, at least at the measurement structure level.

To maximize available data for parent variables, data from Waves 1 and 3 were combined to create parent variables measures. That is, all parent variables are mean scores of Wave 1 and 3 data. Using the mean scores from Waves 1 and 3 provided more reliable measures than using only Wave 1 or Wave 3 measures and eliminated missing data for parent predictor variables almost completely. Parental demandingness and responsiveness were sub-scales of an established scale, described below. The alcohol-specific parental practices were created by identifying sets of items that were conceptually related to each parental practice and then confirming that the sets of items adequately loaded onto the specified latent factors in the confirmatory factor analysis.

For demandingness and responsiveness, respondent parents reported their own behaviors, as well as behaviors for the other parent in two-parent households (94%). Parental demandingness and responsiveness measures are a mean score of the respondent parent and other parent in the household when available.

Respondent parents also reported their own behaviors for alcohol monitoring, negative and permissive alcohol messages and alcohol contingency messages, but were not asked about the other parents' alcohol-specific practices. Therefore, parental alcohol-specific practices were measured as the average of the Wave 1 and 3 scores for the respondent parent.

Parental demandingness was a continuous variable measured by a three-item subscale from the Authoritative Parenting Index (Jackson, Henrickson & Foshee 1998). The demandingness subscale items included: "How often do you...have rules [child's name] must follow...tell [child's name] a time when he/she must come home... ..make sure that (name) does not stay up too late. Item responses were reverse coded (Often = 4, Sometimes = 3, Rarely = 2 and Never = 1), and an mean score for the three items for both parents and waves was calculated to create a continuous scale ranging from 1 to 4. The Cronbach alphas for the scale created using Waves 1 and 3 were: White = .62 and Black = .65.

Parental responsiveness was a continuous variable measured by a three-item subscale from the Authoritative Parenting Index (Jackson, Henrickson & Foshee 1998). Scale items included: "How often do you...make [child's name] feel better when he/she is upset...tell [child's name] when s/he does a good job on things... You want to hear his/her problems?" Item responses were reverse coded (Often = 4, Sometimes = 3, Rarely = 2 and Never = 1), and a mean score for the three items for both parents was calculated to create a continuous scale ranging from 1 to 4. The Cronbach alphas for the scale created using Waves 1 and 3 were White = .82 and Black = .81.

Parental alcohol monitoring was a continuous variable measured by a summed scale that consists of two dichotomous items (range = 0-2). Item responses were coded Yes and No. Items included: “Have you checked (child’s name) room or other places for evidence of tobacco, alcohol or other drug use?” and “Have you ever looked for signs that (name) might have smoked or used other kinds of tobacco, drank, or used marijuana or other drugs?” The Cronbach alphas for the scale created using Waves 1 and 3 were: White = .82 and Black = .80.

Negative alcohol messages is a continuous variable that is measured by a summed scale that includes three dichotomous items. Items include *Have you ever told [child’s name]...* “Drinking can cause loss of control...Drinking can lead to alcoholism...Drinking is not healthy?” Item responses were coded Yes and No, and sums were calculated for the three items (range = 0-3). The Cronbach alphas for the scale created using Waves 1 and 3 are: White = .80 and Black = .85.

Alcohol contingency messages is a continuous variable that was measured by a summed scale that includes three dichotomous items. Items include: *Have you ever told [child’s name]...* “If s/he ever wants to try a drink, s/he should talk with you first...S/he she call home to be picked up if s/he does drink...If or when s/he does drink s/he should drink responsibly.” Item response were coded Yes and No, and sums (range = 0-3) were calculated for the three items. The Cronbach alphas for the scale created using Waves 1 and 3 are: White = .69 and Black = .71.

Permissive alcohol messages is a continuous variable that is measured by a summed scale that includes two items. Items include *Have you ever told [child’s name]...* “Under some circumstances, it’s okay to have sips of a drink, like with parents

or for special family occasions...If s/he ever wants to try a drink, s/he can have sips at home in front of you.” Item responses were coded Yes and No, and sums were calculated for the two items (range = 0-2). The Cronbach alphas for the scale created using Waves 1 and 3 were: White = .69 and Black = .62.

Adolescent Alcohol Misuse

Adolescent alcohol misuse is a nominal variable collapsed from an index of 12 items measuring alcohol misuse (Table 5.2). The variable response categories, yes/no, contrasted those adolescents who endorsed any of the 12 items with those who endorsed none of the items. Originally, adolescent alcohol misuse was conceptualized as a continuous variable. The distributions of the 12 items were extremely skewed, and the original mean scale, therefore, also was extremely skewed. At Wave 1, 7% of White and 9% of Black adolescents reported alcohol misuse. At Wave 5, 31% of White and 20% of Black adolescents reported alcohol misuse. Most adolescents reported they had engaged in one or two of the twelve misuse behaviors. The confirmatory factor analysis confirmed that all 12 items loaded on the latent factor, “alcohol misuse.” Thus, a nominal variable was created, and adolescents who engaged in at least one of the twelve behaviors was categorized as “yes” for adolescent alcohol misuse.

Race Group

Adolescent reported race group is a nominal variable that includes Black and White categories. Race group is used to stratify the sample into White and Black subsamples for all analyses. White and Black variables that represented adolescents’ modal responses from all available waves were created by the Context Study and were used in the present study.

Control Variables

Several factors associated with adolescent alcohol misuse and parent characteristics are included in the models as control variables. Wave 1 measures are used for all control variables.

Parental alcohol use (parent report) was a continuous variable measured as the highest number of drinks consumed by either parent on days they drank during the last three months. The variable ranged from 0-5. Parents reported their own alcohol use and, in two-parent homes, the other parent's use. The parent who consumed the most drinks on days they drank was selected as the highest value for two-parent homes.

Sibling substance use (adolescent report) was a continuous variable measured as the number of siblings who engaged in each of five substance use behaviors at least once a month including: drink alcohol, smoke cigarettes, use other kinds of tobacco (chewing tobacco, snuff, cigars, etc.), smoke marijuana and use other drugs (cocaine, LSD, heroine, Ecstasy or other). The variable was created by calculating the mean of the mean number of siblings (0 to 4 or more) who engaged in each of the five substance use behaviors. The variable range was 0 to 4, with 4 representing that 4 or more siblings engaged in all five substance use behaviors.

Adolescent sex (adolescent report) is a nominal variable that was coded male (reference group) and female.

Parent education (parent report) was a dichotomous variable that indicated the highest level of education of either the respondent or other parent in two-parent families, or the respondent parent in single parent families. Parent education categories were high school education or less and more than high school education (reference group).

Family structure (parent report) was a nominal variable that was coded two-parent household (reference group) and other.

Adolescent age (adolescent report) was a continuous variable based on adolescents' reports of their actual birth date.

Analysis Plan

To achieve the study aims multiple statistical methods were used. Preliminary analysis included generation of descriptive statistics to screen data for problems (e.g., outliers, skewness and kurtosis) and to examine missing data; regression diagnostics to examine data for collinearity; examination of power analysis guidelines to ascertain the sample size required to detect moderation and mediation, and assessment of the intraclass correlation coefficient for school-level clustering to determine whether clustering needed to be considered in the model analyses. To assess measurement equivalence by race, confirmatory factor analyses were conducted for all predictor variables and Cronbach alphas were generated. Bivariate analyses were conducted including comparison of all demographic and predictor variables and the correlation matrices for White and Black adolescents. Finally, multiple logistic regression procedures and path analysis were used to test study hypotheses across race groups.

Results of the preliminary analyses are presented below followed by elaboration of the methods used to assess measurement equivalence and test study hypotheses.

Preliminary Analyses

Table 5.1 shows the number missing for each control variable. Because all parents in the core sample participated in the Wave 1 survey (N=1,663), there was very little missing data for individual measures at Wave 1. Combining Wave 1 and Wave 3

data eliminated almost all missing data for predictor variables, with at most one case missing for any predictor variable. The Maximum Likelihood Estimator (MLE) in MPlus was used to handle missing data for control variables. Unless data are missing for all predictor variables for a participant, the MLE uses all available data to estimate the dependent variable.

Correlation tests for multicollinearity confirmed that the predictor variables were not too highly correlated, and therefore, all predictor variables could be included in the models. As general guidelines, at least 200 cases are required to detect moderation and mediation, and the present study had sufficient samples of White and Black adolescents (Frazier, Tix & Baron, Aguinas, 2004).

The Context Study's design included students nested within schools. The intraclass correlation coefficient for school-level clustering on alcohol misuse, however, was near zero and non-significant ($-.008, p = .61$), indicating no clustering effect. Therefore, the analyses did not include a school level variable or multilevel design.

Measurement Equivalence

A major issue with respect to measuring parental socialization in majority (i.e., White) and minority (i.e., Black in this sample) families is whether measures are equivalent across groups and can, therefore, be interpreted in the same way. Cross-race/ethnic studies of adolescents and parents require careful examination of potential sources of bias when comparing groups who may differ on cultural factors that influence parental socialization and adolescent behavior. The vast literature on studying minority adolescents, and Black families in particular, includes numerous theoretical frameworks

and methodological considerations for measuring and interpreting family processes and norms for behaviors.

A broad assumption of many theories is that effective parenting is culturally relative and therefore differs across race/ethnic groups of parents as a function of cultural context (Peters, 1997; McAdoo, 1997). As such, two important considerations emphasized by many researchers are: how parenting behaviors are measured in minority populations relative to majority populations and how the influence of parental socialization on adolescent outcomes is interpreted. Some researchers who study minority adolescents have argued that a potential source of measurement error is a “cultural bias” that may exist when studies use measures that were originally tested in White populations and then applied in Black populations with the assumption that they function equivalently (Knight & Hill, 1998). Cultural bias would be a systematic variation in the effect of the predictor variables on adolescent alcohol misuse variables due to factors associated with race that are not directly measured.

One way to examine potential cultural bias is to test measurement equivalence across race groups (Knight & Hill, 1998). Measurement equivalence can be examined in multiple ways, but usually includes some test of measurement reliability and validity across race/ethnic groups. I examined measurement equivalence three ways. First, I compared the Cronbach alphas (i.e., reliability) for Black and White parents for each of the parenting style dimensions and the alcohol-specific parental practice scales, as reported with the description of the measures. Second, I examined the measurement structure of the predictor variables (i.e., validity) by conducting confirmatory factor analyses. Confirmatory factor analysis is commonly used to assess whether a set of

indicators adequately measures a latent factor that will then be modeled as a manifest variable (Thompson, 2004). To examine measurement structure by race group I compared two confirmatory factor analysis models: one in which race was constrained and one in which race was freely estimated. If the difference in X^2 model fit indexes is significantly different than zero, then the set of indicators does not equally measure a latent factor for different race groups, and an assumption of measurement equivalence does not hold. MPlus, by default, holds the first indicator of each factor constant (i.e., equal to “1”) when conducting confirmatory factor analyses, which is represented in the factor loadings reported in the results (Table 5.3).

