THE EFFECTS OF ALCOHOL ADVERTISING ON COLLEGE STUDENTS’ BEHAVIORS:
USING FAMILY COMMUNICATION AS A PROTECTIVE FACTOR AGAINST HEAVY
DRINKING AND RISKY SEXUAL BEHAVIORS

By
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To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of MARIE LOUISE RADANIELINA-HITA find it satisfactory and recommend that it be accepted.

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Abstract

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An online survey of undergraduates explored the effects of recalled parent-child interaction regarding media on their critical thinking skills, beliefs about alcohol and sex and current reports of risky behaviors. Students completed the questionnaire three times during fall 2011. The SEM analyses were based on 676 students. The longitudinal data set was used to model a latent trajectory of drinking and risky behaviors.

Students whose parents critiqued media content reported a higher level of critical thinking toward media sources and media content. More critical thinking toward media sources decreased the effects of advertising on alcohol-related expectancies. More critical thinking toward media content decreased the effects of advertising on sex-related expectancies, alcohol-related behaviors and risky sexual behaviors. Parents’ mediation served as protective factors against the effects of advertising on drinking via their effects on critical thinking toward media sources and alcohol-related expectancies. Negative mediation decreased risky sexual behaviors as a result of drinking via its prior effects on critical thinking toward media content and sex-
related expectancies. On the other hand, students whose parents endorsed media portrayals reported lower levels of critical thinking. Positive mediation predicted more risky sexual behaviors. Therefore, critical thinking toward media directly and consistently affected risky behaviors. Alcohol-related expectancies were related to sex-related expectancies. At time 1, more drinking predicted more risky sexual behaviors. However, the relationship did not stand the test of time. The analyses also revealed a linear decrease of drinking from time 1 to time 3.

Developing critical thinking toward media is an effective approach to helping young people make good decision about their health. Although students’ understanding of advertising content may be biased by the emotional aspect of decision making, critical thinking decreased the appeal of advertising on risky behaviors. Parents play an important role in developing their children’s critical thinking skills. As the positive effect of parent-child communication influenced current behaviors, prevention programs targeting college students may still benefit from an inclusion of family communication practices. Although preliminary, the non-significant association between alcohol-related behaviors and risky sexual behaviors across time buttressed previous research, which established a more correlational nature rather than directional relationship.
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DEDICATION

This dissertation is dedicated to my parents,

Radanielina-Ignace Marie Julien and Ravaosolo Marie Louise
CHAPTER ONE
INTRODUCTION

Past research provides compelling evidence that alcohol may impair decision making related to sexual behaviors. For instance, Weinhardt (2000) reported that being intoxicated may increase the likelihood that one will engage in unprotected intercourse. As a matter of fact, individuals who believed in the disinhibitory power of alcohol also reported drinking to intoxication when they were on a date (Dermen & Cooper, 1994). In addition, Santelli, Robin, Brener and Lowry (2001) reported an inverse relationship between age of alcohol experimentation and consistent use of condoms. Studies examining other aspects of sexual life revealed the same pattern of results. Individuals who engaged in sexual relationships with multiple partners were also more likely to drink consistently (Cooper, 2006). Given the hypothesized link between alcohol use and risky sexual behaviors, producing changes in drinking patterns has become the stepping-stone of many public health programs (Labrie, Earleywine, Schiffman, Pedersen & Marriot, 2005). Health professionals have particularly focused on alcohol consumption prior to sexual activity (Cooper, 2006).

Cooper (2006) identified no fewer than 600 studies over a 20-year period that focused on both college students and the general population. Past research (e.g., Bonomo, Coffey & Wolfe, 2001; Labrie et al., 2005; Shih, Miles, Tucker, Zhou & D’Amico, 2010; Weinhardt, 2000) looked at a wide range of behaviors including condom use, age at first intercourse, date rape, sexual assault, unprotected sex, and more general attitudes about sex. The current line of research has made significant contribution by identifying the conditions under which, and the individuals for whom, the link between drinking patterns and risky sexual behaviors, are most likely. Some of the factors that limit the utility of this line of research include the issue of
causation and a limited understanding of the process through which the effects occur. Certainly patterns at the basic level have been established such as the consistent finding that decision making in the context of alcohol use may be problematic. However, mixed results in the literature (Santelli et al., 2001; Santelli, Carter, Orr & Dittus, 2009) due to methodological limitations underscore the need for more research showing that alcohol is indeed a precursor for risky sexual behaviors.

To contribute substantially to the literature, it is important not only to demonstrate that alcohol use affects risky sexual behaviors but also to model the latent trajectory of drinking and risky sexual behaviors; thereby tracking variations across time. Much concern centers on understanding the mechanism through which the effects occur and how broader societal factors such as media or parents mediate the effects leading us to focus on the decision-making process that subsequently affects behaviors. The current study uses a process model called Message Interpretation Model or MIP, which provides the theoretical linkage between the benchmarks of decision making, parental and children’s critical thinking skills, and behaviors (Austin, 2001; 2007; Austin & Chen, 2003; Austin & Meili, 1994; Austin, Pinkleton & Fujioka, 2000; Pinkleton, Austin, Cohen, Chen & Fitzgerald, 2007; Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008).

To address researchers’ call to decrease drinking and related consequences among college students (Goldman, Boyd, & Faden, 2002; Hingson, Heeren, Zakocs, Kopstein & Wechsler, 2001; National Institute on Alcohol Abuse and Alcoholism, 2002; Slutske, et. al, 2004), this study focuses on the complex interplay between individual, relational and societal factors that put college students at risk for engaging in problematic drinking and displaying behaviors that further represent health risks. Slutske and her colleagues (2004) investigated the differences in
the drinking patterns of female college students and their noncollege peers. Of all known risk factors, one aspect of drinking really stood out. Slutske et al. (2004) noted that being in college predicted more drinking. Their finding is consistent with other research. For instance, heavy or binge drinking, considered as the most common indicator of drinking problem, was more likely among 18 to 24-year old college students (Bosari, Murphy & Barnett, 2007).

Currently available data tends to suggest that students who engage in more drinking also engage in more risky sexual behaviors. Survey research showed that “up to half of the undergraduates report drinking more than usual to make it easier to have sex and giving their partners alcohol to increase the likelihood of sex” (Cooper, 2006, p.20). Studies tend to suggest that the heavier the drinking, the stronger its relationship to risky sexual behaviors (Weinhardt, 2000). The prevalence of problematic drinking and the potential for associated behaviors among college students have led researchers (Slutske et al., 2004; O’Malley & Johnston, 2002) to conclude that college life may somewhat serve as an environmental risk factor for the occurrence of risky behaviors. By the time they reach college, many students already have engaged in some form of risky sexual behaviors making incoming students appropriate participants for a study on risky behaviors. In one survey on risky behaviors, 54% of male and 37% of female college students reported that they had 5 or more sexual partners at the time of the study (Labrie et al., 2005). Labrie and his colleagues also reported that 29% of male and 12% of female participants have had 10 sexual partners. Risky behaviors are, however, preventable. To develop effective strategies that can help young people make good decision requires a good understanding of the factors that influence their drinking and related behaviors.
Understanding the Effect of Media on Risky Behaviors

Although a number of factors may contribute to risky behaviors among college students, a key issue from a health communication perspective addresses the effect that alcohol advertising has on young people’s decision-making process and subsequent behaviors. Young viewers are overexposed to alcohol advertising with alcohol companies spending nearly $2.7 billion to place about 29,014 advertisements for alcohol products in U.S. magazines (CAMY, 2010). The same upward trend has been observed on television. In addition, alcohol ads are being placed in programs that are popular among late teens and children. As a result, research (e.g.: Austin, Bolls, Fujioka & Engelbertson, 1999; Austin et al., 2000; Pinkleton et al., 2007) has identified alcohol advertising as a risk factor that increases drinking via advertisers’ appeals to the viewers (Austin et al., 2006; 2008), influencing viewers’ perceptions of alcohol portrayals and biasing their understanding of advertising intent. Both cross-sectional and longitudinal studies lend support to the proposition that exposure to alcohol advertising influences drinking (Anderson, Bruijin, Angus, Gordon & Hastings, 2009; Austin et al., 2000; Smith & Foxcroft, 2009; Martin et al., 2002).

Alcohol advertising seems to be the most likely candidate to test the alcohol-sex link hypothesis. Advertising of alcoholic beverages conveys potentially powerful sexual scripts, including images of attractive models who are shown drinking alcohol in the context of sexual activity and flirting with one another. Content-analytic studies reveal that not only does alcohol advertising depict alcohol consumption in a positive light but it also makes use of sexually related content to promote the product (Austin & Hust, 2005; Finn & Strickland, 1982; Jones & Reid, 2010; Reichert & Lambiase, 2003; 2004). Characters in ads often make explicit or implicit references to sexual behaviors in the context of alcohol consumption.
Past research has largely overlooked the effects of drinking in the context of sexual interactions on viewers’ behaviors. This lack of attention is surprising given that health professionals have called upon advertisers’ use of sex as a persuasive technique to explain the occurrence of risky sexual behaviors as a result of alcohol use. Reichert and Lambiase (2003) argue that “The effect of multiple images on youth who are developing their sense of self and understanding of relationships is also likely to be a strong contributor to the social norm of (excessive) drinking as an essential component of sexual interactions” (p. 31). This is an important issue because having sexual intercourse under risky circumstances may cause detrimental consequences including unprotected sexual intercourse, or even sexual violence. By targeting on the cognitive shortcuts used by media consumers (Davis, 2003), alcohol claims prime and perpetuate stereotypical attitudes about drinking and sex (Wheeler & Petty, 2001). Too young to possess the skills to question their own media experiences and filter the lifestyles and values that will lead to healthy choices, young viewers may be unconsciously influenced by the portrayal of alcohol use as part of sexual activity.

As researchers pointed at, advertising claims may mislead viewers to think that engaging in risky sexual behaviors when intoxicated, is excusable (Reichert & Lambiase, 2003). As a result of this misperception, the public has become increasingly uncomfortable with advertisers’ use of alcohol consumption in the context of sexual activity (Jones & Reid, 2010). Public policy has also been affected by the oversexualization of alcohol ads. Different bodies have taken steps to decrease the use of sex in association with alcohol consumption. For instance, the Beer and Distilled Spirits Codes stipulate that drinking should not be associated with success in sex. The UK committee of Advertising Practice has taken similar steps by requiring that advertisers not attempt to link alcohol with seduction (Jones & Reid, 2010). Despite public outcry, the use of
sex as a persuasive technique in alcohol advertising has not stopped (Jones & Reid, 2010, Reichert & Lambiase, 2003; 2004). Therefore, it is necessary to conduct more research investigating whether exposure to those images may lead to more risky sexual behaviors as a result of drinking. It is also important to determine the set of skills that may help decrease the persuasive effects of alcohol advertising on behaviors. Based on the results of previous research (e.g.: Austin & Chen, 2003, Bleakley, Hennessy, Fishbein, Coles & Jordan, 2009; Bristol & Mangleburg, 2005) this study focuses on the role of parental mediation and critical thinking skills on decision-making processes.

The Role of Parents and Critical Thinking toward Media on Behaviors

As society becomes more media-saturated, one of the challenges to maintaining a healthy population is not to change these media consumers but rather to affect how the latter react to what is shown in the media. Two lines of research – the ecological and socio-ecological approach to health (Bronfenbrenner, 1979; Fraser, 2004) recognize the importance of the broader societal factors as a response to health risks. Because family (Bryant, 1990) is considered as people’s primary agent of socialization, parents have a pivotal role in helping children manage the media environment more effectively. Effective parental management should strive to empower children so that they can take an active rather than a passive role in navigating the media. Some researchers even argued that if they can deliver media literacy training effectively, parents will have one of the most enduring effects on their children (Austin & Chen, 2003). The effect that parental involvement has on their children’s behaviors is a well-documented relationship (Austin, 1993; Austin & Chen, 2003; Bleakley et al., 2009; Bristol & Mangleburg, 2005; Chaffee & McLeod, 1971, 1973; Collins et al., 2004; Fujioka & Austin, 2003; Kinnard & Webster, 2010; Mangleburg & Bristol, 1998; Nathanson, 2002).
The positive effect of parents is expected to be indirect operating through their children’s critical thinking which then affects the latter’s perceptions of media content and concurring beliefs about drinking and sex. For instance, Fujioka and Austin (2003) found an inverse relationship between positive mediation and a child’s level of skepticism. Children whose parents were less likely to endorse media portrayal also reported a higher level of scepticism and vice-versa. Research also indicates that a child, who grew up in a concept-oriented family, where open communication is valued, is more likely to report a higher level of skepticism (Mangleburg & Bristol, 1998). When children became more skeptical of media content, they were better able to assess advertisers’ claims more critically. Skepticism acts a defense mechanism against media content thereby decreasing the likelihood these young viewers will emulate risky behaviors (Austin, Chen & Grube, 2006). To sum it up, the positive effect of parents, along with the influence of peers, were strong enough as to neutralize the persuasive effects of advertising on adolescents’ risky behaviors such as drinking and smoking (Kinnard & Webster, 2010).

As a result, the American Academy of Pediatrics (2010) recommended that parents serve as positive media role models to their children and mediate their media use. Recommendations to parents also include helping children to become media literate by helping them understand how media is packaged and by discussing with them about what is being portrayed in the media. McLeod, Chaffee and colleagues (Chaffee, McLeod & Atkin, 1971), who pioneered research on family communication styles, argued that the long-term effects of communication practices on decision-making processes should persist even years after the young adult has left home. Since the child internalizes and generalizes the pattern(s) of communication promoted at home instead of the specific issues or topics that parents mediate, it stands to reason that a child who grew up
in a family where parents promoted critical thinking is more likely to be equipped with a set of skills that will help her/him better handle media experiences even when (s)he has left home.

Understanding the effects of retrospective reports of parent-child interactions on college-aged populations involves a developmental perspective of family as an agent of socialization. Effects of family variables on behaviors tend to be small but significant (e.g. Schrodt, Witt, & Messersmith 2008; Aquilino, 1996). Recognizing that the frequency of parent-child interactions vary across time and across topics, researchers cautioned about any attempt to disregard parental influence in adult children’s health behaviors. For instance, Block (1971) argued that there is some evidence showing an association between childhood experiences and current behaviors. As they transition into adolescence, individuals’ agents of socializations widen to include media and peers. Early parent-child interactions still foster beneficial attitudes among their adult children. Even though the effects of parental influence on adolescents’ tobacco use were shown to decrease in comparison with peers, it was also shown to mediate the effects of peer (Chassin et al. 1981; Krohn et al. 1983). In addition, Ginsburg and De Vore (2005) argued that parents who engaged in effective parenting are more likely to help adolescents’ health behaviors. On the other hand, other forms of parenting may increase the likelihood that young people will engage in risky behaviors.

Research in risky sexual behaviors show the same patterns of results. As teenagers get older, parents’ influence on their sexual attitudes was shown to decrease. However, the effects remained statistically significant. Hawkins, Lishner and Catalano (1986) argued that individuals, who did not benefit from a healthy socialization in their family are more likely to participate in risky behaviors and are thus more likely to use drugs to cope with the challenges and stress that come with the transitional period from adolescence to adulthood. In the light of the many other
agents of socialization that may influence adult children, the mere fact that childhood
experiences still influenced current behaviors is noteworthy.

But despite the potential for recalled parental mediation to act as a protective factor, only
a few published studies have ever tested the effects of recalled parental mediation on skepticism
(e.g.: Austin et al., 2008), let alone predict subsequent behaviors (for an exception, see Austin &
Chen, 2003; Booth-Butterfield & Sidelinger, 1998). Past research is promising. Austin and Chen
(2003) found an association between parental mediation and skepticism. A lack of skepticism
was related to more dangerous use of alcohol. Other research focused on the effects that parent-
child communication practices have on sexual communication. Parents who emphasize the free
flow of communication in their family also reported the greatest amount of sexual
communication (Booth-Butterfield & Sidelinger, 1998). As a matter fact, mothers were cited
among the top four sources of information in regard to sex (Bleakley et al., 2009).

Individuals who considered parents as their main agent of sexual socialization engaged in
fewer sexual activities (Spanier, 1977) with fewer sexual partners (Booth-Butterfield &
Sidelinger, 1998). Collins et al. (2004) also reported that when parents watch TV with their
children, and actively discuss media content related to sex as well as their own beliefs about sex
with their children, the latter are less likely to engage in risky sexual behaviors. Despite their
potential as protective factor against the negative effects of media on behaviors, however parents
are not often included in ecological models of health (Austin, Knaus & Meneguelli, 1998; St.
Peters, Fitch, Huston, Wright, & Eakins, 2001).

This dissertation contributes to the literature in three ways: First, it will extend traditional
media effects study by explaining how and why the effects occur. Second, it will help establish if
parental mediation really serves as a protective factor against the co-occurrence of heavy alcohol
use and risky sexual behaviors. Last, the current research will help establish a temporal link between alcohol use and risky sexual behaviors. Towards that goal, Chapter two presents an overview of the literature review. Chapter three discusses the theoretical framework. In Chapter four, a method to study the hypotheses and research questions is proposed. Chapter 5 presents the results. The limitations and recommendations for future research are addressed in the last chapter.
CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL RATIONALE

This chapter provides an overview of past research on drinking and sexual behaviors to identify key issues for a study on the alcohol-sex link among college students. Following the section on media portrayals of alcohol and sex, a discussion of traditional media effects theory is offered.

Media Research on Sex and Alcohol: A Review of the Literature

Concerns about the effects of media content related to alcohol and sex on individuals’ behaviors are well-placed. Media effects scholars (Roberts & Christenson, 2000) recommended 3 steps when attempting to explain the effects of media on behaviors: First, researchers must show that alcohol and sexually related content exist in the medium of interest, here alcohol advertising. Second, researchers should demonstrate that people are really exposed to alcohol advertising. Finally, they should establish that viewers’ exposure to the content influences their behaviors. The literature on sex and the media can be divided into: (1) content-analytic studies and (2) effect studies. Content analyses are primarily concerned with the portrayal of alcohol and sex in the media. On the other hand, effect studies, most of which, built upon cultivation theory (Gerbner & Gross, 1976) and social cognitive theory (Bandura, 1985), look at the effects that media portrayals have on individuals’ behaviors. In her review, Ward (2003) identified 64 content studies about sex and 36 effect studies.

Sex And Alcohol In Entertainment Media.

Researchers (Ward, 2003; Cantor, Mares & Hyde, 2002) argue that media are one of the most important agents of sexual socialization. For the purpose of this study, sexual socialization is defined as “the process by which knowledge, attitudes, and values about sexuality are
acquired” (Ward, 2003, p.348). Empirical evidence lends support to their claim. Media serve as one of viewers’ top sources of sexual information (Bleakley et al., 2009). In her review of the literature, Ward (2003) identified 36 studies that examine the effects of exposure to sexually related content on viewers’ behaviors. The overall trend is that exposure to sexual content has an effect on viewers’ behaviors. For instance, Collins et al. (2004) tracked the changes in sexual behaviors among 12 to 17-year olds over a one-year period. Compared to light viewers, those who are more exposed to sexual content aged 12 were more likely to display similar sexual behaviors as that of 14- to 15-year old teens. The effects of media content remained substantial and statistically significant after controlling for covariates including participants’ level of sexuality at the beginning of the study. In addition, Bleakley et al. (2009) reported that changes in the amount of exposure to sexual content among White adolescents were associated with changes in their sexual behaviors.

There is compelling argument that sex is prevalent across all media. For instance, Kunken, Biely and Eyal (2003) noted that sex is a common element of television programming even those that are targeted toward adolescents. In their content analysis, L’Engle, Brown and Kenneavy (2006) found that sexual content made up 12% (28,000 units) of the content they analysed from television shows, movies, music and magazines (236,000 units). It is not surprising that young viewers may be exposed to up to 15,000 sexual references, jokes, and innuendoes each year (Strasburger & Dinnerstein, 1999). Media portrayals generally have 5 themes.

First, media depict sexual activity as a risk-free recreational activity occurring mostly among people in non-committed relationship. There has been frequent depiction of extra-marital sex (Ward, 2003). In their content-analytic study, Lowry and Towles’ (1989) reported that sex
between married couples was mentioned in only 12 scenes. When pitted against the 285 references to unmarried sexual intercourse, this statistic is telling. Given what is known from developmental research, those findings raise concerns. In reviewing the significance, characteristics, and development of adolescent romantic experiences and relationships, Bouchey & Furman (2003) argue that the way adolescents and young viewers view dating and romance is quite different from adults. These researchers note how young people who first attempt to develop romantic relationships often rely on the stereotypical portrayals of heterosexual love conveyed in the media. This leads young people to misunderstand what should the idea of being in a romantic relationship be like. For instance, by glamorizing unmarried sex, the media may unconsciously lead young viewers to pursue this form of intimacy in any relationship, thereby emphasizing what Lauman, Gagnon, Michael and Michaels (1994) called “recreational” perspective on sexuality. Viewing sexual intercourse as recreational will not help youths develop the patterns of behaviors needed in a committed relationship. In addition, it may also raise concerns about STDs and unplanned pregnancies. By perpetuating stereotypical gender roles in a relationship, the media may influence young females to conform to the norms; thereby depriving them of their sexual agency.

Second, despite sex being potentially stigmatizing for some vulnerable populations, the idea of engaging in sexual intercourse is frequently shown across several demographic communities. Characters in the media often talk about engaging in sexual activity with other characters. At the same time, discussions about safe sex practices or how people can protect themselves against the potential consequences of having unprotected sex are rarely addressed. Research (L’Engle, Brown & Kenneavy, 2006) indicates that 83% of the top 20 Nielsen-rated teen television portrayed sex in some ways. On the other hand, the risks and consequences of
engaging in sexual intercourse are only mentioned in 12% of them. As a result, young viewers who are starting to navigate through sexual and romantic relationships are left in the dark about how to keep their sexual relationships safe from potentially negative consequences.

Third, the prevalence of references to different types of sex differed significantly by medium (TV, music, video, and magazines) as well as genre. Results based on the Teen Media project (Pardun, L’Engle & Brown, 2005) suggest that music contains more than 3 times (40%) the amount of sexual references of the next closest medium movies (12% sexual content). Movies were followed by television (11%), magazines (8%), Internet sites (6%), and newspapers (1%). Body exposure and romantic relationships accounted for two-thirds of all the sexual content that was coded. One of the most interesting findings was that sexual intercourse was rarely shown on TV (Roberts & Christianson, 2000; Ward, 2003). The most frequently-occurring physical behavior was passionate kissing. However, frequency of behavior varied across the different media with music referencing sexual intercourse more explicitly and more often than TV (3%) and movies (4%). Research also indicates that more references to sex are made in soap operas than on primetime programming. On the other hand, primetime programs include a wider range of sexual behaviors, more premarital sex, and used more explicit language (e.g., Greenberg, 1993; Greenberg & Hofschire, 2000; Ward, 2003).