Third, I stratified the study sample by race for all model analyses. I chose to use stratified samples of White and Black adolescents because including race as a moderator in the mediation model was not possible in MPlus and stratification was an option for examining race group differences. A stratified approach allowed for descriptive comparisons across race groups about the strength and direction of relationships specified in the models (Hui & Triandis 1985). However, a stratified approach does not allow for direct testing of race group differences, which would be possible if race were entered in the models as a moderator variable. Therefore, race group comparisons are descriptive and do not represent statistically significant differences between race groups.

Hypotheses Testing

Model analyses were conducted in MPlus 5.0. Two major advantages of using MPlus are that the software automatically generates tetra/polychoric transformations for categorical predictor variables and the Maximum Likelihood Estimator handles missing data for predictor variables, as previously described.

Procedures for testing moderation (Research Question 1) with observed variables in MPlus are analogous to multiple regression procedures used in other statistical packages, whereby interaction terms are defined and included in the model as predictor variables.

Path analytic procedures are used to examine the mediation model (Research Question 2). Path analysis, a type of structural equation modeling, is increasingly used by researchers to simultaneously estimate direct and indirect effects in multiple mediation models. For all model testing, parameter estimates were considered significant at $\alpha = .05$ and marginally significant at $\alpha = .10$. Model fit indices also were interpreted, and are described below for each model.

Moderation Model Testing (Hypotheses 1 and 2)

I expected to find that demandingness and responsiveness would significantly moderate the relationships between each of the four alcohol-specific parental practices and adolescent alcohol misuse.

To test Hypotheses 1 and 2, two models were compared for White and Black adolescents: the main effects model that included the control and predictor variables and the moderation model that included all the control and predictor variables and the interaction terms. The moderation model tested whether parental demandingness and responsiveness each moderate the relationships between each of the four alcohol-specific parental practices and adolescent alcohol misuse (MPLUS Manual, 2007). The main effects model was used to assess whether the set of interactions improved model fit through comparison with the moderation model. The Akaike Information Criterion (AIC) was used to compare models. The AIC is an indicator of model fit and parsimony,

with lower values indicating a better fitting and more parsimonious model compared with higher values (Schumacker & Lomax, 2004). The AIC is not intended to be interpreted within a single model, and therefore, was only used to compare models. The Wald Test of Parameter Constraints tests whether the set of interaction terms is significantly different from zero. A significant Wald Test indicates that the set of interaction terms differs from zero and individual interaction terms should be interpreted and probed. The Wald Test should be significant at the .05 level. The Wald Test is only interpreted if at least one interaction is significant.

Eight interaction terms were created: four interaction terms represented two-way interactions between demandingness and each of the four alcohol-specific parental practices (e.g., demandingness*monitoring for alcohol) and four interaction terms represented the interactions between responsiveness and each alcohol-specific parental practice. The control, predictor and moderator variables were estimated in the first model (main effects) and the interaction terms were added to the second model.

Equation 1 is the main effects model that includes all predictor and control variables. Equation 1 was $\hat{Y} = b_0 + b_1X_1 + b_2X_2 + b_3Z_1 + b_4Z_2 + b_5Z_3 + b_6Z_4 + b_7C_1 + b_8C_2 + \dots + b_{12}C_7 + e$, where \hat{Y} equals adolescent alcohol misuse, b_0 is the intercept, b_1 is the beta coefficient for the parenting style dimension X_1 , b_3 is the beta coefficient for the alcohol-specific parental practice Z_1 , b_7 is the beta coefficient for control variable C_1 and e is the model error term. Adolescent alcohol use is predicted by parental demandingness, parental responsiveness, alcohol monitoring, negative and permissive alcohol messages, alcohol contingency messages and the six control variables.

Equation 2 includes all main effects and control variables and the eight two-way interaction terms described above.

Equation 2 was $\hat{Y} = b_0 + b_1X_1 + b_2X_2 + b_3Z_1 + b_4Z_2 + b_5Z_3 + b_6Z_4 + b_7X_1Z_1 + b_8X_1Z_2 +$

$b_9X_1Z_3 + b_{10}X_1Z_4 + b_{11}X_2Z_1 + b_{12}X_2Z_2 + b_{13}X_2Z_3 + b_{14}X_2Z_4 + b_{15}C_1 + \dots$

$b_{21}C_7 + e$

Mediation Model Testing (Hypotheses 3 to 6)

I expected the relationships between each demandingness and responsiveness and adolescent alcohol misuse to be mediated by parental alcohol monitoring, negative and permissive alcohol messages and alcohol contingency messages.

The Maximum Likelihood Estimator was used to estimate individual parameter estimates. Parameter estimates (“paths”) for associations between parenting style dimensions and alcohol-specific practices are interpreted in the same way as multiple linear regression. Parameter estimates for paths that linked alcohol-specific parental practices, demandingness and responsiveness with adolescent alcohol misuse were estimated using logistic regression and were reported as logits.

Because all paths are simultaneously estimated in path analysis, traditional criteria for establishing mediation in a multiple regression framework do not strictly apply to interpretation of path estimates. More specifically, there was no estimate generated for a direct path from parenting style dimensions to adolescent alcohol misuse, without controlling for mediator variables, often referred to as the “c path” in multiple regression mediation procedures (Frazier, Tix & Barron 2003; Mackinnon, 2002; Baron & Kenny, 1986). The direct paths from parenting style dimensions to adolescent alcohol misuse were estimated controlling for the effect of all mediator and control variables,

often referred to as the “c’ path”. Therefore, direct comparison of c and c’ paths to determine the effect of a mediator is not possible. Instead, specific and total indirect effects were interpreted.

The *specific indirect effects* indicated whether a path from demandingness or responsiveness to adolescent alcohol misuse through a mediator candidate variable was significant. MPlus uses the products coefficient strategy, described by Sobel (1986, 1982). The Sobel test involves computing the product of the regression coefficients from the predictor to mediator (pathway a) and mediator to outcome path (pathway b) and dividing the product by the standard error term of the mediated effect.

The *total indirect effect* indicated whether the effect of demandingness or responsiveness on adolescent alcohol misuse variable was mediated by the entire set of mediator candidates. The total indirect effect is calculated using the multivariate extension of the delta method (Preacher & Hayes, in press). The delta method is computationally complicated, as it uses matrix algebra to calculate the total indirect effect from multiple ‘a’ and ‘b’ paths.

The model results included eight specific indirect effects: one each from demandingness through each of the four alcohol-specific parental practices and one each from responsiveness through each of the four alcohol-specific parental practices to adolescent alcohol misuse. The model results also included two total indirect effects, one each for demandingness and responsiveness.

A second difference between a path analytic and a multiple regression approach is that path analysis allows for estimating correlations between predictor variables or between mediator variables, which affects the path estimates and model fit indices. If,

for example, mediator variables are highly correlated, estimating such correlations could improve the model fit and may affect which potential mediators significantly predict an outcome variable. Yet a third difference between path analysis and multiple regression is that the focus of path analysis often is to examine how well a model “fits” the data sample versus examining the proportion of variance, or R^2 , explained in the dependent variable by a set of predictor variables. Nonetheless, a model R^2 is reported to inform model interpretation.

MPlus generates multiple model fit indices for path models, and three fit indices are used to interpret model fit for the mediation model. The Comparative Fit Index (CFI) and Tucker-Lewis index range from 0 to 1, with values at .95 or greater indicating good model fit. The Root Mean Square Error of Approximation (RMSEA) is a global fit index, with values equal to or less than .05 indicating good fit.

Race Group Comparison (Hypothesis 7)

I expected that the pattern of the relationships, that is the direction and strength, specified in the models would not differ by race group. To address this hypothesis, I first examined the pattern of relationships in the White and Black correlation matrices. Second, I examined the patterns of significant associations present in the mediation and moderation models. More specifically, I examined the strength and direction of relationships between variables in the models. Although stratifying the sample by race group does not allow for formally testing whether race significantly moderates relationships in the models, it allows for comparison of significant parameter estimates.

CHAPTER 5: RESULTS

Demographic Characteristics of the Sample

Table 5.1 shows key demographic characteristics of the sample by race group. The majority (66%) of adolescents were White. White and Black adolescents did not significantly differ by age. Adolescents in both race groups were mostly (>90%) 12 to 14 at Wave 1, with a small percentage of adolescents age 11 or older than age 14. Significantly more White (96%) versus Black (90%) adolescents lived in two-parent homes, and significantly more White than Black adolescents had at least one parent who has more than a high school education (93% vs. 85%).

White parents reported significantly higher alcohol use than Black parents. In particular, twice as many White versus Black parents (10% vs. 5%) had four or more drinks when they drank in the past three months. In addition, significantly fewer White versus Black parents (40% vs. 65%) had no alcohol in the past three months. In contrast to parental alcohol use, White adolescents had significantly fewer siblings who used substances than Black adolescents (mean = .16 vs. mean = .26, respectively).

Table 5.2 shows the percentage of White and Black adolescents who engaged in alcohol misuse at Waves 1 and 5. At Wave 1, White adolescents reported slightly less alcohol misuse than Black adolescents (7% vs. 9%), but the difference was not significant. By Wave 5, however, adolescent alcohol misuse among White adolescents

(30%) surpassed alcohol misuse among Black adolescents (20%), and the difference was significant.

At Wave 5, White and Black adolescents engaged in all types of alcohol misuse behaviors. White adolescents, however, were much more likely than Black adolescents to engage in each behavior, with statistically significant race group differences at Wave 5 for all but one of the twelve alcohol misuse items (Table 5.2). The most common adolescent alcohol misuse behaviors for both White and Black race groups, respectively, were having had two or more drinks when you drank (32.4% vs. 18.3%), at least one drink on three or more days (31.2% vs. 19.6%) and gotten drunk or very high from drinking (16.2% vs. 7.7%). A small proportion of adolescents in each race group experienced social problems related to alcohol use, with White adolescents reporting significantly more social problems of all types than Black adolescents.

Table 5.3 shows the means and standard deviations for the predictor variables by race group. White parents had significantly higher mean levels of demandingness ($p = .02$), alcohol contingency messages ($p < .01$), and permissive messages ($p < .01$) than Black parents. Black parents reported significantly higher levels of alcohol monitoring than White parents ($p < .01$). The largest mean differences between White and Black parents were alcohol monitoring (.67 vs. 1.00) and permissive alcohol messages (.48 vs. .19).

Correlation Matrix for White and Black Adolescents

I expected the correlation matrices for White and Black race groups (Table 5.4) to show similar patterns of relationships between adolescent alcohol misuse and the predictor variables; however, there were some differences between race groups. One

predictor variable of six for Whites (permissive alcohol messages) and three for Blacks (negative alcohol, alcohol contingency and permissive alcohol messages), were significantly correlated with adolescent alcohol misuse. Another difference was that none of the relationships between parenting style dimensions and alcohol-specific parental practices that were significant for the White group were significant for the Black group and visa versa.