Fourth, men and women are depicted as having fundamentally different approaches to sex and sexual relationships (Davis, 2003). The media also promote and perpetuate stereotypical ideas about gender roles in romantic and sexual relationships. Men are typically shown as macho, sex-driven creatures whose primary goal is to have as much sex as they can. On the other hand, women are usually depicted as passive individuals whose goal in life is attracting one man, settling down to become a stay-home mother. Finally, the amount and frequency of sexual
content is increasing. In tracking the changes in the magazine Seventeen on a 20-year time span (from 1974 till 1994), Carpenter (2001), reported that references to sexual desire increased from 15% to 19% to 23%. In addition, sexual scripts became more varied.

Alcohol In The Media.

The overall trend suggests that alcohol has become the most frequently used drug on entertainment TV. Research (Wallack, Grube, Madden & Breed, 1990) indicates that alcohol was more frequently depicted in the media in the late 1970s and early 1980s. There is common agreement that the occurrence of drinking in the media decreased between 1984 and 1986. However, recent empirical evidence tends to suggest that alcohol is gradually making its comeback on entertainment TV. In a survey of the top 20 shows among teens and adults, Christenson, Henriksen and Roberts (2000) found that references to alcohol use occurred in 77% of them. In his content analysis of 18 programs, Russell (2006) reported that prime-time shows contained an increased reference to alcohol use both verbally and visually.

In discussing media portrayals of alcohol, Roberts and Christenson (2000) noted how TV makes drinking look like a normal part of life. Characters are often shown drinking alcohol excessively and at a quicker rate than nonalcoholic beverages (Roberts & Christenson, 2000). For instance, major characters in these popular shows were shown using alcohol every 1.6 minutes per hour. Meanwhile, the same characters are shown drinking nonalcoholic beverages an average of 2.4 minutes. In addition, the negative consequences of heavy drinking were left out. Second, explicit alcohol use on entertainment TV is usually shown in the context of other activities without any warning of the potential consequences. Content-analytic studies indicate that TV rarely includes “anti-use” messages (8%). Even worse, the few statements included in TV shows are more likely to be supportive of drinking rather than discouraging drinking
(Roberts & Christenson, 2000). These researchers also found that characters were shown refusing alcohol only in 1% of the 119 episodes that were coded (Roberts & Christiansen, 2000). This is modelling at its finest and given the premise of social cognitive theory (Bandura, 1977; 1986), this type of portrayal is disconcerting to health professionals. Media portrayals do not convey the message that if offered alcohol, one can actually refuse it. Young viewers who have not had time to develop their own set of values and arguments to say no to alcohol may be misled into believing that not drinking is the exception whereas drinking is the rule.

In summary, content-analytic studies showed that the depiction of alcohol and sex in the media is neither healthy nor realistic. Currently available data also show that viewers do receive a fair amount of sexual information and depictions of alcohol from the entertainment media. Media tend to leave out important information and do not raise concerns about the consequences of engaging in a sexual relationship in the context of drinking. Moreover, alcohol advertising has been largely overlooked in past research on sex in the media. Yet, in light of the data showing that youths are overexposed to alcohol advertising, much of which contains messages relevant to sexual activity, it is unclear whether alcohol advertising affects viewers’ behaviors.

Advertising as A Context Of Study.

Research suggests that youths are overexposed to alcohol advertising with alcohol companies spending nearly $ 2.7 billion to place about 29,014 advertisements for alcohol products in U.S. magazines (CAMY, 2010). This is an upward trend that also has been observed on television. In addition, alcohol ads are being placed on programs that are popular among late teens and children. This is problematic because family scholars have reported children tend to watch these programs without their parents. In the absence of parents that could help filter and understand who and what behaviors are in accord with their value, these youngsters are more
likely to be influenced by lifestyles and values that are not good for them. Similar to children, adolescents and late teens are overexposed to alcohol advertising (Snyder, Fleming Milici, Slater, Sun & Strizhakova 2006). This overexposure to alcohol ads raises concerns since underage drinkers remembered and liked what they saw (Johnson, 2009). The liking translated into behaviors since 63% of high school seniors reported to have had a drink and another 32% reported that they would start to drink by their eighth grade (Johnson, 2009). The trend does not decrease among those who go to college.

Research indicates that drinking increases during the first year of college (Bishop et al., 2005; Weitzman, Nelson, & Wechsler, 2003; White et al., 2006). To get more in-depth understanding of how viewers process and understand messages conveyed in alcohol advertising, Jones and Reid (2010) asked students whether they could identify any of the sexual appeals used by advertisers. They also elicited affective responses with open-ended questions. Their findings help connect the dots between ads’ content and behaviors. Jones and Reid found that not only were students aware of the sexual techniques used to attract their attention but they were also drawn to the ads because of them. These findings mean that youths’ understanding of advertising content is biased by the appealing sexual appeals.

*Sexual Appeals in Advertising.*

Using sex to promote one’s products in the hope to sell them is not a new phenomenon. Although sexual imagery in commercials including alcohol advertising may vary, it often includes some content that viewers interpret as sexual (Reichert & Ramirez, 2000). Similar to entertainment TV, advertising uses either verbal or visual devices to convey sexual content. Reichert and Lambiase (2003) note that stimuli identified as sexual often refer to “physically attractive models whose alluring bodies are partially revealed by provocative apparel” (p.121). In
addition to clothing, advertisers have introduced sexual content in subtle ways by using innuendos which left little to the viewers’ imagination. Past research indicates that marketers have mainly used sex as an attention-grabber to increase ads’ memorability (Parker & Furnham, 2007). Since viewers cannot remember content which they did not pay attention to, marketers often use sex as an effective attention grabber. These attention-grabber devices are built on three themes: (1) sexual attractiveness for the consumer; (2) likely engagement in sexual behavior (and more enjoyment from these encounters); and (3), sex esteem defined as the feeling of being sexy or sensual (Reichert & Lambiase, 2003).

The effectiveness of sex as a persuasive technique has been measured by assessing viewers’ level of involvement with the ads as well as by their ability to remember the product and eventually their intention to purchase the product (Gunter, 2000; Parker & Furnham, 2007). There is some evidence suggesting that the use of sex as a device to promote commercial products may have some boomerang effects. Instead of increasing people’s intention to purchase the product, the use of sex as a device to sell may turn people off. Experimental studies showed that people exposed to sex stimuli were less likely to remember the brand. In addition, the sex stimuli did not increase purchase intention either. In one experimental study, Dudley (1999) exposed the treatment group to an ad included in a selected episode of “Sex and the City”. At the end of the experiment, those who were in the treatment group recalled fewer brand names than those who were not exposed to the content. By monopolizing viewers’ cognitive resources, the presence of sexual scripts may shift viewers’ attention from the product itself making it difficult for them to remember anything about brand that the ad tried to promote (Jones & Reid, 2010).

The same pattern of results was found with violent content. In experimental studies, it was reported that the treatment group’s ability to recall television advertising was impaired by
the presence of violent content (Parker & Furnham, 2007). Parker and Furnham (2007) suggested that all the efforts that viewers have to put into attenuating the anger that they feel in watching the violent content may decrease the likelihood that they will process the messages any deeper. Bushman and Bonaci (2002) referred to the same ‘Cognitive Interference Theory’ to explain why and how sexual and violent content impair viewers’ recall of advertising. It appears as if being exposed to sexual or violent content may demand more attention from viewers, thereby reducing cognitive space left to process the information conveyed about the product. As a result, viewers are less likely to recall the content of the advertising and recall the brand name. Eventually, it may also affect their intention to purchase the product.

In summary, empirical evidence suggests that using sex as a persuasive technique may not necessarily increase the effectiveness of ads operationalized as purchase intention. Despite the weak association between intention to buy the brand and exposure to sexual appeals, marketers increasingly rely on female sexuality, to sell alcohol (Jones & Reid, 2010). Even though health organizations as well as businesses can all contribute to educating viewers, it will be challenging to ask beer advertisers to abandon the use of sex as a persuasion technique. The stakes are even higher for social scientists who need to go beyond ‘sex as an attention-getter’ when examining the effect of sexual images in alcohol advertising (Reichert & Lambiase, 2003). For instance, Bushman and Bonaci (2002) suggest that not only does sex decrease the likelihood that viewers will remember the brand but it also encourages sexual thoughts. They then conclude that these continued thoughts about sex or violence reduce viewers’ ability to process the advertisement.

Other content-analytic studies revealed that advertising conveys stereotypical portrayals attitudes about men and women, in conjunction with alcohol consumption. The need for effective
communication in a very short period of time may make it challenging to avoid using stereotypes. Therefore, alcohol advertisers have developed more and more creative ads promoting beliefs and lifestyles that appeal to young people including the importance of being sexier, glamorous, and successful in their sex life. These images tap onto people’s insecurities. Viewers, especially young people who feel insecure about their looks, their social and sexual situations may feel vulnerable to these constructed and ideal situations. As Saffer (2010) put it “Advertising creates the impression that, for a relatively small expenditure, young people can psychologically connect to the positive fantasy places, lifestyle and personality characteristics that it portrays” (p.175). But what makes the depiction of sexuality in advertising fulfilling to viewers?

Those who pioneered research on sex in advertising in the 1960s conceptualized sexual stimuli as “scantily clad images of women” which could “influence advertising response” (Reichert & Lambiase, 2003, p.121). Research revealed a gender effect with women being more sexually objectified. It was also reported that more women (84.2%) than men (15.8%) were depicted in sexual ads (Reichert & Lambiase, 2003). When ads relied more on female characters, the latter were depicted as decorative objects and were more likely to be objectified. In a content-analytic study, Lin (1998) found an unequal proportion of male and female characters represented as sex object with only 9% of male characters and 23% of female characters. Female characters tend to have less clothing on them than male characters (Jones & Reid, 2010, Lin, 1998; Reichert & Lambiase, 2003; 2004). Other research has focused on the extent to which alcohol advertising reinforces sex role stereotypes of males and females and other demographics (e.g.: Finn & Strickland, 1982).
Similar to entertainment TV, men and women in advertising are also depicted in markedly different ways. In their content-analytic study of alcohol advertisements, Finn and Strickland (1982) found that the major characters on both television and in advertisements were more likely to be male. Demographics of the population were not reflected in the commercials either. Roberts and Christianson (2000) note that alcohol portrayals have not drastically changed since Finn and Strickland’s (1982) study. For instance, characters shown drinking were more likely to be an attractive, successful Caucasian man (Roberts & Christianson, 2000). In their content analysis of magazine and video ads, Austin and Hust (2005) showed the same patterns of results. They reported that in 61% of the ads, major characters were Caucasian, followed by African Americans (14%), Asians (5%), and Latinos (5%). Native Americans were never depicted as major characters. Consistent with past research, differences were found in the types of activities that men and women were doing. Alcohol ads presented female characters as victim 6% of the time. On the other hand, the theme of male victimization did not occur at all. These themes are based on stereotypical views of women being vulnerable and in need of help while men supposedly are more instrumental and capable of solving their problems.

This portrayal was so prevalent that media scholars started talking about advertising sexism. Advertising sexism is defined as the “use of derogatory gender role stereotypes or portrayals in advertising” (Jones & Reid, 2010, p.20). Women were sexually objectified and were not presented as professional in the same manner as men were. Instead, women were mostly used as decorative background. Despite its inaccuracy, the ‘dumb, blonde’ imagery has become a trademark in beer advertising, a product that was mostly targeted toward men. Past research suggests that men are more likely to remember this type of content than female viewers (Parker
& Furnham, 2007). In addition, women are more likely to disapprove of this traditional stereotype than men (Dudley, 1999).

To address the public outcry of advertising sexism in parallel with the rise of feminism, marketers have adopted a new approach to sex captured in the concept of raunch culture (Gill, 2008; Jones & Reid, 2010). The next generation of alcohol ads conveyed a different image of women. They are now conscious of their sexual attractiveness and do not shy away from taking advantage of it. The idea was empower women by encouraging them to play with their sexuality. Stated in another way, women are still being presented sexually. However, the sexualization of women has now become a doing of their own. As Gill (2008) put it, “subjectification” is the new objectification, in which active, assertive women choose to be sex objects. However, contrary to the traditional sex object, this second one was seen as empowering and therefore positive. Other researchers (e.g.: Levy, 2005) argued that the raunch culture is just another way to integrate sexiness into mainstream culture.

In comparing the traditional and the new stereotype, Jones and Reid (2010) noted that the only notable difference was that the raunch culture is associated with power. Advertisers have used the same old ingredients and added a new flavor (power) to construct a new, modern image of women in advertising. Or at least advertisers hope that the message sent is not different from the interpretation that viewers will make of it when they see the ads. There is some empirical evidence suggesting that part of the female audience found the message relevant. Jones and Reid (2010) exposed college students to three ads, one of which built upon the idea of raunch culture. They found that even though the ad based on raunch culture was the least liked by women, the few students who liked it did so because of what they perceived to be feminist empowerment.
However, consistent with qualitative research (Lass & Hart, 2004), some female college students expressed concerns that the new image made women look promiscuous (Jones & Reid, 2010).

There remain considerable debates about whether this new portrayal is harmful to the feminist cause or whether it may help decrease sex role stereotyping. Gill (2008) argues women are still being scrutinized through the male gaze. And experimental studies seem to be consistent with her conclusions. College students, primarily females felt as if the ad’s attempt at empowering female characters with sex was doing more harm than good (Jones & Reid, 2010). Thus, the existing empirical evidence tends to suggest that the alcohol industry should work harder to find the effective balance between using female sexual appeals as a persuasive technique while at the same time avoiding the traditional sex object stereotype. Although marketers are relying on the raunch culture to reach/open up their market, it does not appear to be working in the way advertisers would want. Research showed that even though the raunch culture ad was the only one that could increase rather than decrease women’s purchase intention, 70% of female participants reported that they were not likely to purchase alcohol after being exposed to the same ad (Jones & Reid, 2010).

In summary, the use of sexual appeals in alcohol advertising has evolved from the dumb, decorative, and sex object to a modern woman who likes to play with her sexual attractiveness. The second image, based on raunch culture, has gone under different names such as sex kitten. This image constitutes one of the industry’s answers to critique of sexism. The next question that comes to mind is what benefits do sexual appeals try to convey that the virtue of the alcohol brands cannot fulfil on its own?
Sexual Benefits.

To better understand sexual benefits portrayed in advertising, Gould (2003) suggested the concept of lovemaps. The lovemap mechanism explains how advertisers promote their product, here alcohol, by making it part of viewers’ intimacy practices to achieve the desired outcomes. Based on Gould’s (2003) lovemap mechanism, Reichert and Lambiase (2003) identified three sexual benefits (1) sexual attractiveness for the consumer; (2) likely engagement in sexual behavior (and more enjoyment from these encounters); and (3) sex esteem, or feelings of being sexy or sensual. In the case of alcoholic beverages, viewers are expect that they will become as attractive as the models in the ad or feel good about their sexual life if they use the alcohol brand. This is consistent with past research which showed that alcohol advertisers build their messages by questioning people's activities, interests and opinions, in the hope to describe their lifestyles and hence both their television watching habits and preferred product brands (Gunter & Furnham, 1992). This issue is critical as young people might easily infer that consuming an alcoholic beverage really enhances their social and sexual attractiveness. When they were asked to write down the messages they perceived in alcohol ads, students reported that alcohol will help them solve problems and enjoy more their social and relational life (Johnson & Reid, 2010).

Sex differences in the types of sexual benefits were documented in prior research. Ads targeted toward women focus on sexual attractiveness and sex esteem. Meanwhile, ads targeted toward men are mostly based on the idea of enjoying a better sexual experience (Reichert & Lambiase, 2003). The age group and the alcohol brands also influence the purposes of sexual appeals. Among members of the 15-16-year old groups, female participants (64%) were more likely to recall messages suggesting that drinking the product will decrease the likelihood that they will worry about their looks (Jones & Donovan, 2001). These researchers also noted that
older participants were more likely to perceive that the product will help reduce their stress or serve as a mood enhancement.

Prior research indicates that beer advertising is the most problematic of all alcoholic beverages. Empirical evidence suggests that drinking beer is often associated with conviviality and friendship (Jones & Donovan, 2001). In addition, beer ads have helped promote the notion that beer is a reward for hard work. As a result, beer ads on television rank first among complained about ads (Van Zenton, 2005). These complaints are more likely to come from female viewers. The list of grievances includes discrimination or vilification (29.2%) and oversexualization of ads (28.1%). Now, the question is to see whether these “objectionable” content do have an effect on actual behaviors.

Effects Of Alcohol Advertising

For the purpose of this study, media effects are conceptualized as having four key components: (1) a focus on the audience, (2) expectation of some influence on the audience, (3) a belief that the influence is due to some media content, (4) the use of variables or discussion of causality, and last the creation of empirically testable hypotheses (McLeod et al., 1972). Although establishing causal claims is challenging due to methodological limitations and ethical issues with experimental designs, the overall trend suggests that there is an association between exposure to sexual benefits conveyed in alcohol advertising and viewers’ behaviors. Jones and Donovan (2001) argue that even though advertisers are careful not to make causal claims between drinking and improved sexual life, ad sequences do suggest a temporal connection. They note that “young people are presented in a social situation where they feel uncomfortable. They then drink their UDL and the situation improves.” (Jones & Donovan, 2001, p.128). Therefore, viewers could wrongly infer that it was the drinking that improved the situation characters were
in. It follows that viewers will also experience the same benefits after drinking the brand being promoted.

In her review, Ward (2003) identified 36 studies investigating the effects of sexual content on viewers. Those studies examined a wide range of behaviors including initiation of sexual activity, condom use and attitudes about sex. Overall, research indicates that the more individuals are exposed to sexual content, the more they report liberal and stereotypical sexual attitudes. In experimental studies, male students who were exposed to magazine ads in which the female characters were shown as sex object were more likely to agree with rape-supportive statements and were also more accepting of sex role stereotyping than students in the control condition (Lanis & Covell, 1995; MacKay & Covell, 1997). The same patterns were replicated in two other experimental studies where the treatment group was exposed to music videos containing sexist comments and sexual content. After having been exposed to the videos, students were more likely to endorse casual and stereotypical attitudes about sex (e.g., Greeson & Williams, 1986; Kalof, 1999). Recent survey research (Bleakley et al., 2009) also found a positive association between exposure to sexual content in the media and beliefs which increased the likelihood of engaging in sexual activity.

Other research has fleshed out the independent contribution that media has on individuals’ sexual behaviors. L’Engle, Brown & Kenneavy (2006) reported that when compared to peer and other interpersonal factors, media was a stronger predictor of what they called light sexual activity. The construct included five behaviors: (1) having a crush, (2) dating at least once, (3) being in a private place, (4) light kissing, and (5) French kissing. Independently of all other variables, media exposure added 1.2% of variance to the variance explained in heavy sexual activity. Teenagers’ media diet also explained 2.0% of the variance explained in sexual
intentions. Researchers found that media exposure did have an effect on the last factor titled sexual intentions. All these data show that not only are young viewers frequent users of media as part of their information seeking behaviors about sexuality but they are also affected by sexual content conveyed in the media.

Similar to the research on sex in the media, scholars investigated the link between alcohol related content and individuals’ behaviors. Studies on the effect of alcohol advertising and marketing on viewers are divided into (1) consumer studies and econometric studies (Hastings, Anderson, Cooke & Gordon, 2005; Saffer, 2010). Research based on econometric studies is mainly concerned with the “statistical examination of the relationship between overall levels of alcohol consumption (typically in terms of sales) and overall levels of advertising” (Hastings, et al., 2005, p. 297). On the other hand, consumer studies looks at how viewers’ exposure to alcohol may differentially influence their behaviors.

Empirical evidence from college students and teenagers lends support to the claim that exposure to media affects their decision-making processes (Anderson et al, 2009; Austin, 2000; Austin & Chen, 2003; Austin, Pinkleton & Fujioka, 2000; Jones & Jernigan, 2010). Anderson, et al. (2009) reviewed the findings of 13 longitudinal studies. In twelve of the thirteen published longitudinal studies it appears that the more nondrinkers were exposed to alcohol advertising, the more likely they were to start drinking. In addition, exposure to alcohol advertising explained some of the variance in drinkers’ increase in alcohol consumption. Young people seem to be quite vulnerable to the effect of alcohol advertising. For instance, Jones and Jernigan (2010) argued that viewers, including teenagers and younger children do remember and like alcohol advertising. Anderson, Bruijin, Angus, Gordon and Hastings (2009) have also argued that commercials constitute one of the major risk factors that may encourage young viewers to drink.
This is consistent with Austin, Pinkleton and Fujioka (2000) who found that watching more primetime TV increases the likelihood that young people will find the portrayal of alcohol desirable which then increased their desire to reproduce what they see in the ad.

In summary, exposure to objectionable content does have an effect on viewers’ risky behaviors. Despite the contribution of these studies, Ward (2003) expressed concerns about the atheoretical nature of most effect studies. She notes that most research either builds on cultivation (Gerbner, 1970; Gerbner, Gross, Morgan & Signorelli, 1980) or social cognitive theory (Bandura, 1977; 1986; 2001) or did not use a theory at all. Other limitations of past research on alcohol and sex in the media include the issue of mechanism through which effects occur. Stated in another way, traditional media effects theory effectively predicted that changes in viewer’s behaviors will occur. However, what is left missing is the how question. Research should investigate “how might media content get into the minds of viewers, shaping their sexual attitudes, assumptions, and behaviors” (Ward, 2003, p.360). The next section reviews the tenets of traditional media effects of theory and offers a rationale for why a more process-oriented model, Message Interpretation Process Model is appropriate for this research.

Traditional Media Effects Theory.

Cultivation theory (Gerbner, 1970; Gerbner et al., 1980) posits that media portrayals are constructed representations of reality that often do not coincide with what viewers may actually experience in the real world. This grossly exaggerated or simple construction of facts may gradually cultivate the viewers’ perception of the world. One of the core assumptions of cultivation theory is that the depiction of sexual benefits as a result of drinking is so pervasive as to be unavoidable. In addition, cultivation assumes that there are uniform media effects. For all these reasons, cultivation researchers posit that assessing individuals’ overall amount of exposure
to the media is an effective way to assess their level of exposure to those different types of media content. Cultivation (Gerbner et al., 1980) would rely on chronic memory accessibility to explain why individuals who are exposed to different amounts of the same alcohol-sex link content will be impacted differentially. Individuals who are more exposed to media are more likely to endorse the association of alcohol use with risky sexual behaviors than light viewers. Theoretical predictions suggest that heavy viewers would have internalized that particular portrayal so much that it will be easier for them to associate alcohol use with sex each time they are exposed to alcohol advertising. Past empirical evidence provides support for this assumption. Adolescents who were exposed to highly sexualized content were also more likely to have engaged in sexual intercourse early (Brown & Newcomer, 1991; Peterson, Moore, & Furstenberg, 1991). More recently, Hennessy et al. (2009) found a positive relationship between exposure to sexual content and changes in sexual behavior among White adolescents.