I expected a significant positive association between permissive messages and adolescent alcohol misuse and negative associations between all other predictor variables and adolescent alcohol misuse. As expected, there were significant positive associations between permissive messages and adolescent alcohol misuse for both race groups. For Blacks, there also were unexpected *positive* associations between adolescent alcohol misuse and two other predictor variables, parental alcohol monitoring and alcohol contingency messages. For Whites, there were no other significant correlations between predictor variables and adolescent alcohol misuse.

In addition, Whites and Blacks had significant positive correlations between parental alcohol use and adolescent alcohol use. Blacks also had a significant correlation between sibling substance use and adolescent alcohol misuse; this relationship was marginally significant for Whites.

Measurement Equivalence

As expected, the preliminary analysis results confirmed that the predictor variables were equivalent across race group (Table 5.5). Neither the factor loadings generated by the confirmatory factor analysis nor the Cronbach alphas significantly differed by race group. The largest race group absolute difference in Cronbach alphas

was for permissive alcohol messages, with White = .69 and Black = .62. In addition, the difference in the X^2 model fit test statistics when race was constrained and when race was allowed to be freely estimated was not significant, which confirms that the set of indicators used to measure each predictor variable reflected a latent variable equally well across race group.

The Cronbach alphas indicated that the predictor variables were reasonably reliable measures, with most measures having a Cronbach alpha $>.80$. Demandingness had the lowest Cronbach alphas for White (.65) and Black (.62) race groups, but were still above the criterion for adequate reliability ($>.60$) (Netemeyer, Bearden & Sharma, 2003).

Hypotheses Testing

Analysis of Control Variables

Table 5.6 shows the standardized logits, standard errors and odds ratios for the logistic regression of adolescent alcohol misuse on control variables only. In the control variables only model for Whites, Wave 1 alcohol misuse (OR = 3.4, $p = .01$), parent alcohol use (OR = 1.14, $p = .02$), sibling substance use (OR = 2.10, $p < .01$) and age (OR = 1.35, $p < .01$) were significant predictors. Sex was a marginal predictor for White adolescents (OR = .73, $p = .08$), with females having lower odds of alcohol misuse. For Black adolescents, only parental alcohol use was a significant predictor in the control variables only model (OR = 1.27, $p < .01$); Wave 1 alcohol misuse (OR = 2.24, $p = .07$) and age (OR = 1.33, $p = .06$) were marginal predictors of adolescent alcohol use.

Moderation Model Analyses (Hypotheses 1 and 2)

The moderation hypotheses stated that: parental demandingness and responsiveness would moderate the relationships between parental alcohol-specific practices and adolescent alcohol misuse such that:

H1: As parental demandingness and responsiveness increase the negative associations between alcohol monitoring, negative alcohol messages and alcohol contingency messages and adolescent alcohol misuse will increase.

H2: As parental demandingness and responsiveness increase and the positive relationship between permissive alcohol messages and adolescent alcohol misuse will decrease.

Table 5.7 shows the standardized logits, standard errors and p -values for the moderation model with two-way interactions. Contrary to expectation, none of the two-way interactions were significant, although the interaction between responsiveness and negative alcohol messages was marginally significant for Blacks ($p = .09$). For Whites and Blacks, respectively, the model R^2 coefficients were .15 and .18.

Main Effects Model

The main effects model results (Table 5.8) indicated that alcohol contingency messages for White adolescents and permissive alcohol messages for Black adolescents significantly predicted adolescent alcohol misuse once the interaction terms were dropped. For Whites, the unexpected *positive* association between alcohol contingency messages and adolescent alcohol misuse indicated that more alcohol contingency messages were associated with a 1.2 increase in odds ($p = .03$) in adolescent alcohol misuse. For Blacks, the expected positive association between permissive messages and adolescent alcohol misuse indicated that more permissive messages were associated with

a 2.0 increase in odds ($p = .03$) for alcohol misuse. Neither demandingness nor responsiveness or any other alcohol-specific practice were significantly associated with adolescent alcohol misuse. The model R^2 coefficients for Whites = .14 and for Blacks = .13.

Comparisons of the AIC model fit indices for the main effects and moderation models showed that the main effects model better fit the data than the moderation model for both race groups. For Whites the main effects vs. moderation model AICs were 783.24 vs. 792.57, respectively. For Blacks, the main effects vs. moderation AIC were 342.72 vs. 352.50, respectively.

Mediation Model Analyses (Hypotheses 3-6)

The mediation hypotheses stated that:

H3: As parental demandingness and responsiveness each increases, parental alcohol monitoring, alcohol contingency messages and negative alcohol messages will increase, which in turn will predict lower odds of adolescent alcohol misuse.

H4: As parental demandingness decreases and responsiveness increases, permissive alcohol messages will increase, which in turn will predict higher odds of adolescent alcohol misuse.

Figures 5.1 and 5.2 are the respective measurement models for White and Black race groups. Model fit indices indicated that the models for both race groups adequately fit the data (Table 5.9). The R^2 coefficients for the models were White = .16 and Black = .14.

Contrary to expectation, the mediation hypothesis was only partially supported for Whites and was not supported for Blacks (Table 5.10). For Whites, the *total* indirect

effect from responsiveness to adolescent alcohol misuse was significant ($.02, p = .04$), which indicated that the relationship between responsiveness and alcohol misuse was mediated by the entire set of mediators. However, the significance of the total indirect effect should be interpreted with caution because none of the *specific* indirect effects between responsiveness and alcohol misuse were significant, although the specific indirect effect through alcohol contingency messages was marginally significant ($.01, p = .10$). One explanation for the discrepancy between the total indirect and specific indirect effects is that, in MPlus, the *total* indirect effect is estimated using the multivariate extension of the delta method and the *specific* indirect effect is estimated using the product of the coefficients or Sobel test (MPlus Manual, 2008; Preacher, et al., in press). The significant paths from responsiveness to alcohol contingency messages and from alcohol contingency messages to adolescent alcohol misuse suggested that alcohol contingency messages at least partially mediated the relationship between responsiveness and adolescent alcohol misuse. However, because the corresponding specific indirect effect was only marginally significant, partial mediation was not entirely supported.

One reason the mediation hypotheses were largely unsupported is that alcohol-specific parental practices generally did not predict adolescent alcohol misuse in the mediation models, with two exceptions noted below. In addition, the bivariate analysis showed that demandingness and responsiveness were not significantly correlated with adolescent alcohol use. Therefore, criteria for mediation, based on individual paths, were not met and specific indirect effects were unlikely.

Two additional hypotheses concerning the relationships between the parenting style dimensions and alcohol-specific parental practices state that:

H5: Demandingness and responsiveness each will predict both alcohol monitoring and negative messages, but the relationships with demandingness will be a stronger than the relationships with responsiveness.

H6: Demandingness and responsiveness each will predict alcohol contingency messages and permissive alcohol messages, but the relationships with responsiveness will be stronger than the relationships with demandingness.

Hypotheses 5 and 6 were only partially supported for both race groups. Because in most cases only one parenting style dimension predicted an alcohol-specific parental practice, comparisons of the strength of relationships between the parenting style dimensions and alcohol-specific parental practices were generally not possible. Two exceptions are described below.

Contrary to expectation, demandingness predicted some but not all alcohol-specific messages. Demandingness predicted negative (.19, $p < .01$) and permissive (-.08, $p < .01$) alcohol messages for Whites. These two relationships were in the expected directions; with higher demandingness predicting more negative alcohol messages and fewer permissive messages. In addition, demandingness marginally predicted alcohol contingency messages for Whites (.08, $p = .07$). For Blacks, demandingness positively predicted alcohol monitoring as expected (.20, $p < .01$), but did not predict any other alcohol-specific parental practices.

As hypothesized, responsiveness positively predicted alcohol contingency messages and permissive alcohol messages for Whites, but did not predict other negative alcohol messages or alcohol monitoring. For Blacks, responsiveness positively predicted negative alcohol messages (.20, $p < .01$) and alcohol contingency messages (.10, $p = .03$)

as expected; however, responsiveness did not predict alcohol monitoring or permissive messages.

In summary, permissive alcohol messages in the White group was the only alcohol-specific parental practice that was predicted by both demandingness and responsiveness. As expected, the parameter estimates indicated that the positive relationship between responsiveness and permissive alcohol messages (.09) was stronger than the negative relationship between demandingness and permissive alcohol messages (-.08).

As expected, permissive messages was a positive predictor of adolescent alcohol misuse for Black adolescents (.16, $p = .01$) and the only significant predictor of adolescent alcohol misuse for this group. For White adolescents, alcohol contingency messages was the only significant predictor of adolescent alcohol misuse (.13, $p = .03$). However, alcohol contingency messages had an unexpected *positive* association with adolescent alcohol misuse, indicating that more alcohol contingency messages predicted more adolescent alcohol misuse. Demandingness and responsiveness did not directly predict adolescent alcohol misuse for either race group.

Race Group Analysis

The race group hypothesis (Hypothesis 7) stated that the overall pattern of associations among parental demandingness, responsiveness, alcohol monitoring and negative and permissive alcohol messages and alcohol contingencies do not differ by race group.

Descriptive comparisons showed that the race group hypothesis was only partially supported, although race group differences were not directly tested. Contrary to

expectation, there were some race group differences in the patterns of relationships in the models, as described in the model results. One striking difference between race groups was that both demandingness (negative association) and responsiveness (positive association) predicted permissive alcohol messages for Whites in the mediation model, but neither predicted permissive alcohol messages for Blacks. In contrast, permissive alcohol messages did not predict adolescent alcohol misuse for Whites, but did predict alcohol misuse for Blacks in the mediation and main effects models.

Yet another important race group difference was the relationship between alcohol contingency messages and adolescent alcohol misuse. For Whites, alcohol contingency messages positively predicted adolescent alcohol misuse, but they were unrelated to adolescent alcohol misuse for Blacks.

In terms of model comparisons by race group, the lower AIC value for the Black versus White main effects model (342.72 vs. 783.24, respectively) indicated that the main effects model was a better fit overall for Black adolescents than White adolescents.

There also were some similarities across race groups in the overall model results and relationship patterns examined in the study. Both groups had an overall pattern of significant positive relationships between at least one parenting style dimension and each alcohol-specific parental practice. The main race group difference, therefore, was whether demandingness *or* responsiveness was linked to each practice, with one exception noted above for each White and Black groups. Another similarity was that family substance use was an important influence on adolescent alcohol misuse. Parental alcohol use was a significant predictor of adolescent alcohol misuse for White and Black

adolescents. Sibling substance use also was a significant predictor of adolescent alcohol misuse for Whites.