Many scholars question cultivation theory and its conclusion. Among other things, scholars have criticized the theory’s assumption that viewers are passively accumulating every depiction that the media conveys about some issue. The media experience should be viewed as an active rather than a passive, unidirectional process in which viewers passively are being cultivated into a specific portrayal. Therefore, all viewers exposed to the alcohol-sex link may not necessarily be cultivated into that depiction. In addition, scholars question the idea of a uniform media effects and have expressed concerns regarding the small role attributed to viewers’ interpretations of media messages (e.g., Harris, 2003). Critiques (Roberts & Christianson, 2000) appreciate the attention that Gerbner gives to the context in which media experiences occur. The same voices expressed concerns about relying too much on the frequency (e.g., how often viewers are exposed to sexual benefits as a result of drinking) when explaining
media effects. For instance, research in violence in the media has called this operationalization into question. Studies indicate that viewers’ reactions to violent content are relevant in health behaviors. This is an important issue since interpretations of the same media portrayal may vary across individuals (Krcmar, 1998). Therefore, Krcmar cautioned media effect scholars about concluding that the process is completely determined by the image.

Despite those criticisms, cultivation has been used to predict a wide range of behaviors including TV-induced aggression. However, what is missing, one would argue, is unequivocal evidence in support of the causal relationship between exposure to alcohol/sexual content and drinking and sexual behaviors. Proponents of cultivation theory could argue that owing to design limitations and ethical considerations, establishing causality between exposure to sexual content and sexual behaviors is very challenging if not impossible to do. However, beyond this simple causality mechanism, cultivation theory is quite limited in explaining the variations of the persuasive effects of TV content. In the context of sex as a persuasive technique, it is reasonable to argue that mere exposure to alcohol advertising does not ensure that all viewers will be impacted in the same way by what they see. This gap has been partly compensated by Bandura’s (1977; 1986; 2001) social cognitive theory or SCT. Social cognitive theory has been quite fruitful as a theory for mass media campaigns intended to produce behavior changes.

Social cognitive theory explains how people adopt and maintain recommended behaviors through observation. At its core, SCT argues that individuals will be motivated to adopt the recommended behavior to the extent that they perceive the latter will bring about positive outcomes. First-hand experience is not a necessary condition for the behavior changes to happen. Social cognitive theory (Bandura, 1977; 1986) posits that watching on-screen characters rewarded or punished because of their behaviors (vicarious reinforcement) may lead to behavior
changes as much as first-hand experience does. Therefore, SCT relies on the idea that the treatment of a character in the media raises viewers’ awareness about what is right or wrong.

Social cognitive theory describes several factors that determine the people, conditions and circumstances under which behavior modelling and changes are most likely. Those factors include environmental factors such as the situations, expectations, self-efficacy or behavioral capability, emotional coping responses, and related elements. The process starts with the individual being exposed to on-screen characters engaging in some behaviors. Once they have internalized the media portrayal, individuals are expected to emulate the behavior if and only if they believe to have the necessary skills to perform the behavior (self-efficacy or behavioral capability). Positive reinforcement is applied to positive outcomes whereas negative reinforcement is applied to negative outcomes. Viewers who engage in positive reinforcement expect that they will experience the same positive outcomes portrayed onscreen if they were presented with the same situation in the real world. In the context of alcohol and sexual content, it is expected that if the character on TV experiences negative consequences of unmarried sex (e.g., characters impregnated their partners and their own marriage ended up in divorce. Therefore, they got depressed), SCT predicts that the viewer should not want to imitate that behavior.

To summarize, behavior is a function of expectations which in turn are developed by vicarious experience, direct observation, and performance attainment. Rutger, Engels, van Baaren, Hollenstein and Bot (2009) discussed evidence from neuroscience that buttresses past research on observational learning. These researchers argue to that end: “When we observe someone perform a certain action (e.g. pick up a glass and drink), the pre-motor representation of
that action (the goal and the muscles involved) is activated in our brains as if we are about to perform that action ourselves.” (p. 245).

As already noted, alcohol advertising is depicted in a positive way. Even though alcohol advertising may depict alcohol use in driving situations, any talk about the negative consequences of drinking and driving is conspicuously left out. Moderation messages are barely present in ads, often appearing in the background (Austin & Hust, 2005). Instead, advertisers highlight the sexual benefits viewers might aspire to. And this seems to work since participants focus more on the elements that advertisers want them to pay attention to. Thomsen and Fulton (2007) conducted an experiment in which participants were exposed to six alcohol advertisements. The ads were divided into different ‘look zones” including the “message look zones” where moderation statements are placed. The outcome measure was the time that participants spent in each look zone. Thomsen and Fulton (2007) reported that participants spent on average .35 seconds, which makes up 7% of the total time spent in the message look zones. Students exposed to the Cuervo ad were 19 times more likely to look at the sexual stimuli – bikini-clad characters (1.53 seconds) than on the moderation statements. Participants’ reaction to the Amsel Light ad buttressed the idea that viewers tend to spend more time on the elements that increase the risk of engaging in risky behaviors. Thomsen and Fulton (2007) reported that participants were 3.5 times more likely to look at the beverage container than moderation statements.

Given the tenets of SCT, viewers exposed to that type of content and who engage in positive reinforcement of the outcome behavior should expect to not experience the negative effects of drinking while driving, for instance. In the same way, men who are exposed to alcohol ads that describe how they will experience better sex and get more success as a result of drinking
should be more promiscuous and have more liberal attitudes toward sex. Quite fortunately, not all men will engage in risky behaviors as a result of drinking. Some viewers will go through the process outlined by SCT and reproduce the behavior whereas others will not. Research indicates that the impact of media messages on viewers depends on several things including their own interpretations of the message, and the extent to which the media portrayal will be reinforced or contradicted by other agents of socialization such as parents or peers (Roberts, Henriksen & Christenson, 1999). Ward (2003) argued that ‘viewers, even the youngest of children, are not mindless drones, soaking up and imitating all media images. Indeed, many viewers are exposed to the same content, but their subsequent beliefs and behaviors are not equivalent” (p. 360).

Existing media effects theories have not explained how and why media content related to sex and alcohol effectively persuade individuals to engage in risky behaviors. That is, explanations about media effects tell us little about how viewing the content about sex and alcohol makes viewers more vulnerable to those risky behaviors. For example, how does seeing an attractive model using alcohol lead viewers to reproduce the same behavior? This is a critical question for both theoretical and practical reasons. Unless they understand how and why individuals differ in their perceptions of media portrayal of alcohol and sex, health professionals will not be able to intervene and decrease the effects of advertising on behaviors. Identifying the set of skills that could attenuate the negative effects of media content also has practical implications. If the persuasive appeal of alcohol advertising impacts behaviors differentially, the question remains: what skills are some viewers using to resist alcohol advertising? (Ward, 2003). In outlining the steps to be taken for a better understanding of the elements that are so detrimental in alcohol advertising, Smith and Foxcroft (2009) wrote:

“Whilst these studies suggest that exposure to advertising and alcohol portrayal in the media increase likelihood of later alcohol consumption, they are unable to inform us how
exposure brings about these changes, or what aspects of advertising and marketing are the active components. The extent to which psychological factors determine subsequent behaviours is a worthwhile topic for further study.” (p.8).

The next chapter discusses the theoretical framework and the hypotheses.
CHAPTER THREE
THEORETICAL FRAMEWORK

Given the hypothesized indirect nature of parental mediation on concurring beliefs and behaviors regarding sex and alcohol, the study uses a theoretical framework which has proved fruitful in teasing out the effects of risk and protective factors on health behaviors. The following section describes the important elements of the Message Interpretation Process model.

How Media Content Affects Decision Making

The MIP model (Austin & Meili, 1994; Austin & Knaus, 2000; Pinkleton, Austin & 2007; Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008) provides a theoretical framework to (1) understand how people process media messages and (2) understand how parental mediation helps individuals develop media literacy skills, conceptualized as the actual outcome of their media orientation. MIP builds on a set of behavior change models including Bandura’s social cognitive theory (Bandura, 1985), expectancy theory (Goldman, Brown, & Christiansen, 1987), systematic and heuristic persuasion (Chen & Chaiken, 1999) and decision making models. Figure 1 represents the process sequence hypothesized in MIP (from Austin et al., 1999).
Figure 1*: Message Interpretation Process Sequence

* Austin et al., 1999

Figure 1 describes the process that viewers go through after they have been exposed to some media portrayal. In the meaning-making process, both emotion and logic interact and feed into the benchmarks of decision making (Austin et al., 1999; 2000; Austin & Meili, 1994) which then affect behavioral choices. The benchmarks of decision making are rooted in the literature on information processing and behavior changes (Hawkins & Pingree, 1982; 1987; Austin et al., 1990; Reeves & Garramone, 1982). Past research tends to suggest that viewers are more likely to imitate behaviors if media portrayals are perceived to be realistic, and to be similar to real-life examples. Viewers will then identify with onscreen characters and will engage in behaviors that reinforce these media portrayals.
The MIP model focuses on six characteristics (realism, similarity, desirability, identification, norms and expectancies). Each one of these variables is expected to influence decision-making processes and subsequently perceptual behaviors. When exposed to alcohol ads, viewers go through a process in which they submit the media portrayal of alcohol in the context of sexual activity to different tests pertaining to the logic (reality, similarity, norms) and affective (desirability, identification and expectancy) components of decision making. As represented in figure 1, viewers’ early-stage filters in the decision-making process range from the beliefs that media portrayals represent reality (perceived realism) to the beliefs that media portrayals reflect a reality that they aspire to (desirability). If media portrayals were considered realistic, viewers will then determine whether the portrayal reflects what (s)he has personally experienced or perceived similarity. This task requires viewers to compare the behavior or character being portrayed to media-based and real-life examples (Austin & Meili, 1994). In a similar vein, Yanovitzy and Rimal (2006) argued that people are motivate to adopt a behavior to the extent that they perceive the behavior to be popular among significant others or reference groups. Whereas perceived realism refers to the social reality “what appears to be the norm for the generalized other,” perceived similarity has been viewed as a parallel to “social norms for a reference group to which an individual belongs to” (Austin & Chen, 2003, p.161).

Consistent with Yanovitzky and Rimal (2006), research using MIP has shown that individuals learn to formulate perceptions about what is true for most people from what is true for them and their family as early as 3rd grade (Austin, Roberts & Nass, 1990; Austin & Meili, 1994). Yanovitzy and Rimal made a distinction between collective norms and people’s understanding of these collective norms, which they referred to as perceived norms. They note that researchers generally focus on perceived norms and not collective norms when they predict
behaviors with perceived norms resulting from individuals’ construal processes (Yanovitzky & Rimal, 2006). Norms are also further broken into descriptive and injunctive norms. Whereas descriptive norms refer to the behavior that is enacted by the majority of the individual’s reference group, injunctive norms refer to how significant others ought to behave. In the context of problematic drinking and risky sexual behaviors, perceived social norms refer more specifically to the descriptive norms such as the frequency of binge drinking among college students. The MIP model posits that when there is a high congruence of perceived similarity with perceived social norms, then viewers are more likely to identify with (late stage filter) media portrayals.

As shown in figure 1, affective components may bias the logical processing of media content. When viewers’ understanding of advertising content is biased, they may act on messages based on wishful thinking (i.e., affective processing) rather than what they think is true for themselves or most people (Austin et al., 2002). The affect-based component desirability, feeds into the later-stage filters leading viewers to aspire to the same lifestyles that are being portrayed in the ads. Viewers who have identified with media portrayals are also more likely to view the real world in accord with the values and lifestyles that they aspire to. In the context of alcohol advertising, this may ultimately lead to more positive expectancies about alcohol use, thereby increasing the frequency of drinking and occurrence of risky sexual behaviors as a result of their drinking.

Expectancies reflect the extent to which viewers anticipate the same positive outcomes they see in the media. Bandura (1986) argued that expectancies are formed through direct and vicarious learning. The association between behaviors and expectancies is well established in past research. Prevention messages geared toward risky behaviors have targeted expectancies to
reduce drinking and risky sexual behaviors (Austin, Cohen, Chen, & Fitzgerald, 2008; Austin & Meili, 1994; Greenbaum et al., 2005; Pinkleton, Austin & Adler, 2007; Pinkleton). Borsari, Murphy and Barnett (2007) found six potential mediators of alcohol use among college students. These mediators include “coping, alcohol expectancies, drinking motives, perceived norms, Greek membership, and drinking game participation.” They reported that students’ expectancies about alcohol use explained great variance in the reported age at first drink and drinking patterns across time. Longitudinal studies (e.g. Greenbaum et al., 2005) also lent support to the important role that expectancies played in drinking behaviors.

Researchers investigating the alcohol-sex link have focused their attention on the perceived effect that drinking may have on individuals’ sexual life. Sex-related alcohol expectancies were conceptualized as beliefs that increase the likelihood of engaging in risky sexual behaviors as a result of drinking (Dermen & Cooper, 2000). Fromme, Stroot and Kaplan (1993) reported an association between drinking and perceived increase in sexual desire. In addition, women who believed in the disinhibitory power of alcohol were more likely to initiate sexual activity (Leigh, 1990) after they had a drink. Past research operationalized sex-related alcohol expectancies with “sexual risk taking,” and “disinhibition of sexual behavior.”

The utility of these scales have been documented in prior research (Brown, Christiansen & Goldman, 1987; Dermen & Cooper, 1994; Labrie et al., 2005). Labrie and colleagues (2005) investigated whether alcohol use had an effect on a range of risky sexual behaviors including not using condoms or disinhibition of sexual behaviors. They reported that perceived effect of alcohol on sexual behaviors mediated the relationship between drinking and risky sexual behaviors. Other researchers have shown the utility of sexual disinhibition in predicting college students’ risky sexual behaviors (Downing-Matibag & Geisinger, 2009). As students’ sexual
disinhibition was much influenced by the notion of being “swept away” by sexual arousal, researchers argue that students are more likely to engage in risky sexual behaviors when they are not in a mental state to make a good judgment call. Even though past research provided sufficient evidence of reliability and validity, these sex-specific expectancies did not predict the behaviors measured in the current study as they were not originally developed as part of the message interpretation process shown to predict risky behaviors. Therefore, sex-related alcohol expectancies were not used in the analyses. The current study relied on the operationalization of alcohol-related expectancies and sex-related expectancies developed within the MIP framework.

Research (Austin & Meili, 1994; Austin & Knaus, 2000; Pinkleton, Austin & 2007; Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008; Austin & Nach-Ferguson, 1995; Austin et al., 2000; 2002) focusing on both children and college students has provided evidence regarding the causal sequences underlying the message interpretation process model. Mediated messages are related to viewers’ attitudes and beliefs about alcohol portrayals which then predict later use of alcohol. Consistent with the MIP model, desirability of alcohol portrayals was positively associated with identification, which in turn predicted positive alcohol expectancies, negative alcohol expectancies, and liking of beer brands. Austin and Johnson (1997a) reported that desirability, which refers to the extent to which a viewer found media portrayals appealing, was a strong predictor of social norms. The same pattern of results was replicated on college samples. Austin and Chen (2003) reported that students who found alcohol advertising more desirable also perceived that their peers were engaged in like behaviors. Based on past empirical evidence and theoretical predictions, the following expectations were formulated:

**Expectation 1:** Perceived desirability will predict higher social norms.

**Expectation 2:** Perceived desirability will predict identification with the ad’s portrayal.
**Expectation 3:** Perceived realism will predict identification with the ad’s portrayal.

**Expectation 4:** Identification will be positively associated with sex-related expectancies.

**Expectation 5:** Identification will be positively associated with alcohol-related expectancies.

Theoretical predictions suggest that viewers who compare alcohol ads with real-world references and perceive the use of alcohol in the context of sexual interactions as being normative of college life are more likely to emulate what they see in alcohol ads. However, Austin et al. (2002) reported that the affect-based components of decision-making processes had stronger effects on identification than perceived norms. This led them to suggest that students are less likely to imitate the behaviors of their peer groups than those of the groups which they aspire to. More recently, Austin et al., (2006) reported that desirability was positively associated with identification. Due to the inconsistency between empirical evidence and theoretical predictions in regard to perceived norms and identification, this study asks a research question instead of formulating an expectation.

**RQ1:** How will norms relate to identification?

Past research has shown that both emotional and the logical aspects of decision making may be either interrupted or strengthened (Austin & Meili, 1994; Austin & Knaus, 2000; Pinkleton, Austin &; 2007; Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008). For instance, evaluation studies have shown that people who received media literacy training benefited from short-term outcomes leading to intermediate outcomes, thereby reporting fewer positive expectancies which then increased behavioral efficacy (Austin, et al., 2006; Austin & Knauss, 2000; Pinkleton, et al., 2008). Skepticism attenuated the effects of the affective components of decision making which then reduced the effects of expectancies on behaviors.
In experimental studies, people who received media literacy training (Austin et al., 2007) were less likely to expect positive outcomes as a result of risky sexual behaviors compared to those in the control group. Consequently, they were also more likely to postpone sexual experimentation. Another survey (Austin et al., 2006) showed that if the logical aspect of desirability was strengthened through increased skepticism, then the desirable elements of the ads will not increase viewers’ identification with media portrayals. By helping viewers de-glamorize claims about alcohol use as a sexual disinhibitor for instance, media literacy skills may lead viewers to question these portrayals (strengthening the logic-based route of decision making processes). This will decrease the likelihood those viewers will perceive the portrayal as normative and will then report fewer intentions to engage in similar behaviors. Therefore, by developing healthy skepticism instead of cynism, media literacy training could equip viewers with a set of skills to evaluate and assess media content. Figure 2 represents how reflective thinking such as media literacy outcomes could strengthen the early stages of decision-making.

Figure 2*: The Role of Media Literacy in Decision Making

*Austin et al., 2002

A Theory-Based Approach to Critical Thinking

Persuasion scholars are aware of the fact that persuasion is a two-way process. Media consumers are involved in a mental give and take whereby they evaluate the information
conveyed in the media before adopting the recommended behavior. Media literacy is generally conceptualized as media consumers’ ability to analyze and evaluate information conveyed in the media based on the sources of the message and its content (Aufderheide, 1997). In his review of media literacy research, Potter (2010) noted that little agreement exists on the conceptualization of media literacy. As a result, studies rely on different operational definitions to assess the outcome measures. For the purpose of this study, media literacy is conceptualized and operationalized as students’ critical thinking toward media sources and media content (Austin, Pinkleton, Radanielina-Hita & Ran, 2012).

The challenges to those who teach critical thinking skills is not to answer all the questions that viewers may have about the media but rather to coach young people to ask questions about media messages. Whether they are watching Captain Morgan or another ad using sexual innuendos, viewers should keep in mind that these claims represent some values and lifestyles that have been specifically created to influence their own thinking. In the process of creating these ads, advertisers purposefully select elements to highlight. In the selection process, some values and lifestyles are not covered in the ads. Because media consumers only see the packaged products, they may not know which specific lifestyles and values been left out. What is important for the critical viewer is to understand that all communication messages are goal-oriented. They have been created for some purpose or to gain profit. Understanding the techniques used to reach these goals will also help viewers make an informed judgment on whether or not they should act on a message (e.g.: to drink or not drink before sex).

In summary, critical thinking toward media requires more than simply evaluating the product, here the alcohol brand. This is highlighted in the definition that the Center for Media Literacy (2011) has of media literacy as one’s ability to access, analyze, evaluate, and produce
media content in a variety of forms. Media literacy skill training should equip viewers with a set of skills to be critically autonomous and to understand the implications of these media products better (McCannon, 2009).

All of the definitions of media literacy tend to converge into a broader form of critical thinking skills. In the persuasion literature, inoculation theory has focused on providing viewers with a specific skill to counteract the effect of a specific content. On the other hand, Sagarin, Cialdini, Rice and Serna (2002) associated critical thinking with being wary about objectionable contents after being forewarned about it. In the context of the message interpretation process, viewers’ critical thinking toward media is expected to strengthen the logical aspect of decision making leading to fewer risky behaviors. For instance, Austin and Johnson (1997a) found that children who received media literacy training reported increased skepticism and scored lower on desirability, norms, and expectancies for alcohol use. More recent evidence on adolescents showed that participants in a media literacy program intended to increase their level of skepticism also reported being less vulnerable to peer norms. In line with past empirical evidence, the current study expects to replicate the following:

**Expectation 6:** Critical thinking toward media will predict lower norms.

Surveys of college students (Austin et al., 2002) also suggest that skepticism reduces the appeal of alcohol advertising, indirectly reducing expectancies. On the other hand, a lack of skepticism was related to more drinking. The same findings were replicated on other populations such as children and teenagers. For instance, Austin and Johnson (1997a) found that media literacy training designed to enhance skepticism reduces desirability, norms, and expectancies for alcohol use. These researchers also note how health professionals have successfully targeted adolescents’ and children’s levels of skepticism in the hope to increase their understanding of
advertising content. Even though skepticism was positively associated with desirability, it did predict negative alcohol-related expectancies; which predicted less liking of drinking theme products (Austin et al., 2006). This suggests that viewers trained in media literacy do not necessarily enjoy media content less. However, once they acquire critical thinking skills, they are more likely to reflect on the big questions as outlined by the Center for Media Literacy (2002) with critical thinking being a defense mechanism that will effectively counteract the effects of media on risky behaviors.

Based on the aforementioned theorizing and past empirical evidence suggesting the direct and indirect effect of critical thinking on behaviors, the following hypotheses are advanced (see Figure 3):

**H1:** Critical thinking toward media will decrease alcohol-related expectancies.

**H2:** Critical thinking toward media will decrease sex-related expectancies.

**H3:** Critical thinking toward media will decrease alcohol-related behaviors.

**H4:** Critical thinking toward media will decrease risky sexual behaviors as a result of drinking.

**H5:** Critical thinking toward media will decrease alcohol-related behaviors via its prior effect on alcohol-related expectancies.

**H6:** Critical thinking toward media will decrease risky sexual behaviors as a result of drinking via its prior effects on sex-related expectancies.

Despite its positive effect on attitudes and behaviors, critical thinking toward media was also shown to increase the affect-based components of decision making. Researchers have referred to this seemingly counterintuitive expectation as the desirability paradox. This has been mostly documented in experimental studies.
**Expectation 7:** Critical thinking toward media will be positively associated with desirability.

The study asks a research question instead of formulating a hypothesis in regard to realism.