Finally, the mediation model fit indices, which indicated good fit, were similar for White and Black groups. In cases where there are large group differences in the extent to which a set of variables explain variance in adolescent alcohol misuse, often model fit indices will show that the model is a “good” fit for one group’s data, but a “poor” fit for another group’s data. The model fit indices, therefore, supported the mediation model as a “good” model for both groups. This is largely due to the strong associations between the parenting style dimensions and alcohol-specific practices, as only one predictor variable was associated with adolescent alcohol misuse for each race group.

Additional Analyses

An alternative to the study models, which used parent-report measures for demandingness and responsiveness, are moderation and mediation models that use adolescent-report measures for the parenting style dimensions. Adolescent-report measures for alcohol-specific parental practices were not available. Adolescent perceptions about their parents’ demandingness and responsiveness may differ from their parents’ reports of their own behaviors, and therefore may differ in how they predict adolescent alcohol misuse. To explore this alternative model, I examined the models with the adolescent-report measures for demandingness and responsiveness.

Adolescent-Report Measures

Adolescent-report measures for demandingness and responsiveness were created using items from the adolescent survey that are analogous to those in the parent survey, but worded from the perspective of the adolescent. For example, one demandingness

item is “she has rules I must follow.” Similar to the parent-report measures, adolescent-reported measures were a mean of adolescents’ reports of both parents, when available, and Waves 1 and 3 reports.

Correlations between Adolescent and Parent-Report Measures

Correlations between adolescent- and parent-report demandingness and responsiveness varied somewhat by race group (Table 5.11). For Whites, adolescent-report demandingness and responsiveness were both significantly correlated with parent-report demandingness and responsiveness, although the correlations were low ($r \leq .30$). For Blacks, there was a small significant correlation between adolescent and parent report responsiveness ($r = .14$).

Overall, the adolescent-report measures for demandingness and responsiveness were not significantly correlated with the alcohol-specific parental practices. The exceptions to this were the small negative correlations between alcohol monitoring and both demandingness ($r = -.09$) and responsiveness ($r = -.08$) for Whites. The significant correlations indicated that higher levels of parental alcohol monitoring were slightly correlated with adolescent’s perceiving less parental demandingness and responsiveness, which was unexpected. Adolescent-reported responsiveness also was marginally correlated with negative alcohol messages for Blacks.

Moderation Model

Overall, when adolescent-report measures were used, moderation was not supported for the either race group, based on the AIC model fit indices and Wald Test of Parameter Constraints. None of the interactions were significant for Whites. However, for Blacks, responsiveness significantly moderated the effect of permissive messages on

adolescent alcohol misuse and was a marginal moderator for negative and alcohol contingency messages (Table 5.12). Despite the significance of the individual interaction terms, the Wald Test was not significant ($p = .19$), indicating that the entire set of interaction terms did not significantly differ from zero. The AIC model fit indices for the main effects versus moderation model, respectively, were for Whites 774.03 vs. 787.58 and for Blacks 336.90 vs. 340.06. The moderation model R^2 coefficient for Whites was .16 and for Blacks was .20. Although the AIC values indicated better fit for the main effects model for both race groups, the values for the main effects and moderation models were very close for Blacks, which indicates that the main effects model was only a slightly better fit than the moderation model.

Main Effects Model

Similar to the main effects model that used parent-report measures, demandingness was not a significant predictor of adolescent alcohol misuse for either race group (Table 5.13). In contrast to the parent-report model, however, responsiveness was a marginal negative predictor of adolescent alcohol misuse for both White adolescents ($OR=.72, p = .06$) and Black adolescents ($.66, p = .10$).

Mediation Model

The mediation model was not interpreted because the model fit indices for both race groups indicated poor fit (Table 5.8). This was likely due to the lack of associations between the parenting style dimensions and most of the alcohol-specific parental practices.

Overall, the results for the models that used adolescent-report measures for demandingness and responsiveness were similar to results for the models that used

parent-report measures. The major difference between the adolescent- and parent-report models was the pattern of relationships between the parenting style dimensions and parental alcohol-specific practices. For the models that include adolescent-report measures, demandingness and responsiveness generally did not predict parental alcohol-specific practices for either race group. In contrast, the parental alcohol-specific practices were generally associated with either parent-reported demandingness or responsiveness, or both parenting style dimensions. In addition, adolescent-reported responsiveness had marginal negative associations with adolescent alcohol misuse for both races, but parent-reported responsiveness was unrelated to adolescent alcohol misuse.

Table 5.1

Sample Characteristics at Wave 1 by Race Group

Variable	White (N=723)		Black (N = 379)	
	Number	%	Number	%
Gender				
Male	337	46.6	169	44.6
Female	386	53.4	210	55.4
Missing	0		0	
Age				
11	17	2.4	7	1.8
12	227	31.4	117	30.9
13	240	33.2	126	33.2
14	222	30.7	111	29.3
15 or more	17	2.4	18	4.7
Mean Age	12.9		13.0	
Missing	0		0	
Parent Education*				
High school education or less	50	6.9	58	15.3
More than high school education	673	93.1	321	84.7
Missing	0		0	
Family Structure*				
Two-parent	687	95.9	336	90.3
Other than two parent	29	4.1	36	9.7
Missing	7		7	
Parent Alcohol Use (Quantity)				
No drinks in past 3 months	287	39.7	247	65.3
1-2 drinks	259	35.9	86	22.8
3 drinks	103	14.3	27	7.1
4 or more drinks	74	10.3	18	4.8
Missing	0		1	
Mean # of Siblings Who Use Substances				
0	477	72.1	230	64.6
1	164	24.8	103	28.9
2 or more	21	3.2	23	6.5
Missing	61		23	

*p≤.05 level

Table 5.2

<i>Number and % of Adolescents Who Engaged in Alcohol Misuse Behaviors at Wave 5</i>						
<i>Adolescents Who Engaged in Behavior During the Last 3 Months</i>						
Alcohol Misuse Measures	White (N = 723)			Black (N=379)		
	Number	%	Missing	Number	%	Missing
Adolescent Alcohol Misuse						
Wave 1	49	6.8	7	32	8.8	15
Wave 5	227*	31.4	0	76*	20.1	0
Alcohol Misuse Items (Wave 5)						
Had at least one drink on 3 or more days	225*	31.2	1	74	19.6	1
Had two or more drinks when you drank	153*	32.4	250	43*	18.3	144
Had three or more drinks in a row	131*	18.2	2	28*	7.5	4
Had five or more drinks in a row	87*	12.1	6	16*	4.3	4
Gotten drunk or very high from drinking alcoholic beverages	116*	16.2	7	29*	7.7	4
Drunk alcohol when you were alone	80*	11.2	10	17*	4.5	4
Been hung over	77*	10.8	8	21*	5.6	4
Gotten into trouble with your parents because you had been drinking	34*	4.8	8	5*	1.4	9

Table 5.2

<i>Number and % of Adolescents Who Engaged in Alcohol Misuse Behaviors at Wave 5</i>						
<i>Adolescents Who Engaged in Behavior During the Last 3 Months</i>						
Alcohol Misuse Measures	White (N = 723)			Black (N=379)		
	Number	%	Missing	Number	%	Missing
Had problems with someone you were dating because you had been drinking	29	4.1	9	9	2.4	9
Did something you later regretted because you had been drinking	47*	6.6	9	12*	3.2	9
Gotten into a sexual situation because you had been drinking	46*	6.4	8	9*	2.4	9
Gotten into a physical fight because you had been drinking	40*	5.6	9	6*	1.6	9

*p≤.05 level

Table 5.3

Means and Standard Deviations of Predictor Variables

Predictor Variables	Mean Score (SD)			
	White (N=723)		Black (N=379)	
	Mean (SD)	Range	Mean (SD)	Range
Demandingness	3.68* (.37)	2.25-4.00	3.62* (.42)	2.33-4.00
Responsiveness	3.80 (.26)	2.33-4.00	3.78 (.28)	2.55-4.00
Monitoring	.67* (.77)	0-2.00	1.00* (.80)	0-2.00
Negative Messages	2.55 (.79)	0-3.00	2.60 (.79)	0-3.00
Alcohol Contingency Messages	2.01* (.96)	0-3.00	1.82*(1.00)	0-3.00
Permissive Messages	.48* (.67)	0-2.00	.19* (.43)	0-3.00

Note: Missing for each scale ranged from 0-1 case

* $p \leq .05$ level

Table 5.4

Correlation Matrix for White (N = 723) and Black (N = 379) Race Groups

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Misuse5	1.00	.16*	-.01	-.07	.07	.05	.02	.10*	-.03	.14*	.09 [†]	.05	.01	.14*
2. Misuse1	.18*	1.00	.01	-.03	.05	.03	.02	.06	.00	.06	.17*	.02	-.01	.23*
3. Demandingness	.00	-.01	1.00	.42*	.24*	.10 [†]	.10*	-.06	-.02	-.05	.05	.00	.08	.04
4. Responsiveness	-.03	.00	.40*	1.00	.13*	.20*	.14*	-.03	-.05	-.12*	-.07	.00	.01	-.06
5. Monitor	.08*	.16*	.01	.00	1.00	.25*	.24*	.12*	-.11*	.05	.06	-.01	-.02	.14*
6. Negative Mes.	.03	.00	.17*	.05	.11*	1.00	.52*	.06	-.10*	-.01	.06	-.01	.00	.07
7. Alc. Cont. Mes.	.12*	.05	.11*	.11*	.22*	.31*	1.00	.30*	-.10*	.08	.03	-.08 [†]	-.09 [†]	.07
8. Permissive Mes.	.12*	.12*	-.05	.02	.01	-.05	.02	1.00	-.01	.11*	.00	-.08	-.05	.01
9. Family Structure	.04	.17*	-.11*	.05	.07 [†]	-.04	-.07 [†]	-.06 [†]	1.00	-.07	-.03	-.12*	-.02	-.02
10. Parent Alc Use	.10*	.04	-.11*	-.14*	.08*	-.15*	.09*	.16*	-.03	1.00	.00	.00	-.08	.05
11. Sibling Alc Use	.18*	.27*	-.05	-.03	.10*	.02	-.01	-.01	.19*	.04	1.00	-.15*	.10*	.15*
12. Parent Educ.	.03	.01	.03	.02	-.14*	-.04	-.02	.05	-.11*	.03	-.06	1.00	.09 [†]	-.10 [†]
13. Sex	-.08*	.02	.05	-.02	.12*	.06	-.01	-.08*	.06 [†]	-.03	-.05	-.02	1.00	.09 [†]
14. Age	.14*	.18*	-.07 [†]	-.06	.16*	.06 [†]	.10*	.10*	.06	.01	.10*	.00	.10*	1.00

Note: White race group shown above and Black race group shown below the diagonal

*p \leq .05 level †p \leq .10

Table 5.5

Cronbach Alphas and Factor Loadings for Predictor Variables

	White (N = 723)	Black (N = 379)
Cronbach Alphas for Parent Measures		
Demandingness	.62	.65
Responsiveness	.82	.81
Alcohol Monitoring	.82	.80
Negative Alcohol Messages	.80	.85
Alcohol Contingency Messages	.69	.71
Permissive Alcohol Messages	.69	.62
Factor Loadings from CFA		
<i>Demandingness</i>		
You tell [name] times when s/he must come home (X ₁)	1.00	1.00
You make sure that s/he doesn't stay up too late (X ₂)	1.29	1.29
You have rules that s/he must follow (X ₃)	1.23	1.23
<i>Responsiveness</i>		
How often do you make [name] feel better when s/he is upset (X ₄)	1.00	1.00
You tell [name] when s/he does a good job on things (X ₅)	.81	.81
You want to hear about his/her problems (X ₆)	.82	.82
<i>Alcohol Monitoring</i>		
Have you ever checked [name's] room or other places for evidence of tobacco, alcohol or other drug use? (X ₇)	1.00	1.00
Have you ever looked for signs [name] might have smoked or used other tobacco, drank or used marijuana? (X ₈)	.73	.73
<i>Negative Alcohol Messages</i>		
Drinking is not healthy (X ₉)	1.00	1.00
Drinking can lead to alcoholism (X ₁₀)	1.27	1.23
Drinking can cause loss of control (X ₁₁)	1.18	1.18
<i>Alcohol Contingency Messages</i>		
If s/he wants to drink s/he should talk to you first (X ₁₂)	1.00	1.00
S/he should call home to be picked up if s/he does drink (X ₁₃)	.92	.92
If or when s/he does drink, s/he should drink responsibly (X ₁₄)	.97	.97
<i>Permissive Alcohol Messages</i>		
If s/he wants to try a drink s/he can have sips of a drink at home in front of you (X ₁₅)	1.00	1.00
Under some circumstances it's okay to have sips of a drink, at home in front of you (X ₁₆)	.88	.88

Table 5.6

Control Variable Only Model Standardized Logits and Odds Ratios for White and Black Race Groups

	White			Black		
	Logit	SE	OR	Logit	SE	OR
Wave 1 Adolescent Alcohol Misuse	.16*	.05	3.40	.12 [†]	.07	2.24
Parent Alcohol Use	.10*	.04	1.14	.16*	.07	1.27
Sibling Alcohol Use	.15*	.05	2.10	.09	.07	1.34
Parent Education	.02	.05	1.17	.08	.08	1.56
Family Structure	-.04	.06	.70	-.05	.08	.74
Sex	-.08 [†]	.05	.73	.00	.08	.74
Age	.14*	.05	1.35	.14 [†]	.07	1.33

*p≤ .05 level †p≤ .10 level

Table 5.7

Moderation Model Standardized Logits and Odds Ratios for Black and White Race Groups

Variable	White (N = 723)			Black (N = 379)		
	Logit	SE	OR	Logit	SE	OR
Demandingness	-.17	.16	.42	.41	.35	6.73
Responsiveness	-.02	.18	.84	-.22	.21	.21
Monitoring	-.80	.73	.13	-.20	1.10	.61
Negative Messages	-.52	.52	.27	-.52	1.03	.26
Alcohol Contingency Mes.	.22	.91	1.49	1.27	1.20	9.85
Permissive Messages	.40	.75	3.25	.67	.92	22.64
Adolescent Alcohol Misuse (baseline)	.15*	.05	3.33	.11 [†]	.07	2.18
Parent Alcohol Use	.09 [†]	.05	1.12	.14*	.07	1.24
Sibling Alcohol Use	.16*	.05	2.24	.09	.07	1.36
Parent Education	.03	.05	1.22	.11	.07	1.82
Family Structure	-.01	.06	.94	-.04	.09	.75
Sex				.02	.08	1.08
Age	.12*	.05	1.31	.14 [†]	.08	1.34
Demandingness X Monitoring	.61	.49	1.53	1.00	.76	1.94
Demandingness X Negative Messages	.67	.54	1.54	-1.23	.88	.45
Demandingness X Alcohol Contingency Messages	.09	.69	1.04	-.13	.86	.94
Demandingness X Permissive Messages	-.73	.49	.56	.01	.80	1.02
Responsiveness X Monitoring	.18	.76	1.13	-.77	1.23	.61
Responsiveness X Negative Messages	-.08	.87	.95	1.85 [†]	1.08	3.40
Responsiveness X Alcohol Contingency Messages	-.20	.81	.91	-1.24	1.27	.56
Responsiveness X Permissive Messages	.41	.74	1.37	-.53	1.11	.52

*p ≤ .05 level †p ≤ .10 level

Table 5.8

Main Effects Model Standardized Logits and Odds Ratios for White and Black Race Groups

Variables	White (N = 723)			Black (N= 379)		
	Logit	SE	OR	Logit	SE	OR
Demandingness	.04	.05	1.22	.02	.09	1.10
Responsiveness	-.04	.05	.75	-.09	.09	.31
Alcohol Monitoring	<.00	.05	.99	.01	.08	1.02
Negative Messages	.01	.05	1.02	.09	.09	1.26
Alcohol Contingency Mes.	.11*	.05	1.23	-.07	.09	.89
Permissive Messages	.07	.05	1.22	.15*	.07	1.98
Adolescent Alcohol Misuse (baseline)	.15*	.05	3.16	.11 [†]	.07	2.12
Parent Alcohol Use	.08 [†]	.05	1.11	.14*	.07	1.23
Sibling Alcohol Use	.16*	.05	2.21	.09	.07	1.38
Parent Education	.03	.05	1.22	.09	.07	1.61
Family Structure	-.01	.06	.89	-.03	.08	.82
Sex	-.08	.05	.75	<.00	.07	1.01
Age	.13*	.05	1.31	.14 [†]	.07	1.32

*p≤ .05 level †p≤ .10 level

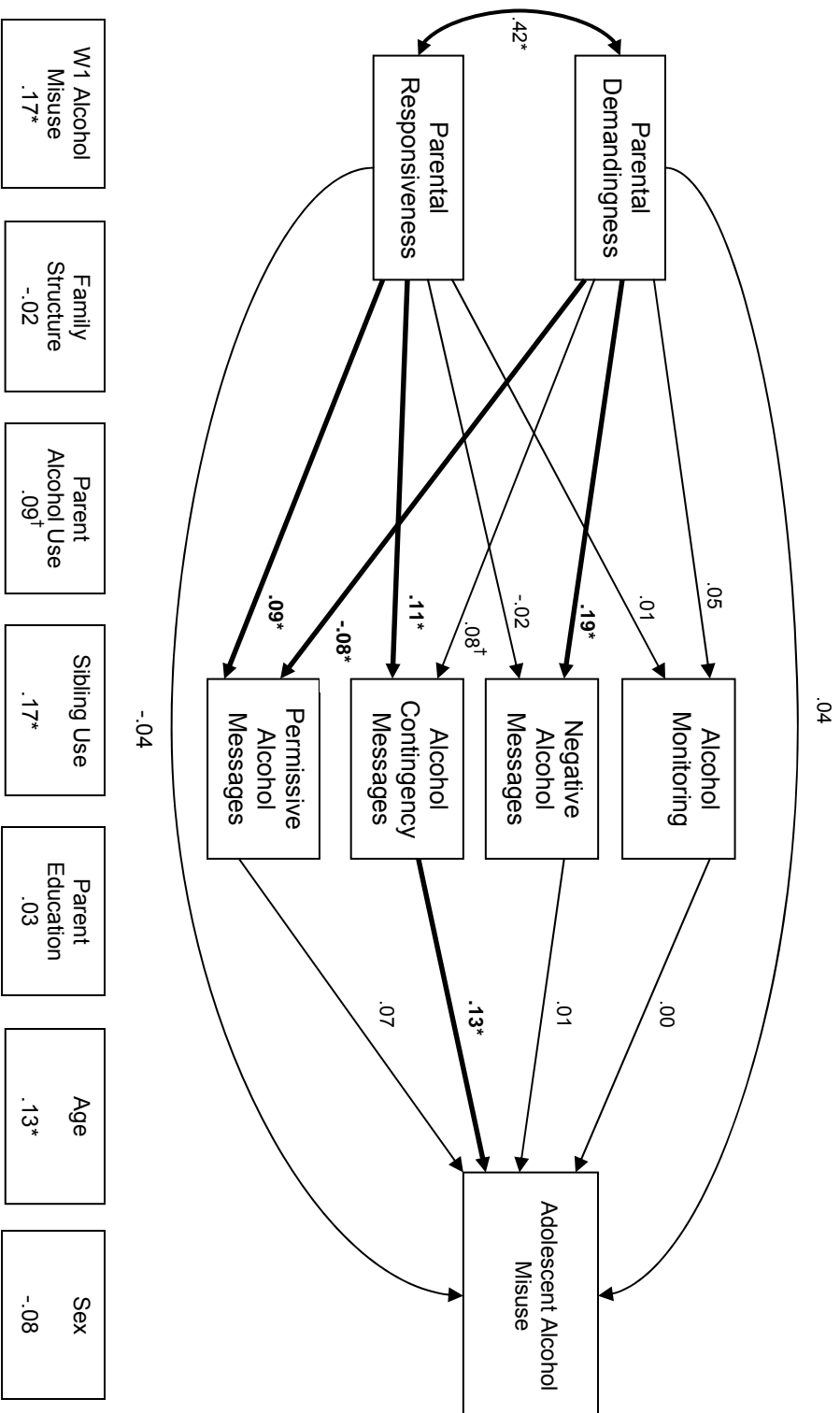
Table 5.9

Mediation Model Fit Indices for White and Black Race Groups

	CFI	TLI	RMSEA
Parent-Reported Demandingness and Responsiveness			
White (N = 723)	.99	.98	.02
Black (N = 379)	1.00	1.14	<.00
Adolescent-Reported Demandingness and Responsiveness			
White (N = 723)	.82	.36	.08
Black (N = 379)	.84	.44	.07