**RQ2:** How will critical thinking skills relate to realism?

**The Effects of Parents on Individual’s Behaviors**

The research on family communication, pioneered by McLeod and Chaffee (1971; 1972), examined how parent-child communication practices influence viewers’ information processing of media messages and how that could influence their decision-making process and behavior changes. More particularly, children whose parents promoted critical thinking were shown to be more skeptical of media content (Bristol & Mangleburg, 2005). However, mediation rarely occurs (Austin, 1993). For instance, Austin, Knauss and Meneguelli (1998) argue that even though the effects of parent-child communication patterns are among the most enduring and most important in an individual’s life, very few studies have examined the role that parent-child communication practices have on children’s behaviors. In a similar vein, St. Peters, Fitch, Huston, Wright, & Eakins. (2001) lament the fact that parents do little, if any, to regulate their children’s media use. And in the rare case that they do step in, they may only enact ineffective behaviors (Austin, 1993; Austin & Nach-Ferguson, 1995).

Additionally, evidence that such parent-child communication practices are effective is relatively scarce, at best; evaluation studies provided mixed results (Ennett, Bauman, Foshee, Pemberton & Hicks, 2001; Stephenson, Quick & Hirsch, 2010). In 2001, Enett and his colleagues suggested that researchers should tone down their enthusiasm about the effects of family communication practices. Ennett et al. (2001) note that no published study has focused on the effects that improved parent-child communication has on risky behaviors. Recent evidence
(Stephenson et al., 2010) lends further support to Enett et al.’s claim. In reviewing family based approaches interventions, Stephenson and his colleagues argue that this research could not clearly establish that youths changed their behaviors as a result of changes in parental mediation behaviors. This is critical because the assumption underlying family research is that parents are primary agents of socialization and important information sources for their children. Therefore, they should have considerable effects on their children’s development of media literacy skills (Austin & Chen, 2003). Continued investigation on the effects of parental mediation, if any, is still needed. This is even critical for adult children.

Since high incidence of parental involvement is expected to occur mostly at the preschool level and in the primary grades than at the middle school, the majority of research examining the effects of parents on risky behaviors focused on young children and late adolescents. In addition, the time and costs involved in longitudinal studies has limited the research on retrospective reports of parental mediation, thereby limiting researchers’ ability to draw any conclusions about its effectiveness. Even if they are not as extensively researched as the childhood experiences, understanding the effects of retrospective reports of parental mediation on adult children is worthwhile.

Developmental theorists often refer to Piaget’s “Cognitive Theory Development” (CTD) when explaining why early parent-child interactions may have enduring effects on adult children. This model explain has been applied to different fields such as consumer socialization, advertising literacy and children’s understanding of media content (Calvert, 2008; Ginsburg & De Vore, 2005). Cognitive Theory Development consists of three steps: preoperational stage, occurring when the child is aged 2 to 7, concrete operational stage, and formal operational stage (12 years of age). The preoperational stage is mostly characterized by the magical thinking in
which children tend to emphasize on the product looks. Even though children start to think logically about things during the second stage, they still have difficulty understanding abstract concepts. Children’s systematic and deductive reasoning start to develop during the formal operational stage, thereby helping them to think more critically about media content.

Parents may be less likely to formulate direct instruction to their children beyond the formal operational stage. However, in Baumrind’s words (1986): “stages of development, although influenced by personal experience, are not formed as the result of direct responses to parents, peers, or the child's own behavior, but result from the child's cognitive processes as they develop and operate within his or her environment.” (p.240). Stated in another way, earlier parent-child interactions have enduring and profound effects on their children. Hagestad (1982) count parents among individuals’ significant others throughout their life influencing their behaviors through their own construal processes and reconstructions of their parents’ attitudes and behaviors.

The Effect of Parental Mediation on Decision Making Related to Sex and Alcohol

Parental mediation refers to caregivers’ behaviors in regard to children’s media use. It has been primarily grounded in the context of television although some researchers such as Nikken and Janz (2006) have extended the research to video games. In reviewing the literature, Fujioka and Austin (2003) note that there are different ways in which parents can influence their children’s use of media by watching television with them or discussing their media use. Parents can also make use of the subtle often unintentional activities such as family norms or by their own media use. This is consistent with Chaffee, McLeod and Atkin (1971) who argued that parental example of media use is the best persuader. Parental mediation is expected to influence their children’ viewing behaviors. What it means for parents to mediate their children’s media
use is that they will engage in one of the three behaviors (Austin et al., 1999; Messaris, 1982; Valkenburg, Krcmar, Peeters & Marseille, 1999). They may engage in categorization in which they will tell their children whether what they see on TV reflects the real world. They may also engage in validation in which they will endorse some TV examples. Last, they might also help their children get more information about what they see on TV (supplementation).

Despite the lack of consistency in regard to conceptualization, assessing parental mediation starts with a multi-dimensional view of parent-child interaction that includes active mediation, coviewing, and rulemaking. In her research, Nathanson (1999; 2002) views active mediation as neutral. However, Austin and colleagues (Austin, 1993; Austin & Chen, 2003; Fujioka & Austin, 2002; 2003; Austin et al., 2011) stressed the need for parents to explain what the children see in the media. Therefore, watching television together without offering a comment on what is shown on TV is not a necessary and sufficient condition for active mediation to happen. When parents engage in active mediation, they might counter-reinforce what is shown in the media, called “negative mediation.” Parents may also endorse media portrayals, thereby engaging in positive mediation. Parents were found to engage in either behavior depending on their motivation and attitudes toward the media (Austin & Chen, 2003; Austin & Fujioka, 2002). More critical thinking skills also were associated with parents’ concerns over the detrimental effects of media on their children. Research indicates that active mediation and positive mediation are separate but related constructs. Therefore, they should not be treated as polar opposites of a single continuum.

Chen and Austin (in press) argued that scholars have predominantly focused on the effects of negative mediation on health behaviors. This situation could be partly explained by the potential of negative mediation to serve as a protective factor against the effects of objectionable
media content. Research investigating the relationship between negative mediation and health behaviors suggests that this type of parental mediation is effective in reducing unhealthy behaviors. Parental discussion was shown to have both a direct effect and an indirect effect on alcohol use via its prior effects on expectancies (Austin et al., 2006). In addition, Collins et al. (2004) found that children whose parents watch TV with them and actively discuss media portrayals of sex-related issues as well as their own beliefs about sex, reported fewer risky sexual behaviors. When they engage in critical discussion via reasoning-oriented communication, parents successfully cultivate the same critical thinking skills in their children that they themselves have (Austin, 1993; Austin et al., 2000). This is consistent with Gecas (1981; 1992) who argued that parents who wish to develop a healthy relationship with their children should provide psychological support along with a good discussion component.

Past research on negative mediation is consistent with research on evaluative-based media literacy interventions. For instance, Nathanson (2004) reported that negative evaluations require those who provide the training to comment on the inappropriateness of media portrayals. Given that one of the primary goals of media literacy interventions (e.g. Austin & Johnson, 1997a) is to help viewers understand and debunk the inaccuracies conveyed in the media, negative reinforcement of media content has been one of the most commonly techniques used in past interventions intended to produce behavior changes. Based on past empirical evidence, the researcher expects to replicate findings that (1) recalled negative mediation will increase college students’ level of skepticism and (2) serve as a protective factor against the occurrence of problematic drinking and risky sexual behaviors (see figure 3).

**H7:** Recalled negative mediation will predict critical thinking toward media.
**H8:** Recalled negative mediation will decrease alcohol-related expectancies via its prior effects on critical thinking toward media.

**H9:** Recalled negative mediation will decrease sex-related expectancies via its prior effects on critical thinking toward media.

**H10:** Recalled negative mediation will decrease alcohol-related behaviors via its prior effects on critical thinking toward media and alcohol-related expectancies

**H11:** Recalled negative mediation will decrease risky sexual behaviors as a result of drinking via its prior effects on critical thinking toward media and sex-related expectancies

As parents who engage more in positive mediation did so because of their own positive attitudes toward media, they were often found to be less critical toward media. It is reasonable to expect that their children will be not as well-equipped to deal with the persuasive effects of alcohol advertising as students whose parents were more critical toward media. Positive mediation tends not to yield beneficial outcomes. Therefore, the following hypothesis is formulated:

**H12:** Recalled positive mediation will be negatively associated with critical thinking skills.

**H13:** Recalled negative mediation will influence identification.

Fujioka and Austin (2002) recognize the importance of highlighting positive behaviors portrayed in the media. However, they do recommend that parents use positive mediation carefully. In one survey (Austin & Chen, 2003), recalled positive mediation was positively associated with desirability of alcohol advertising. Positive mediation did not serve as a protective factor at all. Students whose parents used positive mediation perceived more positive consequences of early alcohol use.
Although this study is mainly concerned with the potential for parents to serve as protective factor, it is important to examine the effects of positive active mediation along with critical discussion of media. Some scholars argued against the assumption that all parents will use critical discussion with their children. For instance, Ennett et al., (2001) reported that parents talked about substance use differently depending on whether they smoke or use alcohol themselves. Harakeh, Scholte, de Vries and Engels (2005) found the same patterns of results. Nonsmoking parents reported engaging in antismoking socialization practices more often and in a more constructive way than smoking parents. Therefore, this study will increase measurement error if it only assesses negative mediation. Students whose parents used only positive mediation behaviors might either skip the items (therefore increasing non-response item bias) or use their best guess.

Even though Austin and Chen (2003) found an inverse relationship between positive mediation and media literacy skills, Austin et al. (2006) reported that parental guidance increased skepticism and decreased problematic use of alcohol. Research suggests that when parents’ messages are unclear, their children may interpret the messages differently than how the parents intended it (Austin, 1993; Austin & Fujioka, 2002). The index used to measure parental guidance did not have negatively oriented items. The items included “how often you explained what the ads are trying to do”. These findings suggest that parents may serve as protective factors by just “talking” to their children. These findings make sense when considered in parallel with McLeod and Chaffee’s (1971, 1973) FCP. These theorists argue that openness to conversation in which parents invite their children to give their input on topics may encourage continued thinking about the issue. In addition, positive and negative mediation correlate with each other. They are related by separate constructs. Once the effects of the negative component have been taken away, what
remains could still predict skepticism. Due to the mixed results in past research, this study asks a research question instead of formulating a hypothesis:

**RQ3**: How will recalled positive mediation be related with drinking and sexual behaviors?

The Alcohol-Sex Link

Popular wisdom teaches us that individuals who are not careful in some aspects of their life tend to be less careful in other aspects of their life as well. Nowhere was this assumption more powerfully applied than in the areas alcohol use and sexual practices. A growing body of research has focused on a wide range of behaviors including age at first sex, number of partners, condom use (Cooper, 2002; 2006; Dermen & Cooper, 1994; 2000; Labrie et al., 2005; Leigh, 1990; 2002; Santelli et al., 2001; Weinhardt, 2001).

The empirical basis for the hypothesized link between risky sexual behaviors and alcohol consumption is mixed. Currently available data tends to suggest that these risky behaviors are related to one another (Cooper, 2006). The general trend is that individuals who do not abuse alcohol enjoy better health outcomes than those who engage in excessive drinking (Shih et al., 2010). For instance, Labrie et al. (2005) reported that individuals who display heavy drinking patterns were also less likely to use condoms consistently. Buchanan, Poppen and Reisen (1996) found that alcohol use prior to sexual intercourse was positively associated with a failure to use condom. Santelli et al. (2001) also reported a positive relationship between prior substance use and sexual experimentation among adolescents. Additionally, Santelli et al. (2001) found that individuals who engaged in sexual relationships with multiple partners were also more likely to report higher current and lifetime use of alcohol (Santelli et al., 2001).
Alcohol use impairs decision making leading individuals to focus more on short-term outcomes such as the satisfaction that one may feel in becoming intimate with an attractive partner instead of thinking about the potential negative consequences of engaging in unsafe sex practices (Dermen & Cooper, 2000; Leigh, 2002). In reviewing 29 studies conducted in naturalistic settings, Cooper (2002) reported patterns of results consistent with those found in individual cross-sectional studies. Despite the growing evidence on the alcohol-sex link, researchers (Cooper, 2002; 2006; Weinhardt, 2000) concluded that continued investigation in the area is needed. In her reviews of research on the alcohol-sex link, Cooper (2002; 2006) found a more complex relationship, which was different from the hypothesized linear relationship. Individuals were found engage in unprotected sexual intercourse only under certain conditions. More specifically, these behaviors occurred “at first intercourse but not on subsequent intercourse occasions, in younger but not older samples, and in studies conducted earlier rather than more recently” (p.21). In a similar vein, Labrie et al.(2005) also found that the average amount of alcohol consumed within two hours before sexual intercourse was 4.8 drinks for new partners, 3.2 for casual partners and 2.3 for regular partners.

Other researchers (Dermen and Cooper, 2000) examined the effects of cognitive and psychological factors such as inhibition conflict to explain why alcohol may interfere with individuals’ judgment call. In their survey research, Dermen and Cooper (2000) asked respondents to think about sexual activity that happened after they had been drinking. Students who experienced such an event then completed a series of questions related to condom use and were asked whether they experienced internal conflict over using a condom. Salient findings included an interaction effect of alcohol use and students’ level of inhibition. Students who had a drink prior to engaging in a sexual intercourse were less likely to use condoms, if and only if
they scored high on inhibition conflict. When conflict inhibition was hold constant at its mean, the effect of alcohol use on condom use decreased and was significant among females but not male college students. This finding makes sense when viewed in the context of other sex differences noted in prior research. On a typical first date, men expect more benefits than costs of engaging in sexual intercourse than women did (Cooper, 2006). From a theoretical standpoint, these findings are important because they underscore the need to identify the factors that mediate the effects of alcohol use on risky behaviors (Dermen & Cooper, 2000). Based on past research and empirical evidence, the following hypotheses are formulated:

**H14:** Alcohol-related expectancies will be correlated with sex-related expectancies

**H15:** Alcohol-related behaviors will have a direct effect on risky sexual behaviors.

**H16:** Risky sexual behaviors will have a direct effect on alcohol-related behaviors

*Alcohol-Sex Link: Possible Mechanism.*

The effects of alcohol on behaviors have been explained by both pharmacological and social factors. Two of the most popular theories used in alcohol research are disinhibition theory and alcohol myopia. Disinhibition theory posits that alcohol consumption in the context of sexual situations will lead to risky sexual behaviors. Alcohol myopia (Steele & Joseph, 1990) offers a more comprehensive explanation on the relationship between alcohol use and risky sexual behaviors. Steele and Joseph (1990) argue that risky sexual behaviors are the results of interplay of individuals’ reduced abilities to process information and the type of external factors that are salient at the moment the individuals have to make decision. As a result of their alcohol use, individuals are less likely to perceive a great range of cues. As they are unable to perceive and make sense of all the information related to the situation at hand, individuals who had been drinking are more likely to rely on the most salient cues (e.g., expectancies that drinking on a
date will help the individual be more successful) rather than distal cues requiring more complex processing (e.g. potential effects of unprotected sex).

Steele and Joseph (1990) distinguish between two types of cues: (1) inhibiting and (2) impelling cues. Experimental studies revealed that when impelling cues or positive outcomes of risky behaviors were made salient, individuals who had been drinking were more likely to process these impelling cues (MacDonald et al., 2000). Consequently, they were more likely to engage in risky behaviors. When they were exposed to inhibiting cues (detrimental effects of unprotected sexual intercourse), however, intoxicated individuals were as less likely as sober and placebo participants to engage in risky sexual behaviors. In an attempt to further understand the link between alcohol and sex, MacDonald et al. (2000) conducted a series of lab and field experiments using both disinhibition and alcohol myopia theory. The experiments provided a stronger support for alcohol myopia than disinhibition theory. When participants were provided with a disinhibiting cue for not engaging in unprotected sex, they were less likely to engage in unsafe sex practices.

In past research, much concern has centered on the causality claims. For instance, Dermen and Cooper (2000) argued that even though studies do find an association between these risky behaviors, the methodological limitations used in past research makes it challenging to establish causality. Most survey research was based on correlations between drinking patterns and measures of risky sexual behaviors such as condom use, age at first sex, or number of sexual partners (Leigh, 2002). Findings of a correlational nature, however, do not provide answers to the questions of why and how effects occurred. To shed more light on the causal processes, some researchers have suggested the use of event-level studies which could help establish whether individual’s risky sexual behavior really occurred as a result of drinking (Labrie et al., 2005). By
asking participants to think about a specific sexual intercourse that occurred as a result of alcohol consumption, event-level researchers hope to provide some evidence showing that alcohol use is really a precursor of risky sexual behaviors. The current study adopted Labrie et al.’s conceptualization by asking students to recall sexual behaviors that occurred as a result of their drinking. Students’ drinking patterns were also measured making it possible to examine the effect of general drinking patterns on risky sexual behaviors occurring as a result of drinking. The cross-sectional analysis will be replicated across time.

*Modeling Drinking and Risky Sexual Behaviors*

Past research has usually tracked variations in individuals’ drinking behaviors using a one-year interval (e.g. Anderson et al., 2009; Casswell & Zhang, 1998) These longitudinal studies provided valuable insights on the patterns of changes in drinking, Greenbaum et al. (2005) argue that meaningful changes in drinking behaviors among college students occur at a faster rate than a one-year interval. Therefore, a study on college students could use a shorter time frame. As a matter of fact, Greenbaum and his colleagues (2005) reported that changes in students’ drinking were influenced by external factors such as holidays and academic events such as midterm exams. Their survey suggests that students could be categorized into 5 different latent classes: (1) light-stable, (2) light-stable plus holiday, (3) medium-increasing, (4) high-decreasing and (5) heavy-stable. With the exception of the light class group, all subgroups showed an increasing trend in their drinking patterns.

Greenbaum et al. (2005) also reported an upward trend, primarily among females, in alcohol consumption during holiday weeks. Peak drinking days included Thursday through Sunday (Borsari et al., 2007; Greenbaum, et al., 2005). The peak drinking weeks included the first weeks of fall and spring semesters, and for females holiday weeks such as Thanksgiving.
break. Students tended to drink less during midterm and finals weeks (Greenbaum, et al., 2005). Because of the specific characteristics of college drinking, using widely-spaced assessments may overlook important information. This study will contribute to the literature by collecting information about students’ drinking and sexual behaviors at three time points during fall 2011. Analysing the information collected from a panel wave will help researchers understand how students’ alcohol use increases or decrease in the course of one semester. Two latent growth curve processes were modelled: one for alcohol-related behaviors and another one for unsafe sex practices. Figure 3 represents the model tested.
Figure 3: Hypothesized effects of time on drinking and risky sexual behaviors

The figure represents a parallel process latent growth curve models. Each latent growth curve has 2 latent constructs: intercept and slope. The intercept for drinking reflects the average
amount of alcohol use at baseline corrected for measurement error. Similarly, risky sex intercept represent the average risky sex at time 1 corrected for measurement error. The slope for alcohol use and risky sex reflect the average rate of change in both alcohol-related behaviors and risky sexual practices across time. Students’ alcohol use and likelihood to engage in unsafe sex practices are collected three times in the course of the semester. Because a random intercept random slope (RIRS) was specified for both latent growth curves, four other parameters can be estimated: variance across alcohol use and risky sex intercept as well as the variance across the slopes. The variance around the intercept reflects the range of individual differences in alcohol use at baseline. The variance around the slope represents students’ rate of change in alcohol use and risky sexual practices. Stated in another way, do some students show a faster increase or decrease in both unhealthy behaviors when compared to their peers? The two directional paths between growth factors (regressing alcohol intercept on risky sex slope, regressing risky sex intercept on alcohol slope) test the alcohol-sex link hypothesis. In other words, if the path from alcohol intercept to risky sex slope is statistically significant, then there is some ground in suggesting that alcohol-related behaviors are indeed a precursor of risky sexual behaviors.

The model also has a one time-invariant and one time-varying covariate. Gender, a variable that does not change over the course of the longitudinal measurements was added to test potential differences between male and female students. Sex differences in alcohol use were documented in prior research. Men were found to be more tolerant of nudity and the use of sexual appeals as a persuasive technique (Dudley, 1999; Jones & Reid, 2010; Lass & Hart, 2004). Other research indicates that men pay more attention to sexual messages than women (Parker & Furnham, 2007).

**RQ4:** Do students start at the same point in terms of their alcohol use?
RQ5: Are students homogenous in terms of their initial alcohol use?

RQ6: How fast do students change in their alcohol use?

RQ7: Do students vary in their increase or decrease in alcohol use?

RQ8: Do students start at the same point in terms of their risky sexual behaviors?

RQ9: Are students homogenous in terms of their risky sexual behaviors at time 1?

RQ10: What is the rate of change in students’ risky sexual practices?

RQ11: Do students vary in their increase or decrease in unsafe sex practices?

RQ12: Does use of alcohol at start predict risky sex slope?

RQ13: Does risky sex at start predict alcohol intercept?

H17: Men are more likely to report higher amount of alcohol use and risky sex at start than women.
CHAPTER FOUR

METHODOLOGY

An online survey of undergraduate students explored the effects that recalled parent-child interaction regarding media may have on their critical thinking skills, their beliefs about alcohol and sex and their reports of risky behaviors. Students who agreed to participate in the project were invited to complete the questionnaire three times during fall 2011. To match the panel data without personally identifying participants, they were asked to enter a unique code each time they completed the survey. Students were asked to enter the first three letters of their last name, the last three digits of their WSU ID number, the month they were born, and their favorite color. Therefore, the researcher was not able to identify specific participants or link the complete surveys to individual students. At the end of the survey, they were asked to click on a link where they could enter their ID number and names. These names were sent to the six instructors who offered extra credit in exchange for students’ participation in the survey. Four other instructors did not consider the project as an opportunity to earn extra-credit in their class. However, all participating students were entered in a drawing to win one of three I-pods.

Survey Design

Past research has shown that peak drinking weeks include the first weeks of fall and spring semesters and for female students, holiday weeks such as Thanksgiving break during which they tend to drink more heavily (Greenbaum, et al., 2005). College students were shown to engage in less drinking during midterm and finals weeks. As a result, the survey was made available online for one week in September, October and November. In summary, the survey research provided two types of data sets: cross-sectional data used to examine students’ understanding of advertising messages, advertisers’ intent and their effects on risky behaviors.
Second, a longitudinal data set used to model a latent trajectory of drinking and risky sexual behaviors across time. Students’ amount of alcohol use and risky sexual behaviors at time 1 served as the baseline data for the latent growth curve models. The SEM analyses also were conducted on the baseline data.

As with other survey methods, carefully-designed online surveys should strive to minimize errors at four levels (Dillman, 2000; 2007; Dillman, Smyth & Christian, 2009): coverage error, sampling error, measurement error and nonresponse error. Maximizing anonymity has been shown to decrease nonresponse to questions about risky behaviors (Rosenbaum & Langhinrichsen-Rohling, 2006; Woo, et al., 2008). The dissertation used a secure and encrypted software to conduct the online survey called Survey Monkey. A notification was sent to interested students on the first day of each data collection. Students could then log in to any computer to complete the survey. To maximize the anonymity of the survey, students’ personal identifiers such as ID number and names were collected separately from the data. The personal identifiers were destroyed once the lists of students were sent to their instructors and the winners of the I-pods were contacted.

During the recruitment procedure, all of these steps were made known to the instructors of participating classes as well as to their students. Students maximized the anonymous nature of the survey by not entering their name or student ID on the questionnaire. As a result of the procedures taken to safeguard students’ privacy, the survey yielded a good participation and survey response. Because of the recruitment procedure, the response rate could not be computed. However, the percentage of missing cases on the measures used in the baseline data ranged from 0.14% to 4.28%.
Not only does the use of anonymity promote survey responses but it also helps with the accuracy of the results. Past research suggests that when used to examine behaviors among a population whose access to the internet is reasonable, online surveys may yield reasonable and accurate responses comparable to that of other survey methods (Graham et al., 2006; Knapp & Kirk, 2003). Using an online survey is considered appropriate as research shows that college population has a good access to the internet (Dillman et al., 2009). The other errors that surveys are prone to include coverage error, sampling error and measurement error. Measurement error occurs when respondents gave inaccurate responses that do not reflect their true score on the construct (Dillman et al., 2008). Researchers acknowledge that it would be quite challenging, even impossible, to ensure that a survey be completely unbiased or untainted with social desirability. However, as documented in prior research, some safeguards built into the survey such as anonymity, tend to decrease socially desirable responses. In conclusion, different steps were taken to minimize the four errors.

Sampling Procedures

The study protocols were approved by the Washington State University Institutional Review Board in June 2011. The research is based on a volunteer sample of undergraduate students enrolled in introductory courses at Washington State University. Using the 2010 archives, a set of large 100- and 200-level classes were identified. The instructors of these classes were asked whether they were going to teach the same class in fall 2011. At that point, only two instructors responded to the inquiry. The same procedure was repeated in the first week of August 2011. Instructors were contacted early enough for them to consider students’ participation in this survey as a possibility to earn extra-credit points in the class. In the second
week of August 2011, instructors who expressed interest in having their class participate in the survey were contacted again and graciously gave their permission to present the project in class. The gender disparity in survey participation has been documented in prior research with more females taking part in research (Gosling, Vazire, Srivastava & John, 2004; Tourangeau, Couper & Conrad, 2004). However, past empirical evidence suggests that alcohol and sex are gendered issues. For instance, men were found to be more tolerant of nudity in the media, and paid more attention to them compared to women (Dudley, 1999; Jones & Reid, 2010; Lass & Hart, 2004; Parker & Furnhamn, 2007). It was important to adopt an approach that would allow for addressing the under-representation of males. This survey thus uses the equivalent of stratified sampling in nonprobability sampling procedure - quota sampling.

Based on the male-female ratio of WSU students “Enrollment by campus college sex since fall 1997,” the researcher generated a list of 6 classes through Random.org-List randomizer (http://www.random.org/lists). The instructors were contacted accordingly. Some instructors responded negatively to the request saying that they could not offer extra-credit to their students in exchange of their participation in the survey. Other instructors did not respond to the request. Therefore, the same procedure was repeated until the researcher obtained a big enough sampling frame. Six instructors eventually agreed to give their students extra credit in exchange for their participation in the project. Four other instructors gave the researcher permission to present the project in their classes and posted the link on their class website. The sampling frame included classes from traditionally male-dominated disciplines (biology, animal sciences, economics, astronomy) and liberal arts (criminal Justice, communication). The inclusion criteria for respondents were: (1) male or female college students and (2) being aged 18 years or older.
Students who were not aged 18 were automatically taken to the “Thank-You” page and could not complete the survey.

Sample Size, Power, and Precision

In line with standard techniques in SEM and latent growth, a series of Monte Carlo simulations were conducted to determine the sample size needed to obtain a good effect size (Muthén & Muthén, 2002). SEM theorists (Brown, 2006; Muthén & Muthén, 2002) argue that Monte Carlo simulation has advantages over rules of thumb. A specified model was tested using population values obtained from past research (Austin & Chen, 2003; Austin et al., 2006; Pinkleton et al., 2007). The conditions such as sample size, degree of data normality were manipulated as needed.

Based on Cohen’s (1988) research on power analysis, a sample size that resulted in an 80% likelihood of rejecting the null model was considered acceptable. The researcher ran two sets of Monte Carlo studies. The first Monte Carlo was used to determine the sample size needed for the SEM analyses. The second Monte Carlo simulation was used to determine power for the latent growth curve modelling. The number of replications specified was 10,000 and the sample size was 250. The model was fit-tested three times. Different SEED numbers were used each time to make sure that the results were reliable. As recommended by Brown (2006), the criteria for sample size included percentage bias and power. The percentage of bias was below 10% for all key parameter estimates. All coverage values approximated .95, that is a 95% confidence interval.

The path from alcohol-related expectancies onto alcohol use was statistically significant in 100% of replications. Stated in another way, the power of rejecting the false null hypothesis is 1.00, which is above Cohen’s .80 cut-off value for acceptable power. The path from parental
mediation to alcohol use was statistically significant in 99% of replications. Stated in another way, the power of falsely rejecting the null hypothesis is .99, which is above Cohen’s .80 cut-off value for acceptable power. The path from sex-related expectancies onto risky sexual behaviors was statistically significant in 100% of replications. Stated in another way, the power of falsely rejecting the null hypothesis is 1.00, which is above Cohen’s .80 cut-off value for acceptable power.

In addition, the path from parental mediation to risky sexual behaviors was statistically significant in 88% of replications. Stated in another way, the power of falsely rejecting the null hypothesis is .88, which is above Cohen’s .80 cut-off value for acceptable power. As a result, the specified sample size was considered reasonable. A set of Monte Carlo studies were also run on the latent growth (drinking and risky sexual behaviors). The findings provided further evidence that the specified sample size was reasonable. The coverage values for the growth factors (intercept and slope) and their variances ranged from .95 to .96. The slope for risky sexual behaviors, which represents the change across time, corrected for measurement error, was statistically significant in 100% of the replications. Stated in another way, the power of falsely rejecting the null hypothesis is 1.00, which is above Cohen’s .80 cut-off value for acceptable power.

The slope, which represents the changes across time was statistically significant in 89% of the replications. Stated in another way, the power of rejecting the false null hypothesis is .896, which is above Cohen’s .80 cut-off value for acceptable power. The variance around the intercept, which represents the individual differences of alcohol use at time1, corrected for measurement error, was statistically significant in 99% of the replications. Stated in another
way, the power of rejecting the false null hypothesis is .996, which is above Cohen’s .80 cut-off value for acceptable power.

To deal with potential attrition rates, a common problem in internet-based surveys (Dillman, et al., 2009), the researcher targeted 355 people. Past research showed that longitudinal surveys may experience a 10% attrition rate per assessment (Hansen, 2008). Based on these predictions, the research could lose about 105 students by the end of the study. The last section describes the measures used in the survey.

Measures Used in the Survey

The two outcome measures included self-report of alcohol-related behaviors and risky sexual behaviors. The independent variables consisted of perceptions about media portrayals and beliefs about alcohol and risky sexual behaviors. These variables are part of the MIP model. The questionnaire also included items measuring students’ critical thinking toward media and recalled parental mediation behaviors. The scales used in the survey were validated in past research. Prior to running the structural equation modeling and latent growth curve analysis, the scales were tested for unidimensionality, reliability and construct validity with a full measurement model (Anderson & Gerbing, 1998; Nunnally & Bernstein, 1994). Unless otherwise indicated, the measures used a 7-point Likert style scale (not at all, very often; strongly disagree, strongly agree) as anchors.

Demographics. A short biography questionnaire was developed to gather information about respondents’ sex, year in school, age, family income, racial background, relationship status, their grades in school, and whether they were members of a fraternity or a sorority. Based on empirical evidence, (Barnett, 2007), Greek membership is an important predictor of drinking among college students.
Parental mediation behaviors. Parental mediation behaviors were assessed with scales that have sufficient validity evidence (Austin, Pinkleton, Radanielina-Hita, Ran, 2011; Austin, Pinkleton & Fujioka, 2000; Fujioka & Austin, 2003). Research showed that parents who discuss media content with their children can endorse or disapprove media portrayals. These operational definitions of parental mediation are consistent with other research (e.g. Messaris & Sarett, 1981; Reid & Frazer, 1980). Parents who participated in these survey reported some form of approval “This is a good program” or disapproval of the content by requiring that their children do not ‘watch this trash.”

Consistent with past research on recalled parental mediation (e.g.: Austin & Chen, 2003; Booth-Butterfield & Sidelinger, 1998), students were asked to recall the strategies their parents adopted while growing up. Recalled negative mediation included the following items: (1) — Tell you about what ads are trying to do, (2) Tell you that something in a TV ad is not OK, (3) Tell you that something seen on TV is not real, (4) Tell you that something in a TV ad is not true, (5) Tell you that they disagree with something shown on TV, (6) Tell you that a TV ad is making something look better than it really is. Positive mediation inventory included the following items: (1) Repeat something heard or seen in a TV ad, (2) Tell you that they like a product shown in a TV ad, (3) Tell you that they like a person or character seen on TV, (4) Tell you that they agree with something seen on TV, (5) Tell you that something seen on TV happens in real life.

In past research, the reliability for positive mediation ranged from .58 (for children) to .75. Recently, the mediation scales were used in a pilot study on dietary behaviors conducted by the researchers in the Murrow College of Communication and the nutrition from the Program in Nutrition and Exercise Physiology, all from Washington State University. To ensure these items measured separate constructs, the scales were submitted to a confirmatory factor analysis. The
two-factor model was supported. The two constructs were weakly correlated, \( r = .30 \), suggesting that positive and negative mediation behaviors are related but separate constructs. Each indicator loaded substantially and significantly onto each hypothesized construct. In the current research, the alphas were .86 for negative mediation and .81 for positive mediation at time 1. The scales remained strongly reliable across time. At time 2, Cronbach alpha was .92 for negative mediation and .86 for positive mediation. At time 3, Cronbach alpha for negative mediation was .93 and .86 for positive mediation.

**MIP subscales.** The MIP subscales measure the viewers’ perceptions of media portrayals and their beliefs about alcohol and sex. The variables include perceived realism, perceived norms, similarity, identification and expectancies. The current research used a set of measures developed by Austin et al. (2012) to assess students’ critical thinking toward media. Past research on both children and college-aged populations provided sufficient validity evidence (Austin & Chen, 2003; Austin et al., 2006; Austin et al., 2012; Pinkleton, et al., 2007; Pinkleton et al., 2008). In examining college students’ alcohol-related behaviors, Austin and Chen (2003) found that expectancies were strongly reliable, \( \alpha = .93 \). Cronbach alpha for desirability was .74. More recently, the MIP scales were used to examine underage and college-aged drinking in the state of Washington. The analyses revealed that MIP subscales have sound psychometric properties. Cronbach alpha was .87 for both skepticism (\( M = 4.72, SD = 1.27 \)) and identification (\( M = 2.24, SD = .68 \)). Expectancy was also reliable, \( \alpha = .72 \) (\( M = 2.88, SD = .40 \)). Cronbach alphas for the other three subscales were lower than .70, \( \alpha = .67 \) for realism (\( M = 1.87, SD = .62 \)), \( \alpha = .63 \) for similarity (\( M = 2.03, SD = .40 \)), \( \alpha = .62 \) for perceived norms (\( M = 3.34, SD = .45 \)). The five MIP subscales are explicated below
Desirability. The desirability index measures students’ responses to alcohol portrayals (Austin, Pinkleton & Funabiki, 2007; Pinkleton, Austin, Chen & Cohen, 2011). The construct was operationalized with the following items: (1) When people in ads act sexy, it makes the products more interesting to me, (2) I like ads that show people flirting, (3) People acting sexy on TV are good looking, (4) Ads that show people acting sexy get my attention, (5) My favorite ads include people flirting, (6) People acting sexy on TV have lots of fun, (7) People acting sexy on TV seem happy. In previous research, the scale was found to be reliable. Cronbach alpha has been reported to range from .85 to .88. Alphas for this study were .91 for time 1, .94 for time 2 and .93 for time 3.

Expectancies. Expectancies were assessed with scales adapted from past research that were based on the approaches of Goldman and colleagues (Goldman, Brown & Christiansen, 1987; Evans & Dunn, 1995). The project assessed alcohol-related and sex-related expectancies. Alcohol-related expectancies reflect the extent to which students believed that alcohol use will have some positive effect on their social life and was measured as part of the message interpretation process that has shown to predict alcohol-related behaviors (Austin & Chen, 2003; Borsari, et al., 2007; Dermen & Cooper, 1994; Goldman, Brown, & Christiansen, 1987; Labrie et al., 2002; Labrie, et al., 2005; Leigh, 1989; Pinkleton et al., 2007). The construct was operationalized with the following items: (1) Drinking beer helps me fit in, (2) Drinking beer helps me have fun, (3) Drinking makes me happy, (4) I will find a beer at a good party, (5) Drinking together is a sign of good friendship, (6) Beer is a good reward after work. In past research, the scale was found to be reliable, α= .77. Alphas for this study were .88 for time 1, .91 for time 2 and .91 for time 3.
Sex-related expectancies reflect the extent to which students anticipated positive outcomes from risky sexual behaviors. Sex-related expectancies were measured as part of the message interpretation process that has shown to predict sexual behaviors (Pinkleton, Austin, Chen & Cohen, 2011). The scale originally included 4 items: (1) Having sex show that you are an adult, (2) Being sexually active makes you cool, (3) Having sex makes you popular, and (4) Being sexually active helps you fit in with people you want to have as friends. The first item did not load well with the other items in a college-aged population. Therefore it was deleted. Alphas for this study were .85 for time 1, .90 for time 2 and .92 for time 3.

Realism. Perceived realism reflects the extent to which students perceived alcohol ads as true representations of the real world and was measured as part of the logical aspect of decision-making process that could predict the persuasive effects of beer advertising on behaviors. The project used a four-item scale that has been extensively used and validated in past research (Austin, Pinkleton & Fujioka, 2000; Austin, Pinkleton, Hust & Cohen, 2005). The realism index included; (1) Beer ads are a realistic source of information for what makes people popular, (2) Beer ads are a realistic source of information for how people my age act, (3) Beer ads are a realistic source of information for what makes people successful, (4) Beer ads are a realistic source of information of what is trendy. A fifth item that specifically refers to sexual attractiveness was added. (5) Beer ads are a realistic source of information for what is sexually attractive. Alphas for this study were .86 for time 1, .92 for time 2 and .92 for time 3.

Norms. Consistent with Rimal, Lapinski, Cook and Real (2005), perceived norms were conceptualized as descriptive norms and reflected the degree to which students perceived that their peers engaged in the following behaviors: (1) Most college students drink alcohol, (2) Most college students play drinking games, (3) Most college students have ridden with a driver who
has been drinking, (4) Most college students have gotten sick from drinking alcohol, (5) Most college students engage in sexual activity as a result of their drinking. The scale was adapted from past research that has sufficient validity evidence (Austin et al., 2005; Austin et al., 2007; Pinkleton et al., 2007). Cronbach alphas ranged from .66 to .68. Alphas for the study were .83 for time 1, .90 for time 2 and .92 for time 3.

**Similarity.** Perceived similarity reflects the degree to which students perceive alcohol portrayals to be similar to them and or people they know in the real world. The scale included the following items: (1) People in my family are like people in beer ads, (2) People in beer ads are like people in my family, (3) I am like people in beer ads, and (4) I like what people in beer ads like. Alphas for the study were .83 for time 1, .91 for time 2 and .94 for time 3.

**Critical thinking toward media.** Students’ critical thinking toward media was measured with a six-item scale that taps into critical thinking toward media content and media sources. The construct developed by Austin and colleagues was measured as part of the message interpretation process that has been shown to strengthen the logical aspect of decision making, thereby reducing the effects of advertising on behaviors. The critical thinking scale was used in a pilot study on family nutrition behaviors conducted by the researchers in the Murrow College of Communication and the nutrition from the Program in Nutrition and Exercise Physiology (Austin, et al., 2012). The analyses showed that the scale was bidimensional. The two-factor solution fit the data better, $\chi^2 (8) = 10.55, p > .05$, CFI = .99, RMSEA = .04, SRMR = .02 than a one-factor model $\chi^2 (9) = 47.8, p < .05$, CFI = .84, RMSEA = .17, SRMR = .09. In addition, the two-factor solution had a good factor structure. The first factor labeled “critical thinking toward media content” was found to be reliable, $\alpha = .76$. The Cronbach alpha for the second factor,
labeled “critical orientation toward media source” was 88. As a result, both subscales were used in the analyses.

The 3 items representing critical thinking toward messages included: (1) “I think about things I see on TV before I accept them as believable”, (2) “It’s important to think twice about what TV says” and (3) “I look for more information before I believe something I see on television”. Alphas for the study were .74 for time 1, .87 for time 2 and .89 for time 3. The measures of critical thinking toward media sources included: (1) “I think about why someone created a message I see on TV”, (2) “I think about how someone created a message I see on TV” and (3) “I think about what the creator of a television message wants me to think”. Alphas were .83 for time 1, .93 for time 2 and .94 for time 3.

Identification. Identification refers to the extent to which students admire and wish the emulate characters portrayed in beer advertising and was measured as part of the message interpretation process that could predict subsequent beliefs about alcohol and sex risky behaviors. The scale, adapted from past literature (Austin, et al., 2000; Austin et al., 2007; Fujioka & Austin, 2003; Pinkleton, Austin & Fujioka, 2001) demonstrated sufficient validity. The Cronbach alpha ranged from .67 to .81. The construct was operationalized with the following items: (1) I wish I could be like people I see in beer ads, (2) I wish I could do the things people in beer ads do, (3) I wish I could look like people I see in beer ads, (4) I wish I could be as successful as people in beer ads, (5) I wish I could be as sexy as people in beer ads and (6) I wish I could be as good-looking as people in beer ads. Alphas were .91 for time 1, .93 for time 2 and .95 for time 3.

Media use. Past research suggests that beer ads, which rank first among alcohol ads on TV, are placed mostly during sports programming, and prime time (Martin et al., 2002; Snyder et
In the current study, students were asked to report their current media use using validated scales (e.g., Austin et al., 2000; Austin & Chen, 2003). Exposure to TV and alcohol advertising were assessed by participants’ indication of the extent to which they watched the following programs: (1) any prime time TV, (2) late-night talk shows, (3) sports programs (e.g.: football games, ESPN), (4) news programs, and (5) alcohol advertising. Alphas were .72 for time 1, .72 for time 2 and .72 for time 3.

**Instrumentality.** Students’ instrumental characteristics were measured with the Personal Attributes Questionnaire (Spence & Helmreich, 1978). Consistent with Dambrot, Reep and Bell (1988) who argued that the masculinity subscale could be effectively used to measure instrumentality and expressivity, the current project used the students’ scores on the same subscale to predict behaviors. The subscale ask students to rate the extent to which they feel: (1) self confident, (2) independent, (3) competitive, (4) passive (reverse coded), or whether they (5) stand up well under pressure, (6) give up easily (reverse coded), or (7) can make decisions easily. Alphas were .66 for time 1, .69 for time 2 and .72 for time 3.

Dependent variables.

The dependent variables included alcohol-related behaviors and items related to risky sexual behaviors. The scales are explicated below.

**Risky sexual behaviors.** In their 2002 report, the Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism (as quoted, Downing-Matibag & Geisinger, 2009) as well as the Center for Disease Control (1995) included the following as risky sexual behaviors among college students: (1) having unprotected sexual intercourse, (2) having multiple sex partners, (3) having sex while under the influence of alcohol and (4) sexual risk taking. Labrie et al. (2005) also argued that researchers should not only target sexual behaviors with regular
partners but should also examine sex practices with new and casual partners. For instance, the use of condoms may be associated with qualitatively different thoughts among people in a committed relationship than with casual or new partners (Labrie et al., 2003; 2005). Individuals in a committed relationship already developed patterns of sexual behaviors. Therefore, a student who is not using condoms when having sex with their romantic partner might not think that (s)he is engaging in risky sexual behaviors. Indeed, Corbin and Fromme (2002) reported that the effects of alcohol on risky sexual behaviors can be mediated by the type of partner.

The scale used in this study was adapted from past research (Hingson, et al., 2003; LaBrie et al., 2002). In this task, students were asked to think over the last 4 weeks preceding each time assessment and provide their best estimate of the frequency with which they engaged in a set of behaviors. The scale read as: Think back over the last 4 weeks, how often has your drinking caused you to.... 1) Engage in unplanned sexual intercourse? 2) Not use protection when you had sex? 3) Engage in sexual relationships with different partners. 4) Not use condoms when you had sex with a new partner? 5) Did something sexual that you later wished you hadn’t? Consistent with Corbin and Fromme (2002), the second item did not hang well with the other risky behaviors.

Three items that refer specifically to sexual assault and consent were added to the previously validated scale. The 8 items were subjected to an Exploratory Factor analysis to see if they could refer to one latent construct. The analyses suggested that the scale was not unidimensional. The two-factor model fit the data better, $\chi^2(13)= 45.62$, $P<.001$, $CFI = .97$, the $RMSEA= .06$ (CI= .04; .08) and SRMR=. 02 than a one-factor model, $\chi^2(20)= 109.18$, $P<.001$, $CFI = .91$, the $RMSEA= .08$ (CI= .07; .10) and SRMR=. 04. Therefore, the three sexual assault items were not included in the original scale. The final measurement and structural model thus
included the previously validated scale based on the conceptualizations of the CDC. Alphas for risky sexual behaviors were .86 for time 1, .91 for time 2 and .89 for time 3.

*Alcohol-related behaviors.* Measures of alcohol-related behaviors were adapted from past research (e.g.: Austin & Chen, 2003; Booth-Butterfield & Sidelinger, 1988). The items were measured on a 6-point Likert-style anchor scale (1= never, 6= twice a week). Students were asked to think over the last 4 weeks preceding each time point assessment and indicate the extent to which they (1) drank an alcoholic beverage, (2) had 4 or more drinks in a row, (3) attended a party where alcohol is served, (4) got sick from drinking alcohol, (5) prefunked (drank alcohol before going out or attending a party). In past research, the scale was found to be reliable. The Chronbach alpha was .86 in Austin and Chen (2003). One item “Rode with a driver drinking alcohol” did not load well with the other items. The absolute value for Kurtosis was 5.26 indicating that people tend to score below the mean and that the item could be potentially problematic. Prior research tends to suggest that the law against drinking and driving and media’s attention on the consequences of drunk driving might have contributed to a decrease in the behaviors (Bucholz, K. & Robins, L.N, 1989). Removing the item from the scale made the scale more internally consistent. Alphas were .91 for time 1, .92 for time 2 and .91 for time 3. The psychometric properties of key measures are presented in Table 1.
Table 1: Reliabilities of key variables at time 1, time 2, time 3

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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(reverse coded)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1, cont.