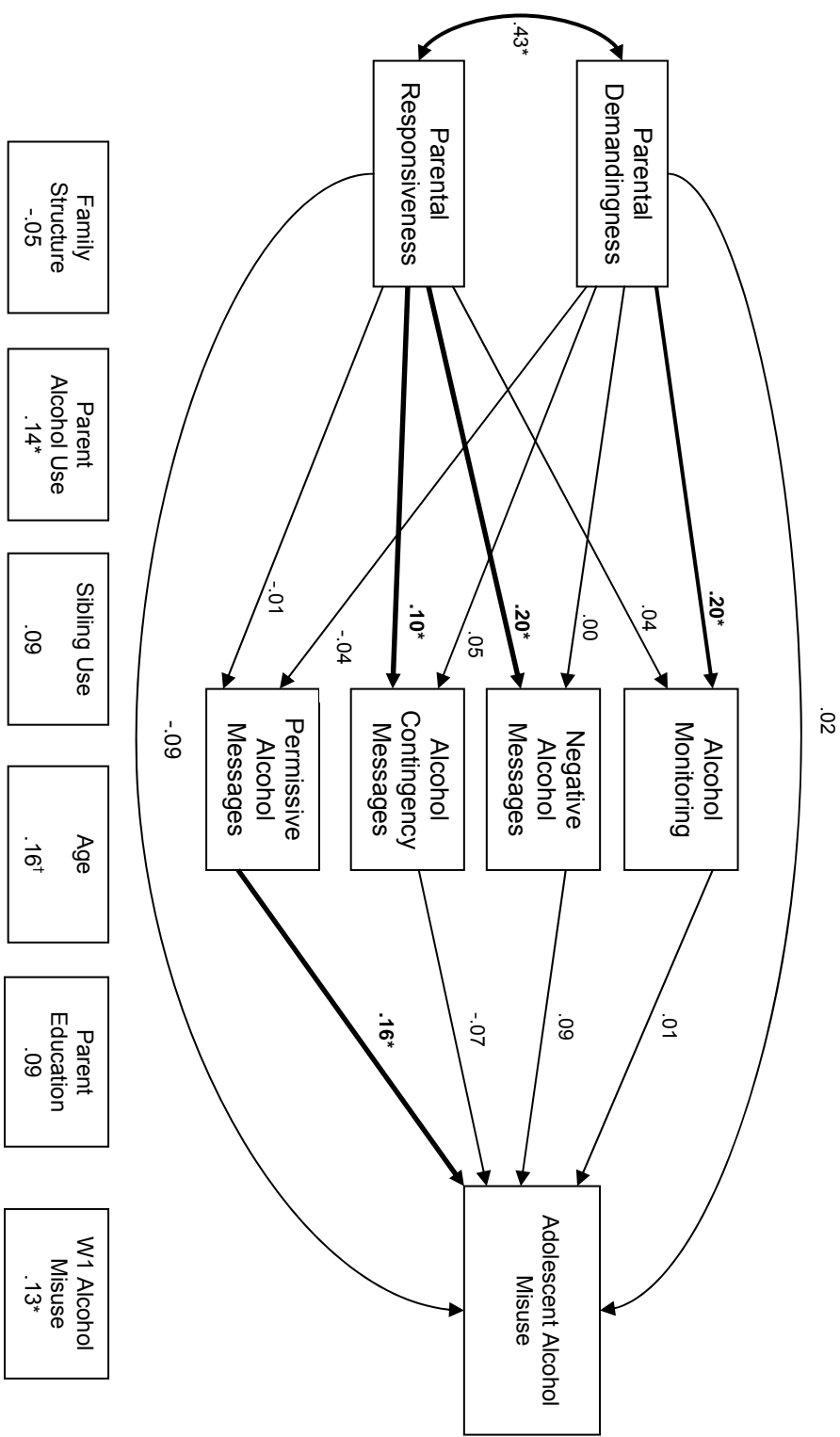
Note: CFI and TLI values greater than .95 are considered good fit; RMSEA values less than .05 are considered good fit

Figure 5.1 Mediation Measurement Model for White Race Group



*p-value $\leq .05$; †p-value $\leq .10$

Figure 5.2 Mediation Measurement Model for Black Race Group



*p-value $\leq .05$; †p-value $\leq .10$

Table 5.10

Mediation Model Total and Specific Indirect Effects for White and Black Race Group

Total and Specific Indirect Effects	Standardized Estimate	
	White (N = 723)	Black (N = 379)
Total Indirect Effect from Demandingness to Adolescent Alcohol Misuse	.01	-.01
Total Indirect Effect from Responsiveness to Adolescent Alcohol Misuse	.02*	.01
Demandingness Monitoring Adolescent Alcohol Misuse	<.00	.00
Demandingness Negative Messages Adolescent Alcohol Misuse	<.00	.00
Demandingness Alcohol Contingency Messages Adolescent Alcohol Misuse	.01	.00
Demandingness Permissive Messages Adolescent Alcohol Misuse	-.01	-.01
Responsiveness Monitoring Adolescent Alcohol Misuse	.00	.00
Responsiveness Negative Messages Adolescent Alcohol Misuse	.00	.02
Responsiveness Alcohol Contingency Messages Adolescent Alcohol Misuse	.01 [†]	.00
Responsiveness Permissive Messages Adolescent Alcohol Misuse	.01	-.01
*p ≤ .05 level †p ≤ .10 level		

Table 5.11

Correlation Matrix with Adolescent and Parent-Reported Parenting Style Measures for

White (N = 723) and Black (N = 379) Race Groups

	1.	2.	3.	4.	5.	6.	7.	8.
1. Ad Rep Demandingness	1.00	.59*	.23*	.16*	-.09*	-.01	.00	-.03
2. Ad Rep Responsiveness	.50*	1.00	.12*	.30*	-.08*	-.01	.06	-.01
3. Par Rep Demandingness	.07	.03	1.00	.40*	.01	.17*	.11*	-.05
4. Par Rep Responsiveness	.08	.14*	.42*	1.00	.00	.05	.11*	.02
5. Alcohol Monitoring	.02	.08	.24*	.13*	1.00	.11*	.22*	.01
6. Negative Messages	.08	.10 [†]	.10 [†]	.20*	.25*	1.00	.31*	-.05
7. Alc. Contingency Mes.	-.03	.05	.10*	.14*	.24*	.52*	1.00	.33*
8. Permissive Messages	-.02	-.01	-.06	-.03	.12*	.06	.30*	1.00
White Standard Deviation	.65	.66	.37	.26	.77	.79	1.07	.67
Black Standard Deviation	.71	.71	.42	.28	.80	.79	.11	.43

Note: White race group shown above and Black race group shown below the diagonal

*p ≤ .05 level †p ≤ .10 level

Table 5.12

Adolescent-Report Moderation Model Standardized Logits and Standard Errors for White and Black Race Groups

Variable	White			Black		
	Logit	SE	OR	Logit	SE	OR
Ad Rep Demandingness	-.27	.21	.45	.32	.33	2.57
Ad Rep Responsiveness	.08	.21	1.28	-.14	.28	.67
Monitoring	.03	.17	1.08	-.45	.31	.32
Negative Messages	-.05	.20	.88	.74*	.35	7.15
Alc. Contingency Mes.	.10	.20	1.20	-.62 [†]	.32	.32
Permissive Messages	.15	.19	1.56	.63*	.25	21.23
Adolescent Alcohol Misuse (baseline)	.13*	.05	2.67	.14*	.07	2.76
Parent Alcohol Use	.08 [†]	.05	1.11	.15*	.07	1.26
Sibling Substance Use	.14*	.05	2.04	.08	.07	1.31
Parent Education	.03	.05	1.26	.08	.07	1.55
Family Structure	-.02	.06	.81	.09	.08	1.02
Sex	-.06	.05	.80	.03	.08	1.15
Age	.12*	.05	1.29	.09	.08	1.21
Demandingness X Monitoring	.10	.18	1.12	-.02	.33	.98
Demandingness X Negative Messages	.29	.26	1.26	-.38	.53	.73
Demandingness X Alcohol Contingency Messages	.05	.30	1.03	.03	.49	1.02
Demandingness X Permissive Messages	-.06	.20	.93	.02	.20	.31
Responsiveness X Monitoring	-.15	.20	.85	.56 [†]	.34	1.82
Responsiveness X Negative Messages	-.21	.27	.85	-.75 [†]	.43	.54
Responsiveness X Alcohol Contingency Messages	-.02	.30	1.03	.71	.45	1.02
Responsiveness X Permissive Messages	-.03	.21	.96	-.53*	.24	.31

*p ≤ .05 level †p ≤ .10 level

Table 5.13

Adolescent-Report Main Effects Model Standardized Logits and Odds Ratios for White and Black Race Groups

Variables	White			Black		
	Logit	SE	OR	Logit	SE	OR
Ad Rep Demandingness	-.03	.06	.92	.08	.09	1.24
Ad Rep Responsiveness	-.11 [†]	.06	.72	-.15 [†]	.09	.66
Alcohol Monitoring	-.01	.05	.97	.01	.08	1.01
Negative Messages	.01	.05	1.02	.09	.10	1.27
Alcohol Contingency Mes.	.13*	.05	1.26	-.08	.09	.87
Permissive Messages	.07	.05	1.22	.15*	.07	2.01
Adolescent Alcohol Misuse (baseline)	.13*	.05	2.72	.14*	.07	2.68
Parent Alcohol Use	.08	.05	1.11	.14*	.07	1.25
Sibling Substance Use	.14*	.05	2.02	.07	.07	1.29
Parent Education	.03	.05	1.25	.04	.07	1.25
Family Structure	-.02	.06	.80	-.02	.08	.88
Sex	-.06	.05	.79	.04	.08	1.19
Age	.12	.05	1.29	.11	.08	1.25
*p≤ .05 level †p≤ .10 level						

CHAPTER 6: DISCUSSION

The present study examined the influence of parental socialization on adolescent alcohol misuse. Two models of parental socialization were tested in separate samples of White and Black adolescents and their parents derived from the Context Study. The specific aims of the study were to examine the parental socialization process through which dimensions of parenting style and alcohol-specific parental practices influenced adolescent alcohol misuse and the extent to which socialization processes differed by White and Black race groups. More specifically, the study examined whether parental demandingness and responsiveness moderated the relationships between alcohol-specific parental practices and adolescent alcohol misuse, and whether demandingness and responsiveness each predicted alcohol-specific practices, which in turn predicted adolescent alcohol misuse.

Adolescent Alcohol Misuse

Adolescent alcohol misuse included drinking behaviors and social problems associated with drinking alcohol. Consistent with other studies, White adolescents in the present study drank more frequently and in greater quantities than Black adolescents at Wave 5 (Johnston, et al, 2006; Centers for Disease Control & Prevention, 2006; Foley, Altman, Durant, et al., 2004). In particular, White adolescents at Wave 5 had much greater heavy episodic drinking than Black adolescents, with three times as many White versus Black adolescents reporting they drank five or more alcoholic drinks in the past three months. In contrast to other studies, however, White adolescents also had greater alcohol-related social

problems than Black adolescents (Wallace & Muroff, 2002; Bachman & Wallace, 1991; Welte & Barnes, 1987). Previous studies have shown that, while Black adolescents misuse alcohol less frequently than White adolescents, they experience alcohol-related problems more often than their White counterparts. In the present study, however, White adolescents much more often than Black adolescents had gotten in trouble with their parents, gotten into a physical fight and had problems with dating partners. Perhaps most striking, from an adolescent risk perspective, was that White adolescents were three times as likely as Black adolescents to get into a sexual situation because they were drinking. However, because all of the adolescent alcohol misuse items had an extremely skewed distribution, with low proportions of adolescents reporting they had engaged in each of the alcohol misuse behaviors, alcohol misuse could not be reported as a continuous variable.