<table>
<thead>
<tr>
<th>Indices</th>
<th>Range</th>
<th>TIME 1</th>
<th>TIME 2</th>
<th>TIME 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>α</td>
</tr>
<tr>
<td><strong>Risky sexual behaviors</strong></td>
<td>1 - 7</td>
<td>1.95</td>
<td>1.40</td>
<td>.86</td>
</tr>
<tr>
<td>Please think back over the last 4 weeks, how often has your drinking caused you to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage in unplanned sexual intercourse?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage in sexual relationships with different partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not use condoms when you had sex with a new partner?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did something sexual that you later wished you hadn’t?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drinking-related behaviors</strong></td>
<td>1 - 6</td>
<td>3.03</td>
<td>1.55</td>
<td>.91</td>
</tr>
<tr>
<td>Please think back over the last 4 weeks, how often have you done each of the following things:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drank an alcoholic beverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have 4 or more drinks in a row</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend a party where alcohol is served</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Get sick from drinking alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefunked (drank alcohol before going out or attending a party)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To test the causal sequences of decision-making process as hypothesized by the MIP, a structural equation model was conducted on the baseline data. Establishing causality in survey data is more challenging because of the difficulty controlling extraneous variables to rule out spurious associations. However, in line with Curran and Hussong (2003), latent growth curve analysis and structural equation modeling (SEM) hold out the promise of shedding light on causal processes. In discussing the use of latent trajectory models in psychological research, Curran and Hussong (2003) argue that research based on these techniques focus on the stability and changes over time. Therefore, they will provide the “needed empirical evaluations of the course, causes, and consequences of abnormal behavior” (p.526). To examine the changes in drinking and sexual behaviors across time, a parallel growth curve process was estimated.

Latent growth curve models focus on mean change over time and individual variability from mean trend. Latent growth curve models have some edge over other analytical tools because they examine within person change across time as well as variability within person change. A random slope random intercept model was tested. Provided that the change is statistically significant, the researcher can examine the predictors of these changes. Therefore, the analyses may contribute to a better understanding of the alcohol-sex link.
CHAPTER FIVE

RESULTS

Participant Characteristics

At time 1, participants accessed the survey 711 times. Five students were below the age of 18 and were automatically taken to the last page of the survey, the “thank-you page.” In other words, these underaged students could not complete the questionnaire. This was in accord with IRB’s requirements that only legal adults should participate in the survey. About 26 students only answered the first two items—the “consent” question and whether they were 18 years old. Some others were duplicates (i.e. students accessed the survey twice or three times). In the case of duplicates, the complete survey was included in the analysis. This left a total of 685 participants.

Out of the total sample, 9 students were aged 30-46. Research (e.g.: Booth-Butterfield, Sidelinger, 1998) has shown that college-aged populations are appropriate sources of information on mediation behaviors since they have experienced a wide range of strategies to decrease alcohol use. In an attempt to minimize the effect of recall bias, the researcher removed the nontraditional students who were asked to recall things that happened some decades ago. In addition, past research suggests that an increased occurrence of risky behaviors is more likely during the developmental period (Bachman, Wadsworth, O’Malley, Johnston, & Schulenberg, 1997); thereby making the recall of parental strategies among late adolescents and young adults handier. The cut off age, 30 years, was also chosen based on longitudinal studies (e.g.: Fillmore et al., 1987). Reported onset of alcohol problem occurred in the 20s up until middle age (30s) after which it developed into alcoholism. Because of the societal implications of this research, it is important to understand the skills that could help decrease risky behaviors before they develop.
into alcoholism. In their report NIDA (2000) as reported in Ennett et al. (2001) recommended that interventions be targeted at late adolescents to early adults because any risky behaviors that were developed during this developmental period could develop into lifetime patterns.

As stated previously students had a week to complete the survey at each time point assessment. Because of some time constraints, the deadline for time 1 was extended and 44 students completed the survey four days after the original deadline. To determine whether there were significant differences between the two groups on the outcome measures, the sample was divided into early and late response groups. A comparison of 44 students randomly selected from early respondents with the 44 late respondents showed no significant differences on the outcome measures. The means for drinking behaviors were $M = 2.80$ (SD= 1.59) for the first group and $M = 3.10$ (SD= 1.46) for late respondents, $p > .05$. The means on risky sexual behaviors were $M = 2.04$ (SD= 1.26) for the first group and $M = 1.97$ (SD= 1.46), $p > .05$. Therefore, the 44 late respondents were included in the SEM analyses. The final number of valid cases for the baseline data was 676. Therefore the SEM analyses were based on these 676 students. The sample characteristics for the baseline data are provided in Table 2.
Table 2: Demographics at baseline

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>205</td>
<td>30.3%</td>
</tr>
<tr>
<td>Female</td>
<td>456</td>
<td>67.5%</td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>2.2%</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>193</td>
<td>28.6%</td>
</tr>
<tr>
<td>19</td>
<td>134</td>
<td>19.8%</td>
</tr>
<tr>
<td>20</td>
<td>107</td>
<td>15.8%</td>
</tr>
<tr>
<td>21</td>
<td>87</td>
<td>12.9%</td>
</tr>
<tr>
<td>22</td>
<td>28</td>
<td>4.1%</td>
</tr>
<tr>
<td>23</td>
<td>13</td>
<td>1.9%</td>
</tr>
<tr>
<td>24</td>
<td>7</td>
<td>1%</td>
</tr>
<tr>
<td>25-30</td>
<td>9</td>
<td>1.2%</td>
</tr>
<tr>
<td>Missing</td>
<td>98</td>
<td>14.5%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>229</td>
<td>33.9%</td>
</tr>
<tr>
<td>Junior</td>
<td>162</td>
<td>24.0%</td>
</tr>
<tr>
<td>Sophomore</td>
<td>157</td>
<td>23.2%</td>
</tr>
<tr>
<td>Senior</td>
<td>102</td>
<td>15.1%</td>
</tr>
<tr>
<td>Missing</td>
<td>26</td>
<td>3.8%</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed race</td>
<td>50</td>
<td>7.4%</td>
</tr>
<tr>
<td>African Americans</td>
<td>11</td>
<td>1.6%</td>
</tr>
<tr>
<td>Asians</td>
<td>61</td>
<td>9.0%</td>
</tr>
<tr>
<td>Caucasians</td>
<td>485</td>
<td>71.7%</td>
</tr>
<tr>
<td>Latino(a)s</td>
<td>29</td>
<td>4.3%</td>
</tr>
<tr>
<td>Native Americans</td>
<td>2</td>
<td>0.3%</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>1.8%</td>
</tr>
<tr>
<td>Missing</td>
<td>26</td>
<td>3.8%</td>
</tr>
<tr>
<td><strong>Family income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very low income</td>
<td>16</td>
<td>2.4%</td>
</tr>
<tr>
<td>Low income</td>
<td>72</td>
<td>10.7%</td>
</tr>
<tr>
<td>Middle income</td>
<td>400</td>
<td>59.2%</td>
</tr>
<tr>
<td>High income</td>
<td>141</td>
<td>20.9%</td>
</tr>
<tr>
<td>Very high income</td>
<td>17</td>
<td>2.5%</td>
</tr>
<tr>
<td>Not sure</td>
<td>4</td>
<td>0.6%</td>
</tr>
<tr>
<td>Missing</td>
<td>26</td>
<td>3.8%</td>
</tr>
<tr>
<td><strong>Greek membership</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>140</td>
<td>20.7%</td>
</tr>
<tr>
<td>No</td>
<td>510</td>
<td>75.4%</td>
</tr>
<tr>
<td>Missing</td>
<td>26</td>
<td>3.8%</td>
</tr>
</tbody>
</table>
Consistent with survey research, the sample was predominantly female – 67.5%. Males made up 30.3% with 2.2% failing to report their gender. The reported age of participants ranged from 18 to 30, with the greatest number of participants between 18 to 20 years old (64.2 %). The mean age was 19.57%. Even though the sample was predominantly Caucasian (71.7%), the project had a substantial number of non-White participants (17%) and students of mixed race (7.4%). About 3.8% of respondents did not indicate their race. Out of the total sample, 20.7% of students indicated that they were members of a fraternity or a sorority organization. About 46.7% reported that they have a regular sexual partner. Reported age of first sex ranged from 10 to 24 years old, with a mean age of participants being 17.01 (SD= 1.70).

At time 2, the survey was accessed 538 times, with 507 valid cases. About 394 students could be matched on the unique codes that they provided. Out of the total sample, 113 students did not participate in the first survey. At time 3, the survey was accessed 461 times, with 451 valid cases. Out of the total sample, 290 students were matched on the unique codes that they provided at time 1, time 2 and time 3.

Overall, 51 students participated in survey 1 and 3 and 41 students in survey 2 and 3. On the other hand, 69 of these students did not complete the first two surveys. The survey experienced a 25.98 % drop out rate from survey 1 to survey 2 and 11.04% from survey 2 to survey3.

These dropout rates were higher than the expected 10% on which the Monte Carlo was based. However, the final number of valid cases at time 3, that is 290, was higher than the expected 250 students which were shown to provide a good power. Table 3 presents the characteristics of those who made up the effective sample size for the longitudinal analyses.
Table 3: Demographics for the longitudinal analyses

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Frequency</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>65</td>
<td>22.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>224</td>
<td>77.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
<td>19.81</td>
<td>2.03</td>
</tr>
<tr>
<td>18</td>
<td>79</td>
<td>27.24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>73</td>
<td>25.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>59</td>
<td>20.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>48</td>
<td>16.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>6</td>
<td>2.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>5</td>
<td>1.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>4</td>
<td>1.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-30</td>
<td>9</td>
<td>3.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>92</td>
<td>31.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>75</td>
<td>25.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sophomore</td>
<td>73</td>
<td>25.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>46</td>
<td>15.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>4</td>
<td>1.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed race</td>
<td>25</td>
<td>8.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African Americans</td>
<td>3</td>
<td>1.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asians</td>
<td>26</td>
<td>9.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasians</td>
<td>222</td>
<td>76.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino(a)s</td>
<td>8</td>
<td>2.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>4</td>
<td>1.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Family income</strong></td>
<td></td>
<td></td>
<td>3.09</td>
<td>.72</td>
</tr>
<tr>
<td>Very low income</td>
<td>16</td>
<td>2.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>72</td>
<td>10.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle income</td>
<td>400</td>
<td>59.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High income</td>
<td>141</td>
<td>20.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very high income</td>
<td>17</td>
<td>2.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not sure</td>
<td>4</td>
<td>.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>26</td>
<td>3.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Greek membership</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>58</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>227</td>
<td>78.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>1.7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Prior to conducting structural equation modeling analyses, researchers have to check that the data meet the assumptions for univariate and multivariate normality. Two value statistics, skewness and kurtosis, are used to determine data normality (Bump, 1991; Kline, 2003). Normally skewed data is symmetrical to normal distribution. On the other hand, kurtosis compares the shape of the data distribution to the normal distribution by examining relative height to width. Granted the data do not violate the assumptions of univariate and multivariate normality, maximum likelihood (ML) can be used as a method of estimation in subsequent analyses.

Data Distribution

With the exception of the alcohol-related behaviors, all items, were measured on 7-point Likert-style scales (1 = strongly disagree, 7 = strongly agree/1 = not at all, 7 = very often). For the parental mediation scales, the means on individual items ranged from 3.58 to 4.57 for time 1. The standard deviations ranged from 1.51 to 1.78. These values suggest that there is not too much variance and that the data do not deviate from normality. The Kurtosis and Skewness were within the acceptable ranges. No value exceeded 3.00 and 10.00. Therefore, all individual items met the criteria for univariate normality.

The means of the individual items for MIP variables ranged from 1.81 to 5.44. On average, students tended to score lower on similarity, skepticism and realism but tended to score high on norms. The means for expectancies ranged from 2.95 to 4.00. The standard deviations ranged from 1.76 to 1.94. The Kurtosis and Skewness were within the acceptable ranges. No value exceeded 3.00 and 10.00. Therefore, all individual items met the criteria for univariate normality. The means for desirability ranged from 2.70 to 3.88. The standard deviations ranged from 1.54 to 1.81. The means of the individual items of the norm index ranged from 4.36 to 5.45.
The standard deviations ranged from 1.58 to 1.67. The Kurtosis and Skewness were within the acceptable ranges. No value exceeded 3.00 and 10.00. Therefore, all individual items meet the criteria for univariate normality.

On the drinking behaviors, the means ranged from 1.87 to 3.66. The standard deviations ranged from 1.28 to 1.88. The Kurtosis and Skewness for all items appear acceptable. On the risky sexual behaviors, the means for individual items ranged from 1.67 to 2.12. The standard deviation ranged from 1.45 to 1.85. The Kurtosis and Skewness were within the acceptable ranges. No value exceeded 3.00 and 10.00. Therefore, all individual items met the criteria for univariate normality.

Even though univariate normality is a sine qua non condition for multivariate normality (Johnson & Wichern, 1992), researchers who use SEM methods must ensure that the sampling distributions and means of the variables are normally distributed as are their linear combinations. In line with theorists (Brown, 2006; Burdenski, 2000; Gao et al., 2008), the researcher computed the Mardia’s coefficients of multivariate kurtosis, its critical ratio and the Mahalanobis distance to check the assumption of multivariate normality. Statistical packages such as SAS provide all of these values. The Mahalanobis distance determines the location of each individual observation in relation to the means of all variables considered as a whole (Burdenski, 2000). Individual scores that are located far from the central point are considered as outliers. Gao, Mokhtarian and Johnson (2008) argued that large deviations from the normal distributions caused by outliers may distort the covariance matrix, which is inputted in SEM and latent growth modeling analyses. As larger distances from the mean increases the standardized estimate of multivariate kurtosis, researchers may delete outliers until they reach an acceptable level. In the current study, the standardized multivariate kurtosis was -1.6 which is below the 1.9 cut-off value suggesting that
the multivariate kurtosis is not statistically significant from 0 (Gao et al., 2008). The chi-square was around 50% (.53). In conclusion, there was no strong evidence suggesting large departure from multivariate normality.

Missing Case Analysis

As stated previously, missing cases on the perceptual and behavioral measures ranged from 0.19% to 4.28%. The percentage of missing cases on the sexual behaviors was 3.40% to 3.99%. Except for the items “got sick from drinking alcohol” and “prefunked,” with a 4.28% of missing cases, the proportion of missing cases on the drinking behaviors was 3.84%. Traditional approaches to handle missing cases include listwise and pairwise deletions. A listwise approach to missing cases consists in removing participants who skipped some of the questions. On the other hand, pairwise deletion occurs when cases with missing data on the variables involved in the current analysis are removed. Researchers (e.g.: Brown, 2008; Peters & Enders, 2002) suggest that using maximum likelihood as a method of estimation is a more effective way in handling missing cases. All analyses were conducted using Mplus 5.2 with a robust estimation - Maximum Likelihood Robust (MLR) as a method of estimation. Before testing the hypotheses with the structural equation modeling, the researcher had to fit the measurement model.

Measurement Evaluation

Structural equation modeling has two parts: the measurement model and the structural portion. The measurement model describes the relationships between a set of manifest variables (indicators) and a set of latent constructs. Running the measurement model requires three steps to follow. The data were screened and then estimated. The goal of model estimation was to generate an estimated data matrix from the specific model and parameter values that reproduced the actual data matrix with the smallest amount of residual (a perfect model results in zero
Brown (2008) recommended that analysts use Maximum Likelihood (ML) as a method of estimation as ML takes standard errors into account when determining the precision of parameter estimates (Brown, 2008).

The 14 latent constructs were fitted simultaneously to ensure that constructs are distinct from one another and that all individual items were good indicators of the hypothesized constructs. The measurement model provided the needed evidence that the constructs were indeed unidimensional. Consistent with Brown (2008), the researcher used three criteria to evaluate the fit of the measurement model: (1) overall goodness of fit of the model as a whole, (2) the size of the parameter estimates and (3) localized areas of strains or ill-fits. The overall goodness of fit was evaluated using the following: Chi-square test, the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root-Mean-Squared Residual (SRMR). The parameters were expected to load substantially and statistically onto the hypothesized constructs.

In line with Hair et al. (1998), a loading of .6 or above was considered a high factor loading and .4 a low factor loading. Since low loadings are not unlikely in the real world, Raubenheimer (2004) even recommended including factor loadings as low as .4 as long as the items are consistent with theory. To obtain estimates of the localized areas of strains (ill-fits), one has to subtract the value of the observed sample statistic from the value of its model implied and then divide the obtained value by the standard deviation of the difference between the value of the observed sample statistic and its model estimated value. Residuals should not be higher than 2.58.

The Chi-square test provides a global measure of the fit. A significant chi-square test suggests that any discrepancy between the implied model and the real matrix is statistically significant. Therefore, the model provides a poor fit to the data. However since the chi-square is
almost always significant with large samples of about 200 and more, theorists recommend the use of other relative fit indices. The Comparative Fit Index (CFI) compares the specified model to the null model. The CFI values range from .00 to 1.00. A value of .90 or higher is considered reasonable. The Standardized Root-Mean-Squared Residual (SRMSR) reflects the mean discrepancy between the correlations in the observed and the specified model. Based on past research (Brown, 2008; Kline, 2003), a value below .07 is considered reasonable. The RMSEA is a measure of fit with parsimony correction. It is also considered as an “error of approximation.” In line with Brown (2008) and Kline (2006), a value of .05 is considered close fit.

In the current research, the measurement model provided a good fit for the data. Even though the chi-square was statistically significant, $\chi^2 = 3298.04$, $p < .001$, the other relative fit indices were good, CFI = .92, the RMSEA= .03 (CI= .035; .039) and SRMR=. 05. The final measurement model did not have cross-loadings. In other words, no indicator loaded substantially on more than one construct. The final model only allowed errors within the same construct to correlate with one another (similarity 1 with similarity 2, identification1 with identification 2, desirability 3 with desirability 5, and drinking 2 with drinking 4). As shown in Table 4, all freely estimated parameters loaded substantially and statistically onto the hypothesized constructs. The descriptions of the final measurement items for each construct are presented in Table 4.
Table 4: Results of the Measurement Model

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Estimate *</th>
<th>S.E</th>
<th>Est/S.E</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative mediation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often did your parents:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tell you that something in a TV ad is not true</td>
<td>.76</td>
<td>.02</td>
<td>30.12</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you that something in a TV ad is not OK</td>
<td>.69</td>
<td>.02</td>
<td>24.97</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you that something seen on TV is not real</td>
<td>.72</td>
<td>.02</td>
<td>26.38</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you about what ads are trying to do</td>
<td>.65</td>
<td>.03</td>
<td>21.65</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you that they disagree with something shown on TV</td>
<td>.74</td>
<td>.02</td>
<td>28.30</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you a TV ad is making something look better than it really is</td>
<td>.73</td>
<td>.02</td>
<td>27.05</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Positive mediation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often did your parents:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tell you that they agree with something seen on TV</td>
<td>.76</td>
<td>.02</td>
<td>28.25</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you that they like a product shown in a TV ad?</td>
<td>.66</td>
<td>.03</td>
<td>22.46</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you that they like a person or character seen on TV</td>
<td>.68</td>
<td>.03</td>
<td>21.32</td>
<td>.001</td>
</tr>
<tr>
<td>Tell you that something seen on TV happens in real life</td>
<td>.68</td>
<td>.03</td>
<td>22.51</td>
<td>.001</td>
</tr>
<tr>
<td>Repeat something heard or seen in a TV ad</td>
<td>.61</td>
<td>.03</td>
<td>16.55</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Desirability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When people in ads act sexy, it makes the products more interesting to me.</td>
<td>.80</td>
<td>.01</td>
<td>42.87</td>
<td>.001</td>
</tr>
<tr>
<td>Ads that show people acting sexy get my attention.</td>
<td>.79</td>
<td>.01</td>
<td>43.23</td>
<td>.001</td>
</tr>
<tr>
<td>I like ads that show people flirting.</td>
<td>.73</td>
<td>.02</td>
<td>31.94</td>
<td>.001</td>
</tr>
<tr>
<td>People acting sexy on TV are good looking.</td>
<td>.78</td>
<td>.01</td>
<td>40.48</td>
<td>.001</td>
</tr>
<tr>
<td>My favorite ads include people flirting.</td>
<td>.69</td>
<td>.02</td>
<td>28.28</td>
<td>.001</td>
</tr>
<tr>
<td>People acting sexy on TV have lots of fun</td>
<td>.80</td>
<td>.02</td>
<td>40.79</td>
<td>.001</td>
</tr>
<tr>
<td>People acting sexy on TV seem happy</td>
<td>.79</td>
<td>.02</td>
<td>37.33</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Expectancies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking beer helps me have fun.</td>
<td>.85</td>
<td>.01</td>
<td>55.28</td>
<td>.001</td>
</tr>
<tr>
<td>Drinking beer helps me fit in.</td>
<td>.72</td>
<td>.02</td>
<td>31.40</td>
<td>.001</td>
</tr>
<tr>
<td>Drinking makes me happy.</td>
<td>.79</td>
<td>.01</td>
<td>41.97</td>
<td>.001</td>
</tr>
<tr>
<td>I will find a beer at a good party.</td>
<td>.75</td>
<td>.02</td>
<td>31.58</td>
<td>.001</td>
</tr>
<tr>
<td>Drinking together is a sign of good friendship.</td>
<td>.71</td>
<td>.02</td>
<td>27.97</td>
<td>.001</td>
</tr>
<tr>
<td>Beer is a good reward after work.</td>
<td>.68</td>
<td>.02</td>
<td>26.32</td>
<td>.001</td>
</tr>
</tbody>
</table>