Parental Socialization Models

Neither the moderation or mediation models were supported overall as models that explained the influence of parental socialization on adolescent alcohol misuse. In large part, the lack of support for either model was because demandingness and responsiveness were not associated with adolescent alcohol misuse, although some alcohol-specific practices predicted alcohol misuse. Nonetheless, there were some important links between parenting style dimensions, alcohol-specific parental practices and parental alcohol use that can inform future research on the process of parental alcohol socialization.

In contrast to Darling and Steinberg's (1993) hypothesis that parenting style moderates the effect of domain-specific parental practices on adolescent outcomes, the present study did not find support for the moderated effects of dimensions of parenting style on the relationships between alcohol-specific practices and adolescent alcohol misuse.

One reason for this may be that parenting style is most influential on less extreme adolescent alcohol behaviors, such as initiation and regular use, but is less effective once alcohol use has progressed to misuse. A related explanation may be that high levels of parental demandingness and responsiveness may influence alcohol misuse in pre- and early adolescence, but may not be as effective as children get older. Latendresse, et al. (2007), for example, found that aspects of demandingness (supervision) significantly buffered the effect of parental alcohol use on adolescent alcohol misuse in early adolescence, but the buffered effect of supervision did not persist through later adolescence. With a diminished effect of parenting style on adolescent alcohol misuse overall, it would be difficult to detect a moderated effect of parenting style dimensions on alcohol-specific practices.

There was some support for the mediation hypotheses in the White adolescent group. In particular, the total indirect effect for parental responsiveness on adolescent alcohol misuse was significant, largely due to the mediated effect through alcohol contingency messages. The finding should be interpreted with caution, however, as the specific indirect effect, described in the results section, was not significant. In addition, the significant paths between parental demandingness and responsiveness to many of the alcohol-specific practices suggests that a mediation model may be a plausible parental socialization model for other adolescent outcomes that are associated with both dimensions of parenting style and domain-specific practices. The specific relationships in the mediation model are discussed in the next section.

Importantly, this study “unpacked” parenting style to examine whether demandingness and responsiveness had distinct effects on alcohol-specific practices and adolescent alcohol misuse (Fletcher, Steinberg & Williams-Wheeler, 2004; Gray &

Steinberg, 1999). The present study found that demandingness and responsiveness often predicted different alcohol-specific practices, particularly for Black families.

Demandingness only predicted alcohol monitoring and responsiveness only predicted negative and alcohol contingency messages for Black adolescents. In contrast, both demandingness and responsiveness predicted alcohol contingency messages and permissive alcohol messages for White adolescents; that is, each dimension had a distinct influence on parents' use of these messages. However, only demandingness predicted negative messages for Whites, and alcohol monitoring was unrelated to either parenting style dimension for this group. These findings support that both demandingness and responsiveness, overall, are important influences of parents' selection of alcohol monitoring and alcohol messages, with the noted exception of alcohol monitoring for White parents. The study, therefore, contributes to a better understanding of the mechanisms through which dimensions of parenting style operate in parents' alcohol socialization process by linking demandingness and responsiveness to alcohol-specific parental practices.

Alcohol monitoring was unrelated to adolescent alcohol misuse for both race groups. This finding was surprising in light of the numerous studies that have found that monitoring in general, and alcohol monitoring in particular, is protective against adolescent alcohol use and misuse (Barnes, Welte, et al. 2005; Simons-Morton & Chen, 2005; Van Der Horst, Engels, et al, 2005; Boyle and Boekeloo, 2004; Rai, Stanton, et al., 2003; Simons-Morton & Chen; Diclemente, et al., 2001; Barnes, Farrell, et al., 2000; Reifman, et al., 1997 and 1998; Li, Stanton & Feigelman, 2000; Beck, Beck, et al. 1999; Barnes and Farrell, 1992; Baumrind, 1991). One explanation for the finding is that the types of alcohol monitoring measured in the study, such as checking an adolescent's rooms for signs of alcohol use and

“sniffing” for alcohol on their children may not be intensive enough to prevent alcohol misuse once adolescents have started to drink. Other types of monitoring and supervision, such as calling parents who are supervising a party or seeking information from peers and other sources may be more effective in reducing alcohol misuse or preventing adolescents’ progression from regular alcohol use to misuse (Barnes, et al. 2005; Simons-Morton & Chen, 2005; Van der Horst, et al., 2005; Rai, Stanton, Wu, Li, et al. 2003; Barnes, Farrell, et al., 2000, Beck, et al., 1999, Reifman, Barnes, et al., 1998, Barnes & Farrell, 1992).

Alcohol-Specific Parental Practices and Parenting Style Dimensions

Similar to parenting style dimensions, parental practices such as alcohol rules, and alcohol monitoring have been associated with less alcohol use and misuse (Van der Horst, et al., 2005 and 2006; Simons-Morton & Chen; DiClemente, et al., 2001; Reifman, et al., 1997), although communication about alcohol rules has been associated with increased alcohol use in a general population of adolescents (Ennett, et al, 2001). In this study, however, only two alcohol-specific parental practices, one for each race group, predicted adolescent alcohol misuse. Communicating alcohol contingency messages predicted higher odds of alcohol misuse for White adolescents; the positive relationship between alcohol contingency messages and alcohol misuse was unexpected. The findings indicated that White parents in the study conveyed messages about alcohol contingencies, such as “s/he she call home to be picked up if s/he does drink” and “if or when s/he does drink s/he should drink responsibly,” after adolescents engage in alcohol use. In fact, alcohol contingency messages may actually increase if parents believe their children are drinking. Therefore, these messages may not be strictly intended by parents to prevent alcohol misuse as conceptualized in the study, but may be intended to mitigate potential harm from alcohol use. Another explanation is that

adolescents may view alcohol contingency messages as parents' sanction of alcohol use. Although the confirmatory factor analysis suggested that alcohol contingency messages are conceptually distinct from permissive alcohol messages, the study did not examine how adolescents actually perceive such messages. It is possible that adolescents believed their parents' messages about alcohol contingencies condoned alcohol use. However, given that permissive alcohol messages were not related to adolescent alcohol misuse, it is unclear that alcohol contingency messages would actually promote adolescent alcohol use.

From a prevention perspective, the positive association between alcohol contingency messages and adolescent alcohol misuse is important for at least two reasons. One reason is that parents' intentions conveyed through alcohol messages may differ from how adolescents actually receive alcohol messages. Another reason is that some alcohol messages may promote alcohol use. Ennett, et al. (2001), for example, found that alcohol messages that conveyed "alcohol rules" predicted increased alcohol use among adolescents. The study authors hypothesized that the positive relationship between parental alcohol "directive" messages that conveyed rules may have incited a rebellious reaction from adolescents, which in turn led to increased alcohol use. Although possible, it is less likely that alcohol messages that acknowledge that adolescents may be drinking and attempt to respond to potential alcohol-related situations would incite rebellion in the same way as messages that convey disapproval and rules. Because there is not strong empirical support for the link between alcohol messages and more severe alcohol use and alcohol-related social problems further research is needed to explore how alcohol messages are received by adolescents.

The effect of permissive messages was more salient for Black adolescents than White adolescents, as such messages predicted increased alcohol misuse only for Black adolescents.

One possible explanation for this race group difference may be that Black parents in general are less likely to hold permissive attitudes (approval) about alcohol than White parents (Foley, Altman, Durant, et al., 2004; Johnson & Johnson, 1999). Therefore, permissive alcohol messages may reflect a parental practice that conflicts with established socio-cultural beliefs among Black families and could be viewed by Black adolescents as parent-sanctioned social deviance. In contrast, White parents are more likely than Black families to have permissive attitudes toward adolescent alcohol use and to model alcohol use (Foley, Altman, Durant, et al., 2004; Johnson & Johnson, 1999). It is possible, therefore, that White adolescents in the study viewed their parents' permissive alcohol messages as consistent with family and broader social norms related to alcohol use among White families, rather than view their parents' messages as socially deviant. Thus, for White adolescents, parental permissive alcohol messages may be viewed more as their parents' setting parameters for acceptable drinking rather than promoting deviant behavior.

I could find no studies that have examined parent-reports of their explicit permissive alcohol messages; however, related studies on parental alcohol approval have consistently shown that parents' permissive attitudes toward adolescent alcohol use positively predicts alcohol use and misuse among adolescents (Nash, McQueen & Bray, 2005; Wood, Read, Mitchell, et al., 2004; Yu, 2003). Parental attitudes are likely reflected in alcohol-specific practices parents use to socialize their children, but attitudes are not the same as parental practices. This study contributes to research on alcohol-specific practices, as it may be among the first to examine the influence of explicit permissive alcohol messages on adolescent alcohol misuse.

Parental alcohol use, which is another aspect of parental alcohol socialization, was included in the models as a control variable rather than an alcohol-specific practice for two reasons. One reason was that parental alcohol use may or may not be an intentional parental practice in that only some parents may modify their use as a conscious effort to socialize their children while other parents drink alcohol or abstain from alcohol use for other reasons. Another reason parental alcohol use was a control variable was that it was conceptually implausible to have parental demandingness and responsiveness predict parental alcohol use, as it would have if parental alcohol use were to be considered as an alcohol-specific parental practice. In fact, it is more likely that parental alcohol use may predict parenting style dimensions, although this hypothesis has not been well studied.

Race Group Differences

Often studies that include race/ethnic group comparisons assume that measures are equivalent across race/ethnic groups. The present study contributes to research on parental socialization because it examined some types of measurement equivalence directly, including confirmatory factor analyses and reliability analyses. The preliminary analyses confirmed that the study measurement structures of the predictor variables were equivalent for White and Black race groups. That is, the measures equally measured the latent factors assumed to be reflected in the observed predictor variables.

The study did not, however, examine all potential sources of measurement bias related to race group differences. For example, it is possible that parents in White and Black race groups interpreted question items differently due to cultural differences in the meaning of terms such as “has rules” and “wants to hear problems.” This type of cultural measurement bias could lead to race group differences caused by differences in the validity

of the predictor variables rather than actual race group differences. However, the study was a secondary analysis of quantitative data, which did not allow for assessing possible differences in how questions may have been interpreted.

In addition, the study examined, in a descriptive sense, whether the parental alcohol socialization process differed across race group. The study found that dimensions of parenting style influenced the alcohol-specific practices of both White and Black parents; however, there were some race group differences in the effect of parenting style on alcohol-specific dimensions, as described earlier. Overall, the study found that influence of parenting style dimensions on alcohol-specific practices and adolescent alcohol misuse cannot be assumed to be the same, although race group difference should be interpreted with caution as there was no direct test of such differences. One possibility for race group differences is that the predictor variables had different levels of variability across race groups, which would affect the power to detect significant relationships between predictor variables and adolescent alcohol misuse. Another consideration is that the White sample had almost twice the number of cases as the Black sample, which means that there was greater power to detect significant relationships in the White versus Black sample. Although the study met the general guidelines for determining power for mediation and moderation (i.e., at least 200 cases), formal power analyses could have been informative as to the magnitude of relationship that was possible to detect with the given samples of White and Black adolescents. Thus, future studies should examine race group differences directly, when possible, by including race as a moderator variable and ensuring that the study has adequate power to detect relationships at a desired magnitude.