*Standardized values
Table 4, cont.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Estimate *</th>
<th>S.E</th>
<th>Est/S.E</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex-related expectancies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being sexually active makes you cool</td>
<td>.83</td>
<td>.02</td>
<td>35.94</td>
<td>.001</td>
</tr>
<tr>
<td>Having sex makes you popular.</td>
<td>.81</td>
<td>.02</td>
<td>30.07</td>
<td>.001</td>
</tr>
<tr>
<td>Being sexually active helps you fit in with people you want to have as friends.</td>
<td>.81</td>
<td>.02</td>
<td>31.96</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Realism</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beer ads are a realistic source of information for what makes people successful.</td>
<td>.82</td>
<td>.02</td>
<td>37.94</td>
<td>.001</td>
</tr>
<tr>
<td>Beer ads are realistic sources of information for what makes people popular.</td>
<td>.76</td>
<td>.02</td>
<td>26.89</td>
<td>.001</td>
</tr>
<tr>
<td>Beer ads are realistic sources of information for how people my age act.</td>
<td>.71</td>
<td>.02</td>
<td>26.82</td>
<td>.001</td>
</tr>
<tr>
<td>Beer ads are realistic sources of information for what is sexually attractive.</td>
<td>.73</td>
<td>.02</td>
<td>27.39</td>
<td>.001</td>
</tr>
<tr>
<td>Beer ads are realistic sources of information for what is trendy</td>
<td>.72</td>
<td>.03</td>
<td>23.89</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Norms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most college students play drinking games.</td>
<td>.81</td>
<td>.02</td>
<td>29.68</td>
<td>.001</td>
</tr>
<tr>
<td>Most college students drink alcohol.</td>
<td>.76</td>
<td>.03</td>
<td>24.67</td>
<td>.001</td>
</tr>
<tr>
<td>Most college students engage in sexual activity as a result of their drinking.</td>
<td>.68</td>
<td>.03</td>
<td>21.43</td>
<td>.001</td>
</tr>
<tr>
<td>Most college students have ridden with a driver who has been drinking.</td>
<td>.62</td>
<td>.03</td>
<td>20.24</td>
<td>.001</td>
</tr>
<tr>
<td>Most college students have gotten sick from drinking alcohol.</td>
<td>.72</td>
<td>.03</td>
<td>22.60</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Similarity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am like people in beer ads.</td>
<td>.78</td>
<td>.02</td>
<td>28.42</td>
<td>.001</td>
</tr>
<tr>
<td>People in my family are like people in beer ads.</td>
<td>.63</td>
<td>.04</td>
<td>15.83</td>
<td>.001</td>
</tr>
<tr>
<td>People in alcohol ads are like people in my family.</td>
<td>.66</td>
<td>.03</td>
<td>17.82</td>
<td>.001</td>
</tr>
<tr>
<td>I am like people in beer ads.</td>
<td>.71</td>
<td>.03</td>
<td>22.57</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Critical thinking toward media sources (CTMS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about WHY someone created a message I see on TV</td>
<td>.85</td>
<td>.02</td>
<td>39.33</td>
<td>.001</td>
</tr>
<tr>
<td>I think about HOW someone created a message I see on TV</td>
<td>.79</td>
<td>.02</td>
<td>30.26</td>
<td>.001</td>
</tr>
<tr>
<td>I think about what the creators of a television message wants me to believe.</td>
<td>.74</td>
<td>.03</td>
<td>24.04</td>
<td>.001</td>
</tr>
</tbody>
</table>
Table 4, cont.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Estimate *</th>
<th>S.E</th>
<th>Est/S.E</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical thinking toward media content</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(CTMC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about things I see on TV before I accept them as believable.</td>
<td>.71</td>
<td>.03</td>
<td>19.03</td>
<td>.001</td>
</tr>
<tr>
<td>It's important to think twice about what TV says.</td>
<td>.70</td>
<td>.04</td>
<td>17.75</td>
<td>.001</td>
</tr>
<tr>
<td>I look for more information before I believe something I see on television</td>
<td>.70</td>
<td>.03</td>
<td>20.34</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Identification</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I wish I could be like people I see in beer ads.</td>
<td>.70</td>
<td>.03</td>
<td>22.72</td>
<td>.001</td>
</tr>
<tr>
<td>I wish I could look like people I see in beer ads.</td>
<td>.87</td>
<td>.01</td>
<td>50.34</td>
<td>.001</td>
</tr>
<tr>
<td>I wish I could do the things people in beer ads do.</td>
<td>.66</td>
<td>.03</td>
<td>19.25</td>
<td>.001</td>
</tr>
<tr>
<td>I wish I could be as successful as people in beer ads.</td>
<td>.69</td>
<td>.03</td>
<td>22.43</td>
<td>.001</td>
</tr>
<tr>
<td>I wish I could be as sexy as people in beer ads.</td>
<td>.86</td>
<td>.01</td>
<td>50.28</td>
<td>.001</td>
</tr>
<tr>
<td>I wish I were as good-looking as most people in the beer ads.</td>
<td>.87</td>
<td>.02</td>
<td>42.84</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Risky sexual behaviors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think back over the last 4 weeks, how often has your DRINKING caused you to....</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage in unplanned sexual intercourse</td>
<td>.79</td>
<td>.02</td>
<td>27.16</td>
<td>.001</td>
</tr>
<tr>
<td>Not use condoms when you had sex with a new partner?</td>
<td>.72</td>
<td>.03</td>
<td>20.27</td>
<td>.001</td>
</tr>
<tr>
<td>Do something sexual that you later wished you hadn’t?</td>
<td>.78</td>
<td>.03</td>
<td>26.06</td>
<td>.001</td>
</tr>
<tr>
<td>Engage in sexual relationships with different partners.</td>
<td>.83</td>
<td>.02</td>
<td>31.93</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Drinking-related behaviors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think back over the last 4 weeks, how often have you engaged in the following:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefunked (drank alcohol before going out or attending a party)</td>
<td>.86</td>
<td>.01</td>
<td>55.17</td>
<td>.001</td>
</tr>
<tr>
<td>Drank an alcoholic beverage</td>
<td>.87</td>
<td>.01</td>
<td>58.70</td>
<td>.001</td>
</tr>
<tr>
<td>Had 4 or more drinks in a row</td>
<td>.91</td>
<td>.01</td>
<td>81.04</td>
<td>.001</td>
</tr>
<tr>
<td>Attended a party where alcohol is served</td>
<td>.83</td>
<td>.01</td>
<td>46.92</td>
<td>.001</td>
</tr>
<tr>
<td>Got sick from drinking alcohol</td>
<td>.56</td>
<td>.02</td>
<td>21.09</td>
<td>.001</td>
</tr>
</tbody>
</table>
Preliminary Analysis on Control Variables

A path analysis was conducted to investigate the effects of demographics and potential control variables on the two outcome behaviors and the perceptual measures. Path analytic models include manifest variables and not latent factors. Age had an effect on desirability ($\beta=.28, p<.001$), on critical thinking toward media content ($\beta=.26, p<.001$), critical thinking toward media sources ($\beta=-.10, p<.05$), identification ($\beta=-.47, p<.001$), and risky sexual behaviors ($\beta=.16, p<.001$). However, age had no significant effect on drinking behaviors. Committed relationship was negatively associated with desirability, ($\beta=-.21, p<.001$) controlling for the effects of other variables. Students in a romantic relationship were considered as the reference group. However, no significant differences on desirability were observed between students who reported that they already had sexual intercourse and those who answered “no” to the question.

These findings suggest that older students were more critical of media content after controlling for the effects of other variables. These older students are less likely to identify with alcohol portrayals even though they are more likely to emulate the behaviors of the characters portrayed in beer advertising. The negative relationship between critical thinking toward media sources and age could be the result of suppression effect since the bivariate correlation shows that both variables were not correlated with each other. Likewise, students who responded that they were virgins were less likely to identify with media portrayals ($\beta=-.14, p<.01$) controlling for the effects of other variables.

Committed relationship was positively associated with realism ($\beta=.57, p<.001$) controlling for the effects of other variables. Students’ professional aspirations (“How far will you go in school?”) were negatively associated with alcohol-related expectancies ($\beta=-.07, p<.05$) controlling for the effects of other variables. Likewise, committed relationship was
negatively associated with sex-related expectancies (β = -11, p = .053) and alcohol-related expectancies (β = -64, p < .001) controlling for the effects of other variables.

The direct effect of media on sex-related expectancies was positive and statistically significant (β = .22, p < .05) controlling for the effects of other variables. No significant differences on sex-related expectancies were observed between students who answered “yes” and “no” to the question as to whether they have had a sexual intercourse. Students who reported being virgins were less likely to endorse norm-related items, (β = -.23, p < .05) controlling for the effects of other variables.

Demographics also had an effect on the behavioral measures. Not being affiliated with a Greek organization decreases the likelihood of drinking (β = -10, p < .01) and engaging in risky sexual behaviors (β = -09, p < .05) controlling for the effects of other variables. Instrumentality predicted alcohol-related behaviors, (β = .15, p < .001) controlling for the effects of other variables. Biological sex (male vs. female) did not have an effect on alcohol-related behaviors.

Committed relationship was negatively associated with risky sexual behaviors (β = -.21, p < .001) controlling for the effects of other variables. The effect was statistically significant because of a suppression effect. The two variables were not correlated with one another. Being a non-virgin also had an effect on risky sexual behaviors (β = .12, p < .05). The effect of instrumentality on risky sexual behaviors was not statistically significant. Biological sex (male vs. female) did not have a significant effect on risky sexual behaviors either.

Next, the structural equation modeling was examined for fit. The partially latent structural equation modeling provided a poor fit for the data. When the measurement errors were taken into account, the effects of demographics and control variables disappeared or became attenuated. In the exception of media on sex-related expectancies which was marginally
significant, all of the effects of demographics and control variables disappeared. None of the demographics and control variables had an effect on sexual behaviors. For the exceptions of media and Greek membership, none of the demographics had a significant effect on alcohol-related behaviors. The fit indices and the size of the parameters show that the model does not represent a good fit for the data, $\chi^2$ (2225)= 4177.11, $p>.05$, CFI= . 88, and RMSEA= . 041 (CI= .039; .043), SRMR= .058.

Next, the two demographics were entered as covariate in the partially latent SEM. The effect of Greek membership was attenuated and it also contributed to a suppression effect. Therefore, the final model consisted of the following: one covariate (media), two mediation constructs, the two media literacy scales, the six benchmarks of decision making and the two outcome measures.

Testing of Hypotheses

The model provided a good fit for the data. Even though the chi-square was statistically significant, $\chi^2$ (1847)= 3737.63, the other relative fit indices were good. This suggests that the discrepancy between model implied and the real matrix is statistically significant. However, the chi-square is sensitive to sample size, being almost always significant with large sample size. Hence, it is more helpful to examine relative fit indices. The CFI was .906, RMSEA=.040 (CI=.038; .042), and SRMR=.068. There was no cross-loading. Only errors within the same construct were allowed to correlate (similar 1 and 2, identification 1, 2,4, and drinking 2 and drinking 4). Overall, the standardized residuals were close to the cut-off value 2.58. The results with standardized values are presented in Figure 4.
Figure 4: Hypothesized effects of parental mediation and critical thinking on risky behaviors
The set of variables explained 39% of the variance accounted for in alcohol-related behaviors and 26% of the variance accounted for in risky sexual behaviors. The two scales measuring critical thinking toward media were moderately correlated, \( r = 0.59, p < 0.01 \). The correlation is below Brown’s .80 cut-off value. The findings are summarized below:

**Expectations regarding the benchmarks of decision making**

Expectation 1 posited that perceived desirability will predict higher norms. As shown in figure 4, the direct path from desirability to norms was statistically significant, \( \beta = 0.24, p < 0.01 \). This suggests that a one SD increase in desirability predicted a .24 SD increase in norms controlling for the effects of critical thinking toward media content and critical thinking toward media sources. Therefore, expectation 1 was supported.

Expectation 2 posited that perceived desirability will predict more identification with alcohol portrayals. As shown in figure 4, the direct path from desirability to identification is statistically significant, \( \beta = 0.36, p < 0.001 \) controlling for the effects of realism. This suggests that a one SD increase in desirability predicted a .36 SD increase in identification controlling for the effects of realism. Therefore, expectation 2 was supported. Expectation 3 posited that realism will increase identification. The path from realism to identification was statistically significant, \( \beta = 0.38, p < 0.001 \). This suggests that a one SD increase in realism predicted a .38 SD increase in identification controlling for the effects of desirability.

Expectation 4 posited that identification will be positively associated with sex-related expectancies. The direct path from identification onto sex-related expectancies was statistically significant, \( \beta = 0.29, p < 0.001 \). This suggests that a one SD increase in identification predicted a .29 SD increase in sex-related expectancies controlling for the effects of desirability and critical
orientation toward media content. Therefore, expectation 4 was supported. Expectation 5 posited that identification will increase alcohol-related expectancies. The expectation was not supported.

Expectation 6 posited that critical thinking toward media will predict lower norms. The expectation was partially supported. As shown in figure 4, the direct path from critical orientation toward media sources predicted lower norms, $\beta = -0.20$, $p<0.01$. This suggests that a one SD increase in critical thinking toward media sources predicted a .20 SD decrease in norms controlling for the effects of desirability and critical thinking toward media content. Interestingly enough, critical orientation toward media content increased the likelihood that students perceived that their peers engaged in negative behaviors related to drinking and risky sexual behaviors, $\beta = 0.47$, $p<0.001$. This suggests that a one SD increase in critical orientation toward media content predicted a .47 SD increase in norms controlling for the effects of desirability and critical thinking toward media sources.

Expectation 7 posited that critical thinking toward media will increase desirability. As shown in figure 4, the direct path from critical thinking toward media content onto desirability was statistically significant, $\beta = 0.23$, $p<0.001$. This suggests that a one SD increase in critical orientation toward media content predicted a .23 SD increase in desirability controlling for the effects of positive mediation, norms and realism. Therefore, expectation 7 was supported. A research question was posed in regard to the relationship between critical thinking toward media and realism. The path was not statistically significant.

**Critical thinking skills**

Hypothesis 1 predicted that critical thinking toward media will have an effect on alcohol-related expectancies. As shown in figure 4, the direct path from critical thinking toward media sources onto alcohol-related expectancies was statistically significant, $\beta = -0.11$, $p<0.01$. This
suggests that a one SD increase in critical thinking toward media sources predicted a .11 SD decrease in alcohol-related expectancies controlling for the effects of identification, desirability, norms, and realism. Therefore, H1 was supported. Although not hypothesized, more norms predicted higher alcohol-related expectancies, $\beta = .21$, $p < .001$. As did desirability ($\beta = .50$, $p < .001$) and realism, $\beta = .21$, $p < .001$. These findings suggest that a one SD increase in norms predicted a .21 increase in alcohol-related expectancies controlling for the effects of critical thinking orientation toward media sources, desirability, identification, and realism. Similarly, a one SD increase in desirability predicted a .50 SD increase in alcohol-related expectancies after controlling for the effects of critical thinking toward media sources, identification and realism. A one SD increase in realism also predicted a .21 SD increase in alcohol-related expectancies after controlling for the effects of critical orientation toward media sources, desirability, identification and norms.

Hypothesis 2 predicted that critical thinking toward media will have an effect on sex-related expectancies. The analyses showed a negative relationship between critical thinking toward media content and sex-related expectancies, $\beta = -10$, $p < .05$. This suggests that a one SD increase in critical thinking toward media content predicted a .10 SD decrease in sex-related expectancies controlling for the effects of desirability and identification. Therefore, H2 was supported. Although not hypothesized, desirability also directly influenced sex-related expectancies, $\beta = .42$, $p < .001$. This suggests that a one SD increase in desirability predicted a .42 SD increase in sex-related expectancies after controlling for the effects of critical orientation toward media content and identification.

Hypothesis 3 predicted that critical thinking toward media will decrease alcohol-related behaviors. As shown in figure 4, the direct path from critical thinking toward media content onto
drinking was statistically significant, $\beta= -12$, $p<.01$. This suggests that a one SD increase in critical thinking toward media content predicted a .12 SD decrease in alcohol-related behaviors controlling for the effects of exposure to media, alcohol-related expectancies, and risky sexual behaviors (not shown because not statistically significant). Therefore H3 was supported.

Hypothesis 4 predicted that critical thinking toward media will decrease risky sexual behaviors as a result of drinking. As shown in figure 4, the path from critical thinking toward media content on risky sexual behaviors as a result of drinking was statistically significant, $\beta= -.08$, $p<.05$. This suggests that a one SD increase in critical thinking toward media content predicted a .08 SD decrease in risky sexual behaviors controlling for the effects of exposure to media (not shown because not statistically significant), sex-related expectancies, recalled positive mediation, and alcohol-related behaviors. Therefore, H4 was supported.

Hypothesis 5 predicted that critical thinking toward media will decrease alcohol-related behaviors via its prior effects on alcohol-related expectancies. The indirect path from critical thinking toward media sources via alcohol-related expectancies was statistically significant, $\beta= -.07$, $p<.05$. This suggests that a one SD increase in critical thinking toward media sources predicted a .07 SD decrease in alcohol-related behaviors via its prior effects on alcohol-related expectancies. Therefore H5 was supported.

Hypothesis 6 predicted that critical orientation toward media will decrease risky sexual behaviors via its prior effects on sex-related expectancies. The indirect path from critical thinking toward media content via sex-related expectancies was statistically significant, $\beta= -.03$, $p<.05$. This suggests that a one SD increase in critical thinking toward media content predicted a .03 SD decrease in risky sexual behaviors via its prior effects on sex-related expectancies. Therefore, H6 was supported.
Hypotheses related to recalled parental mediation behaviors

Hypothesis 7 predicted that recalled negative mediation will predict more critical thinking. The direct path from negative mediation onto critical thinking toward media sources was statistically significant, β= 29, p<.000. This suggests that a one SD increase in negative mediation predicted a .29 SD increase in critical thinking toward media sources. In addition, negative mediation was also positively related with critical thinking orientation toward media content, β= .57, p<.000. This suggests that a one SD increase in negative mediation predicted a .57 SD increase in critical thinking toward media content controlling for the effect of positive mediation. Therefore, H7 was supported.

Hypothesis 8 predicted that negative mediation will decrease alcohol-related expectancies via its prior effects on critical orientation toward media. Consistent with the predictions, negative mediation decreased alcohol-related expectancies via its prior effects on critical thinking orientation toward media sources, β= -.03 p<.05. This suggests that a one SD increase in negative mediation predicted a .03 SD decrease in alcohol-related expectancies via its prior effects on critical thinking toward media content. Therefore, H8 was supported.

Hypothesis 9 predicted that recalled negative mediation will decrease sex-related expectancies via its prior effects on critical thinking toward media. The indirect path from negative mediation on sex-related expectancies via critical thinking toward media content was significant, β= -.06, p<.05. This suggests that a one SD increase in negative mediation predicted a .06 SD decrease in sex-related expectancies via its prior effects on critical thinking toward media content. Therefore, H9 was supported.
Recalled negative mediation served as a protective factor by decreasing alcohol-related behaviors via critical thinking toward media sources and alcohol-related expectancies, β= -.02 p<.05 in support of hypothesis H10. This suggests that a one SD increase in negative mediation predicted a .02 SD decrease in alcohol-related behaviors via its prior effects on critical thinking toward media sources and alcohol-related expectancies. In addition, recalled negative mediation reduced risky sexual behaviors through its prior effects on critical thinking orientation toward media content and sex-related expectancies, β= -.021 p<.05. This suggests that a one SD increase in recalled negative mediation predicted a .021 decrease in risky sexual behaviors via its prior effects on critical thinking toward media content and sex-related expectancies. Therefore H11 was supported.

Hypotheses 12 predicted that recalled positive mediation will decrease students’ critical thinking skills. As shown in figure 4, the direct path from positive mediation to critical thinking toward media sources was statistically significant, β= -.22, p<.01. This suggests that a one SD increase on positive mediation predicted a .22 SD decrease in critical thinking toward media sources controlling for the effects of negative mediation. Therefore, H12 was supported.

A research question was asked about the potential effect of positive mediation on risky behaviors. As shown in figure 4, recalled positive mediation was positively associated with risky sexual behaviors, β=.12 p<.01. This suggests that a one SD increase in recalled positive mediation predicted a .12 SD increase in risky sexual behaviors controlling for the effects of sex-related expectancies, critical thinking toward media content and alcohol-related behaviors. Hypothesis 13 predicted that recalled negative mediation will influence identification. The hypothesis was not supported.
Alcohol-sex link

The findings also shed a light on the relationship between alcohol use and drinking behaviors. Hypothesis 14 posits that alcohol-related expectancies will be related with sex-related expectancies. Alcohol-related expectancies were related with sex-related expectancies, $r = .19$, $p < .05$, supporting H14. A bidirectional effect was hypothesized for negative alcohol-related behaviors and risky sexual behaviors as a result of drinking. As shown in figure 4, the path from drinking to risky sexual behaviors was statistically significant, $\beta = .19$, $p < .05$. Therefore H15 was supported. This suggests that a one SD increase in alcohol-related behaviors predicted a .19 SD increase in risky sexual behaviors controlling for the effects of sex-related expectancies, positive mediation, and critical thinking orientation toward media content. This path was re-tested using the latent growth curve process model to see if the directional effect stood the test of time. The path from risky sexual behaviors to drinking was not statistically significant. Therefore, H16 was not supported.

Time-varying hypotheses

A random intercept random slope (RIRS) was specified to test the time-varying hypotheses. The model requires that the disturbances of the latent growth factors were correlated with each other. The model provided a good fit for the data, $\chi^2 (6) = 14.044$, $p > .05$, CFI= .99, and RMSEA= .06 (CI= .02; .11), SRMR= .03. The chi-square test is not statistically significant suggesting that any discrepancies between the implied model and the real matrix are not statistically significant. However, the paths from drinking intercept onto sex slope were not statistically significant. The path from the sex intercept onto drinking slope was not significant either. Therefore, the paths were dropped in further analyses. Because the parameter estimates
are based on the variance-covariance matrix, the unstandardized values are presented in figure 5. The figures are in the original metrics.
Figure 5: Hypothesized effects of time on drinking and risky sexual behaviors
Figure 5 represents two growth processes: negative alcohol-related behaviors and risky sexual behaviors. The two variables were measured simultaneously across time (time 1, time 2, and time 3). The first two ovals represent the intercept and slope factor for alcohol-related behaviors. The two ovals at the bottom of the figure reflect the growth process for risky sexual behaviors. Research question 4 asks about initial use of alcohol-related behaviors. As shown in figure 5, the initial status for drinking is 2.95. This value represents the estimated mean on the initial status factor adjusted for measurement error. The mean is statistically different from 0, \( p < .001 \). Research question 5 asks about variations in students’ initial use of alcohol. As shown in figure 5, the variance around the intercept was 2.17 and was statistically significant, \( p < .001 \). This value represents the variations in students’ alcohol-related behaviors at time 1 that indicates that there is variability around this initial starting point. The significant result suggests that some students engaged in more alcohol-related behaviors than others at baseline.

Research question 6 asks about students’ amount of risky sexual behaviors at time 1. As shown in figure 5, the initial status for risky sex is 1.77. This value represents the estimated mean on the initial status factor adjusted for measurement error. The mean is statistically significant from 0. Research question 7 asks about students’ rate of change in risky sexual behaviors. As shown in figure 5, the variance around the mean was 1.15. This value represents variations in students’ scores on risky sexual behaviors. Since the value was statistically significant, it can be concluded that some students engaged in more risky sexual behaviors than others at time 1.