Implications for Future Research

The present study has implications for future research on the study population and adolescent and parent research in general. In this section, I discuss additional considerations for examining the influence of parental socialization within the current study population, as well as the broader implications for research.

As discussed earlier, one consideration in interpreting the findings is that adolescent alcohol misuse was a measure of extreme alcohol use and problems, and therefore reflects behavior that is less normative than alcohol initiation and experimentation. It is possible that parenting style dimensions and the alcohol-specific parental practices are less influential once alcohol use has progressed to misuse than in earlier phases of alcohol use. Two alternative models, therefore, could be those that predict alcohol initiation or recent alcohol use (e.g., any use during the past three months).

Another consideration is that the predictor variables were a mean of Wave 1 and 3 parent reports. Although combining Waves 1 and 3 improved reliability of the predictor variables and reduced missing data, alternative models could use measures based on Wave 1 or Wave 3 reports. For example, the mediation model could include Wave 1 parenting style dimensions and Wave 3 alcohol-specific parental practices. The moderation model, however, would likely need to use either Wave 1 or Wave 3 reports, as the conceptualization of this model assumes that parenting style interacts with alcohol-specific parental practices at a given time point.

The study interpreted results from the full mediation models, which include significant and non-significant paths. This approach was chosen because the study aims were to examine the relationships within the models, and not only the overall model fit. Another

approach to path analysis, however, is to “trim” all non-significant paths and analyze the trimmed model. Trimming the model would likely result in changes in the strengths of paths that remain in the model and may provide different results than the present study. Another alternative may be to remove some of the mediator variables based on the strength of their relationships with parenting style dimensions and adolescent alcohol misuse. For example, alcohol monitoring for Whites was not significantly associated with either parenting style dimension or adolescent alcohol misuse and could be removed from the model.

In a broader context, the study findings point to areas of future research. In particular, parental alcohol use for Black adolescents and sibling substance for White adolescents were significant predictors of adolescent alcohol misuse. Little is known, however, about how parental alcohol use is related to dimensions of parenting style and alcohol-specific practices. One study of adolescent alcohol misuse found that parental alcohol use and intoxication was negatively associated with adolescents’ perceptions of shared activities (an aspect of responsiveness) and parental supervision (demandingness), although only parental monitoring predicted adolescent alcohol misuse (Latendresse, et al., 2007). Parental alcohol use may in fact influence adolescent alcohol misuse indirectly through other aspects of parental socialization, such as parenting style and alcohol-specific practices.

Parental alcohol use was significantly correlated in the bivariate analysis with two predictor variables for White adolescents and all predictor variables for Black adolescents. Of particular note, parental alcohol use was negatively correlated with responsiveness and positively correlated with permissive alcohol messages for White adolescents. These correlations indicated that higher alcohol consumption was associated with lower

responsiveness and more permissive alcohol messages. Further, Black parents' alcohol use was negatively correlated with both parenting style dimensions, indicating that higher parental alcohol consumption was associated with lower demandingness and responsiveness.

In addition, more research is needed about race/ethnic group differences in the effect of parental socialization on adolescent alcohol misuse. The study findings suggested that there were some race group differences in which parenting style dimensions influence particular alcohol-specific parental practices and which parental practices are related to adolescent alcohol misuse. As described earlier, one major differences between White and Black groups is that both lower demandingness and higher responsiveness predicted permissive alcohol messages for Whites, but permissive messages was unrelated to adolescent alcohol misuse for this group. In contrast, while neither parenting style dimension predicted permissive alcohol messages for Blacks, such messages were the only significant predictor of adolescent alcohol misuse for this group. In addition, alcohol contingency messages significantly predicted adolescent alcohol misuse for only White adolescents.

Although the present study examined the effect of some types of alcohol messages on adolescent alcohol misuse, more research is needed on other types of alcohol messages and alcohol practices parents in different race/ethnic groups use to influence adolescent alcohol use. In particular, a qualitative approach that elicits information from parents about their overall approach to alcohol socialization, their alcohol-specific practices and the family beliefs and behaviors that may influence their children's alcohol misuse would provide more context and details about potential differences in parental socialization for various race/ethnic groups.

Implications for Practice

Many health education efforts and pediatric clinical guidelines encourage parents to communicate with their children about alcohol to prevent alcohol initiation and use. The present study, however, found that alcohol messages can have unintended effect. Alcohol contingency messages for White adolescents and permissive alcohol messages for Black adolescents were both positively associated with alcohol misuse. The findings suggest that communicating alcohol messages may not be an effective strategy in preventing adolescent alcohol misuse because of counterproductive results and therefore, should not be the primary focus of parent education on alcohol socialization and prevention. As described earlier, permissive alcohol messages may be particularly salient for Black adolescents, as such messages positively predicted adolescent alcohol misuse for this group. Programs that are directed toward Black families in particular should consider that permissive alcohol messages are likely outside the family and socio-cultural norms established in many Black families and efforts to explicitly discourage such messages in parent education may be warranted.

Because alcohol monitoring has been well established as a positive predictor of adolescent alcohol use and misuse, the surprising lack of association between alcohol monitoring and adolescent alcohol misuse in the present study should be interpreted with caution. Parents may need to employ more intensive monitoring than the types measured in the present study, which included checking adolescents' rooms for signs of alcohol use and "sniffing" for alcohol on their children. Programs, therefore, should consider how parents can modify their monitoring once adolescents have started to engage in alcohol use to prevent escalation of alcohol use and related problems.

In addition, other parental practices may be more relevant to preventing adolescent alcohol misuse than those practices measured in the study. As noted above, parents' alcohol use, in particular, was a positive predictor of adolescent alcohol misuse for both White and Black adolescents. Parent alcohol use is an important component to parental alcohol socialization for several reasons. Parent modeling of alcohol behaviors is well established as a risk factor in adolescent drinking, as adolescents are more likely to use alcohol if their parents drink (Steinberg, 2001, Wood, et al., 2004). In particular, parents who are problem drinkers are more likely to have adolescents who misuse alcohol than parents who are moderate drinkers or abstainers (Coffelt, et al., 2005, Chassin, et al., 2002, White, et al., 2001). Parents who drink also are more likely than other parents to have alcohol available in the home and to allow their children to drink within the home (Hearst, Fulkerson, Maldonado-Molina, et al., 2007). Thus, alcohol prevention programs need to explicitly address with parents their own alcohol use and related alcohol practices that encourage adolescent alcohol use. Such programs would likely need separate strategies for parents who are non-drinkers, light to moderate drinkers and those who are problem drinkers.

Strengths and Limitations

There were some notable limitations in the present study. One limitation was that, while the study used combined measures of both parents' reports of parenting style dimensions, only the respondent parent's (usually the mother) report of alcohol-specific parental practices was available. Therefore, the study could not examine the combined influence of both parents' alcohol-specific practices. It is possible, therefore, that the study actually underestimated the influence of the alcohol-specific practices within the family environment.

Another study limitation was that the stratified White and Black analysis samples did not allow for statistical testing of race group differences, as would have been possible by including race as a moderator variable. However, there was clearly only one alcohol-specific practice for each race group, alcohol contingency messages for Whites and permissive alcohol messages for Blacks, that was associated with adolescent alcohol misuse. In addition, the separate samples allowed for examining the influence of parenting style dimensions on the entire set of alcohol-specific parental practices within each group to better understand the overall socialization process. In fact, if race had been included in the models as a moderator variable, each significant interaction would have to be stratified by race, plotted and compiled into a coherent analysis of the overall parental socialization process. The stratified samples, therefore, provided a coherent picture of parental socialization for each race group and allowed for comparison of the entire socialization process.

Another possible limitation of the study was the combined Wave 1 and 3 measures used for the predictor variables. By combining the two waves of data, it was not possible to establish the temporal relationship between parenting style dimensions and alcohol-specific parental practices. However, parenting style is established by parents early in their children's life and is assumed to be consistent and endure through adolescence (Darling & Steinberg, 1993, Baumrind, 1971). Thus, even Wave 1 parenting style dimension measures, when adolescents were in sixth to eighth grade, should not have reflected the initiation of parents' demandingness and responsiveness. In addition, the combined waves increased reliability and reduced missing data, which meant that the study findings could be interpreted with the assumption that the predictor variables adequately measured their underlying constructs.

There also were several study strengths. The study examined the process of parental socialization by testing theoretically specified relationships between parenting style dimensions, alcohol-specific practices and adolescent alcohol misuse. In contrast to studies that only examine mean level differences in parenting behaviors between White and Black race groups, this study contributes to knowledge about the strength (i.e., scalar measurement equivalence) and direction (i.e., functional measurement equivalence) of relationships within the parental socialization process (Hui & Triandis 1985). A related strength is that the study compared White and Black families. Because research on race/ethnic group differences is inconclusive with respect to whether cultural differences exist in parental socialization, the present study contributes to knowledge about such differences. In particular, the study found that some differences exist in the influence of parenting style dimensions on alcohol-specific practices and differences in the influence of such practices on White and Black adolescents' alcohol misuse.

Another study strength was its longitudinal study design, with parents' combined Wave 1 and 3 parenting behaviors hypothesized to predict Wave 5 adolescent alcohol misuse. Because of the longitudinal design, the study could establish that parenting style dimensions and alcohol-specific practices preceded adolescents' reports of their alcohol misuse. Because it is possible that adolescent alcohol misuse could actually influence parental behaviors, a cross-sectional design would have greatly weakened any causal attribution of the predictor variables on adolescent alcohol misuse. In fact, adolescent alcohol misuse prior to Wave 5 may have influenced parental socialization behaviors measured in the study, but only a small proportion of White and Black adolescents had reported alcohol misuse at earlier waves.

Finally, the study clarified relationships between dimensions of parenting style and alcohol-specific parental practices by testing the separate effects of demandingness and responsiveness on such practices. In fact, the study findings support that research on parental socialization should consider demandingness and responsiveness as separate influences on alcohol-specific practices, although both parenting style dimensions may influence such practices.

In summary, the study did not find support for either a moderation or mediation model as a parental socialization process that predicted adolescent alcohol misuse. As noted throughout the discussion, however, there were clear links between one or both parenting style dimensions and the alcohol-specific parental practices for both White and Black adolescents. In addition, alcohol contingency messages for White and permissive alcohol messages for Black adolescents significantly predicted adolescent alcohol misuse. Parental alcohol use also was an important predictor of adolescent alcohol misuse. Future research should continue to explore the relationships between parenting style dimensions, alcohol-specific practices and parental alcohol use to further clarify the role of parental alcohol use in family alcohol socialization.

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