Research question 8 asks about the variations in students’ rate of change regarding alcohol-related behaviors. The loadings on the slope factors reflect the hypothesis of linear growth with equal time intervals. The mean slope for drinking is -.21. The value is statistically significant. This implies a linear decrease of drinking-related behaviors from time 1 to time 3.
The variance around the slope was .12. The value was marginally significant. This would suggest that students’ drinking behaviors do not decrease at the same rate. The mean slope for risky sexual behaviors is -.02. The value was not statistically significant. Because the slope was statistically significant for drinking, a linear pattern of change was tested (cf. figure 5). The hypothesis about linear growth was supported. The value was -.13, p<.05.
Last, the time invariant and time-varying covariates were entered in the model to predict the linear growth of drinking (the only one which was statistically significant). The demographic variables, biological sex, instrumentality and age were entered in the predictive mode one by one. However, using each one of them made the model worse. However, the model provided a poor fit for the data, $\chi^2(13) = 247.25$, $p<.001$, $CFI = .543$, the RMSEA= .26 (CI= 23; 29) and SRMR=. 23. Correlating errors made the model inadmissible. Using instrumentality to predict variations in drinking and risky sexual behaviors also worsened the model fit. The model provided a poor fit for the data, $\chi^2(13) = 231.096$, $p<.001$, $CFI = .542$, the RMSEA= .252 (CI= 22; 28) and SRMR=. 22. Likewise, the model provided a poor fit for the data when age was used as a covariate, $\chi^2(13) = 236.83$, $p<.001$, $CFI = .55$, the RMSEA= .25 (CI= 22; 28) and SRMR=. 22.

None of the other control variables, exposure to media, parental mediation behaviors and critical thinking toward media had a significant effect on the drinking slope. Therefore, the
model in figure 5 was considered the final model. Prior to discussing the theoretical and practical implications of the results, a summary of the significant findings is presented in Table 5.

Table 5. Summary of the Significant Findings in the Current Study

<table>
<thead>
<tr>
<th>Expectations related to the benchmarks of decision making</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectation 1: Perceived desirability will predict higher norms.</td>
<td>Supported</td>
</tr>
<tr>
<td>Expectation 2: Perceived desirability will predict higher identification</td>
<td>Supported</td>
</tr>
<tr>
<td>Expectation 3: Perceived realism will predict higher identification</td>
<td>Supported</td>
</tr>
<tr>
<td>Expectation 4: Identification will predict sex-related expectancies.</td>
<td>Supported</td>
</tr>
<tr>
<td>Expectation 5: Identification will be positively associated with alcohol-related expectancies.</td>
<td>Not supported</td>
</tr>
<tr>
<td>Expectation 6: Critical thinking toward media will predict lower norms.</td>
<td>Partially supported</td>
</tr>
<tr>
<td>Expectation 7: Critical thinking toward media will increase desirability</td>
<td>Supported</td>
</tr>
</tbody>
</table>

**RQ1:** How will norms relate to identification?

**RQ2:** How will critical orientation toward media relate to realism?

<table>
<thead>
<tr>
<th>Hypotheses related to critical thinking toward media</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Critical thinking toward media will decrease alcohol-related expectancies.</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: Critical thinking toward media will decrease sex-related expectancies</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: Critical thinking toward media will decrease alcohol-related behaviors</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: Critical thinking toward media will decrease risky sexual behaviors as a result of drinking</td>
<td>Supported</td>
</tr>
<tr>
<td>H5: Critical thinking toward media will decrease alcohol-related behaviors via its prior effect on alcohol-related expectancies.</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: Critical thinking toward media will decrease risky sexual behaviors as a result of drinking via its prior effect on sex-related expectancies.</td>
<td>Supported</td>
</tr>
</tbody>
</table>

**Hypotheses related to recalled parental mediation behaviors**

| H7: Recalled negative mediation will increase critical thinking toward media. | Supported |
| H8: Recalled negative mediation decrease alcohol-related expectancies via its prior effects on critical thinking toward media. | Supported |
| H9: Recalled positive mediation will decrease sex-related expectancies via its prior effects on critical thinking toward media. | Supported |
### Hypotheses related to recalled parental mediation behaviors

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Supported/Not supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H10:</td>
<td>Recalled negative mediation will decrease alcohol-related behaviors via its prior effects on critical thinking toward media and alcohol-related expectancies</td>
<td>Supported</td>
</tr>
<tr>
<td>H11:</td>
<td>Recalled negative mediation will decrease risky sexual behaviors as a result of drinking via its prior effects on critical thinking toward media and sex-related expectancies</td>
<td>Supported</td>
</tr>
<tr>
<td>H12:</td>
<td>Recalled positive mediation will be negatively associated with critical thinking toward media.</td>
<td>Supported</td>
</tr>
<tr>
<td>H13:</td>
<td>Recalled negative mediation will have an effect on identification</td>
<td>Not supported</td>
</tr>
<tr>
<td>RQ3:</td>
<td>How will positive mediation be associated with risky behaviors?</td>
<td>Significant (+)</td>
</tr>
</tbody>
</table>

### Hypotheses related to the alcohol-sex link

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Supported/Not supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H14:</td>
<td>Alcohol-related expectancies will be correlated with sex-related expectancies</td>
<td>Supported</td>
</tr>
<tr>
<td>H15:</td>
<td>Alcohol-related behaviors will have a direct effect on risky sexual behaviors</td>
<td>Supported</td>
</tr>
<tr>
<td>H16:</td>
<td>Risky sexual behaviors will have a direct effect on alcohol-related behaviors</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

### Changes across time and across individuals

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Description</th>
<th>Supported/Not supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ4:</td>
<td>Do students start at the same time in regard to alcohol-related behaviors?</td>
<td>Significant (+)</td>
</tr>
<tr>
<td>RQ5:</td>
<td>Is there any variations in regard to initial use of alcohol</td>
<td>Significant (+)</td>
</tr>
<tr>
<td>RQ6:</td>
<td>Do students start at the same point in regard to risky sexual behaviors?</td>
<td>Significant (+)</td>
</tr>
<tr>
<td>RQ7:</td>
<td>Do students vary in their rate of change regarding risky sexual behaviors?</td>
<td>Not significant</td>
</tr>
<tr>
<td>RQ8:</td>
<td>How fast do students change in regard to their alcohol use?</td>
<td>Significant (-)</td>
</tr>
<tr>
<td>RQ9:</td>
<td>Do students vary in their rate of change?</td>
<td>Significant (-)</td>
</tr>
<tr>
<td>RQ10:</td>
<td>How fast do students change in regards to risky sexual behaviors?</td>
<td>Not significant</td>
</tr>
<tr>
<td>RQ11:</td>
<td>Do students vary in regard to their rate of change?</td>
<td>Not Significant</td>
</tr>
<tr>
<td>RQ12:</td>
<td>Does alcohol use at start predict sex slope?</td>
<td>Not significant</td>
</tr>
<tr>
<td>RQ13:</td>
<td>Does sex intercept predict alcohol slope?</td>
<td>Not significant</td>
</tr>
<tr>
<td>H17:</td>
<td>Men are more likely to report a higher amount of risky behaviors</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
CHAPTER SIX
DISCUSSION

The study reported in this dissertation tested the utility of parental mediation as a protective factor against risky behaviors. Based on the results of previous research, parent-child interaction regarding media was expected to influence current perceptions of alcohol portrayals and consequently their beliefs about alcohol and sex. This may help decrease young people’s alcohol-related behaviors and risky sexual behaviors. The effect of parental mediation behaviors is expected to be indirect, operating through the benchmarks of decision making. More specifically, parental mediation was expected to strengthen the logic based components of decision making via its effects on students’ critical thinking toward media. Overall, the findings are consistent with a more “process-focused” approach to health in which health educators should try to affect viewers’ responses to media rather than change media consumers or the media landscape. This could be achieved by targeting the process involved in decision making, hypothesized to be the predictors of behaviors.

The Message Interpretation Process (MIP) model developed by Austin and colleagues helped shed a light on the causal sequences that take viewers from exposure to media to behavior changes. Researchers found that viewers’ interpretations of a media portrayal are based upon both the logical and emotional route. They tended to reproduce behaviors that they found realistic and desirable which also seem to be similar to them or the people they know. This is important for media literacy-based education as it suggests that curriculum developers are more likely to influence behaviors (increase healthy behaviors or decrease unhealthy behaviors) if they successfully appeal to both routes. Existing studies focused mainly on children and adolescents, leading us to investigate the potential effect of parental mediation on young adults’ current behaviors. Notable exceptions include Austin and Chen (2003). This study, thus, examined the
degree to which the effect of parent-child interaction regarding media helped develop participants’ critical thinking toward media. Secondly, this study considered how students’ level of critical thinking affected their perceptions of portrayals of characters in beer advertising, beliefs about alcohol and their current use of alcohol and their risky sexual behaviors. Based on past research, it was hypothesized that students’ perceived realism, identification with the values and lifestyles portrayed in beer advertising will affect the outcomes that they expected to receive from the behavior, thereby increasing alcohol-related and risky sexual behaviors.

Findings generally indicated that the message interpretation process model successfully predicted the effects of exposure to beer advertising on viewers’ perceptions of alcohol portrayals, reactions to beer ads and behaviors. As shown in figure 4, the magnitude of effects ranged from small (parental mediation) to high (direct effects of expectancies on risky behaviors). Consistent with past empirical evidence and theoretical predictions, the effects of recalled parental mediation were small. However, these results should be viewed in light of the number of variables (12) that influenced drinking and risky sexual behaviors. Aside from media, cognitive and psychological factors had a significant effect on the outcome measures. Consistent with past research (e.g., Borsari et al., 2005), positive outcomes as a result of drinking was the strongest predictor of negative alcohol-related behaviors. Similarly, sex-related expectancies explained most of the variance in risky sexual behaviors. What is remarkable about the retrospective reports of parental mediation was that they did predict behaviors in the expected direction. The fact that the effects of childhood experiences remained statistically significant in spite of the competing effects of the cognitive processes is worthwhile.

MIP model considers that viewers’ understanding of advertising content may be biased by the emotional aspect of decision making. However, critical thinking toward media should
strengthen the logical aspect of decision making, thereby decreasing the detrimental effects of advertising on behaviors. The entry variables – desirability (emotion) and realism (logic) interacted and fed into the same later-stage filters of decision making. The effects of these variables on identification were substantial and were roughly similar in terms of magnitude of effects. Consistent with past research, when there was a high congruence between similarity and realism, students were more likely to identify with media portrayals. Perceived desirability predicted identification with portrayals of characters in beer advertising, ß= .36, p<.001. Students who found alcohol portrayals more realistic also identified more with the characters in beer ads, ß= .38, p<.001. Students who believed that beer ads represent true representations of the world were also more likely to find more media-based and real life examples also reported that, ß=.89, p<.001.

The findings were consistent with past research showing that positive affect can bias logical processing leading people to make decision based on wishful identification (Austin & Knaus, 2000; Austin, Pinkleton & Fujioka, 1999). Desirability was a strong predictor of norms ß= .24, p<.001. Once viewers have identified with media portrayals, they will act on them if they expect to enjoy the same positive outcomes from the behavior being portrayed. In line with expectation 4, identification was positively related to sex-related expectancies ß= .29, p<.01.

Consistent with past research, the emotion-based entry level variables also feed into expectancies. Their effects were significant and substantial. The effect of desirability on sex-related expectancies was statistically significant, ß= .42, p<.001. Due to a suppression effect, the direct path from identification on alcohol-related expectancies was not statistically significant. Even though the bivariate correlation was significant, this relationship did not survive more rigorous statistical testing. Therefore, expectation 5 was not supported. Similarly to sex-related
expectancies, alcohol-related expectancies were also predicted by the other benchmarks of decision making. The effects of desirability, $\beta = .50$, $p<.001$, norms, $\beta = .21$, $p<.001$, and realism, $\beta = .21$, $p<.001$ were all statistically significant. The support of the Message Interpretation Process model on a college-aged population is consistent with researchers’ call to target the decision-making process when attempting to understand and produce positive health-related behavior changes (Austin & Johnson, 1997). These findings indicate that college students process messages in a manner that combines logical and emotional responses to media. For health-related messages to be effective, researchers must understand and take into account the full range of receivers’ message responses.

Consistent with past research critical thinking toward media content decreased perceived norms, $\beta = -.20$, $p<.05$. The effect of critical thinking toward media sources on perceived norms was also significant. However, the direction was not in the expected direction, $\beta = .47$, $p<.001$. In line with previous research, critical thinking toward media content increased desirability toward the ad, $\beta = .23$, $p<.001$. Although the finding is counterintuitive and worrisome, it nonetheless buttressed past research, which established the now well-documented desirability paradox. Researchers (Austin & Chen, 2003) report that media literacy training strengthens the skills needed to resist persuasion. Meanwhile, it does not seem to deter the development of affective responses to the ads. In trying to debunk the misrepresentations in alcohol portrayals, viewers will become aware of the different techniques advertisers use to attract viewers. Not only do improved critical thinking skills help viewers identify what elements advertisers have omitted (Hobbs & Frost, 2003) but they also help them understand why certain elements have been particularly highlighted in the ads. As Austin et al. (2007) argued, desirability actually reflects the extent to which those who received media literacy training became aware of the elements of
marketing that are used to draw their attention to the ads. As previously reviewed, these elements include sexual stimuli and excessive drinking. However, individuals’ critical thinking skills that have been activated in the process as well are expected to mute the effects of desirability on the logical aspect of decision making. This is consistent with Chan (2001) who reported that as viewers grow older, they tend to perceive ads as less truthful. However, they do not necessarily pay less attention to ads nor like them less.

Utility of critical thinking in decision making

The findings reinforced past research showing that critical thinking has both affective and logical components. In line with past research, positive affect (desirability) evoked by the beer ads influenced students’ decision-making process. This leads to more identification with beer ads, in turn leading to higher expectancies related to alcohol and sex and higher likelihood to engage in risky sexual behaviors and negative alcohol-related behaviors. But, the survey also reinforced past findings that critical orientation toward media will help strengthen the logically dominated route of decision making thereby reducing the effects of advertising appeals on expectancies and behaviors.

The findings buttressed past research that established how critical thinking toward media affects expectancies. This finding is important from a theoretical and practical point of view. First, it reinforces past research showing that critical thinking operates indirectly through expectancies. In this study, a critical orientation toward media content decreased alcohol-related expectancies and sex-related expectancies. Students’ critical thinking skills strengthened the logical aspect of decision making thereby decreasing the effects of advertising on positive expectancies. The latter is a well-established predictor of risky behaviors (Borsari et al., 2007). Longitudinal studies (e.g. Greenbaum et al., 2005) also lent support to the important role that
expectancies played in drinking behaviors. Identifying a set of skills that will reduce the effects of the predictors of risky behaviors is valuable for prevention purposes. Past research suggests that critical thinking is among the more advanced skills required of the media literate (Potter, 2010). The critical viewer is skeptical of media content and actively evaluates and reflects on it (Anderson, 1983). This results in receivers who are less taken in by the features and characteristics of well-produced advertising messages.

The observed relationship between critical thinking and expectancies may also benefit health campaigns targeting healthy behaviors. Expectancies are developed through vicarious and direct interactions with people performing the behaviors. This study showed that critical thinking toward media provided students with a set of skills that helped them consciously and systematically questioned the veracity of learned expectations related to sex and alcohol. At time 1, the effects of skepticism were strong enough as to reduce the effects of expectancies on behaviors. This is the manifestation of critical thinking at its best: asking questions that lead to other questions while not necessarily rejecting an argument that they hear from the media. With a goal of promoting healthy skepticism rather than cynicism, media-literacy based programs will help viewers question their media experiences leading to stronger decision making.

The results reported here are consistent with past research indicating that increasing viewers’ critical thinking toward media is an effective approach to helping young adults make good decisions about their health. In the context of objectionable content, improving critical thinking means helping young adults see that media and beer advertisers are in the business of selling products along with values and lifestyles that are not necessarily good for them. Understanding how advertising is produced and packaged will help young adults become more
skeptical of what they see on TV. The latter will help decrease the effects of risky behaviors promoted in beer advertising.

As predicted, more critical thinking toward media decreased risky behaviors. The direct path from critical thinking toward media content was negatively related to alcohol-related behaviors, $\beta = -0.12$, $p<0.01$ after controlling for the effects of other variables. Likewise, critical thinking toward media content was negatively related to risky sexual behaviors, $\beta = -0.08$, $p<0.05$, after controlling for the effects of other variables. These findings are valuable and add to our knowledge of how expectancies, which are not exclusively logic-based may be strengthened through a critical orientation. Even though the affect-based route (desirability and identification) had an effect on expectancies, the effects of critical orientation (logic-based route) were strong enough to weaken the influence of these components on risky behaviors.

To sum up, critical thinking toward media is relevant in health behaviors and should be incorporated in prevention campaigns. Students who have developed the necessary skills to analyze and reflect on media content appear to manage their media experiences more effectively. Critical thinking skills may contribute to their understanding of advertisers’ intent that media products are constructed for a purpose. Even though media messages may seem realistic and especially desirable, they remain advertisers’ ideas and representation of the world. This is valuable for prevention campaigns. When viewers focus on how media representations are developed to entice them to consume alcohol in the context of sexual situations, they might be better able to avoid their enticing appeal. This leads to fewer risky sexual and drinking behaviors. Some of this depends on the level of positive outcomes people expect if they imitate a behavior being portrayed in the media. As reported in table 5, critical thinking toward media sources decreased negative alcohol-related behaviors via its prior effects on alcohol-related
expectancies, $\beta = -0.07$, $p < 0.05$. In addition, critical thinking toward media content decreased risky sexual behaviors via its prior effects on sex-related expectancies, $\beta = -0.039$, $p < 0.05$.

The effect of critical thinking skills on sex-based expectancies is encouraging. As reported in past research, alcohol-related expectancies and sex-related expectancies appear to be the strongest predictors of both initiation and steady growth in students’ risky behaviors (Borsari et al., 2007; Dermen & Cooper, 1994; Labrie et al., 2003; 2005). Longitudinal studies (e.g. Greenbaum et al., 2005) also lend support to the important role that expectancies play in drinking behaviors. Social Learning Theory and SCT both predict that individuals rely on cues in their changing environment to build up their expectancies. Therefore, it stand to reason to expect that college years which are still characterized by formative identity development (Arnett, 2000) will be an appropriate time to modify the outcomes associated with drinking and risky sexual behaviors as a way to address these health risks.

Consistent with past research, about one fifth of students engaged in frequent heavy episodic drinking (Wechsler, 2001; Wechsler et al., 1999). More specifically, 16.2% of the students at time 1 reported that they had 4 or more drinks more than twice a week. The current study buttressed past research which suggests that colleges may serve as an environmental risk factor (Slutske et al, 2004). In addition, more drinking predicted more risky sexual behaviors. Prevention efforts geared toward college students should include some material or exercises to prevent students from anticipating positive outcomes from drinking or engaging in risky sexual behaviors.

The findings suggest that self-reports of media exposure are as important as viewers’ interpretations of media content containing risky behaviors. Consistent with past research (e.g., Austin & Chen, 2003; Austin et al., 2006; Borsari et al., 2007; Stacy et al., 2004; Snyder, 2006),
exposure to media also increased sex-related expectancies. The direct effect of media on sex-related expectancies was positive and statistically significant ($\beta = .22, p < .05$) controlling for the effects of other variables. All things being equal, students who were more exposed to media, which Strasburger (1999) identified as a super-peer, were more likely to expect positive outcomes from their risky behaviors. The super-peer often glamorizes or promotes behaviors that are not healthy. In addition, exposure to media also increased negative alcohol-related behaviors. The direct path was positive and significant, $\beta = .14, p < .001$. These results make sense when pitted against content-analytic studies showing how entertainment TV and beer advertising purposefully highlight what they perceive to be the positive effects of alcohol use. Meanwhile, advertisers barely mention moderating messages or the risk of alcohol use in the context of other activities including sexual activity. When moderating statements are used, they are often presented in the background making it challenging to recall. For instance, Thomsen and Fulton (2007) reported that students who watched the Captain Morgan ad in an experimental study were more likely to recall the cartoon pirate (37.5%) used by the marketers to help viewers recall the brand’s name. Only 21.9% of participants remembered what the moderation statement said. Similarly, the risk and potential consequences of risky sexual behaviors are usually left out making it easier for students to associate the use of alcohol and risky sex with positive outcomes as operationalized in the two scales.

The current study provides evidence for a cultivation effect in which exposure to media is expected to cultivate media portrayals of alcohol advertising. The more students were exposed to media, the more likely they were to retrieve the association of drinking with sex stimuli in alcohol advertising. Hence, they were also more likely to report negative alcohol-related behaviors and risky sexual behaviors. Based on previous research showing that beer advertising
is mostly placed in prime time TV and sports programming, students were asked to report among other things, the extent to which they watched prime time TV, and sports. The findings buttressed past research, which suggests that college students who report watching sports or are sports fans also report more problematic drinking including binge drinking (Nelson & Wechsler, 2003). Media scholars have expressed concerns about the strategic “branding” of sports by alcohol sponsors and businesses. The more they are exposed to sports events, the more sports fans attending college may develop a strong emotional connection between their “team”, the alcohol brand being promoted and the sports events itself.

The direct effect of media on risky behaviors is of particular concern to health professionals. Unfortunately, this study joins the long list of research providing support to the fact that media is displacing other agents of socialization. Exposure to media has been shown to directly and consistently affect dietary behaviors (Neumark-Sztainer, et al. 1999), for example and smoking (Pierce et al., 1998). Media have taken such an importance in young people’s life that they serve as one of the major sources of information about sex and food (e.g., Story and French, 2004). On average, American youth use media 8 hours per day (Rideout, 2010). In the absence of guidance from parents, teachers or other adults in their lives to help them discern good messages from those that are not good for them, young adults may succumb to a world of fantasy, of different lifestyles and values that parents might not condone had they had the chance to guide and coach them. Such presence in young people’s life can bring a healthy counterbalance to media’s influence. The effects of media were so strong that they withstood more rigorous testing. Of all the demographics and control variables included in the model, only media had a significant effect on the key measures. The study also showed that influencing
viewers’ reactions to media content is quite effective increases their critical thinking toward media.

In sum, more critical thinking toward media sources predicted less alcohol-related expectancies which in turn led to fewer drinking behaviors. In addition, more critical thinking toward media content directly predicted fewer drinking behaviors. The same pattern of results was observed for risky sexual behaviors. Critical thinking toward media predicted fewer sex-related expectancies which then led to fewer risky sexual behaviors. In addition, critical orientation toward media content also directly influenced risky sexual behaviors. Critical thinking skills then consistently affected risky behaviors through a direct and an indirect route (via expectancies). The interweaving of critical thinking toward media content and critical thinking toward media sources shows that as critical viewers, we need to pay attention to both the sources of the messages and the content, and the interaction between the two, affecting both. This could reflect the overwhelming nature of the media landscape today.

The protective effect of critical thinking skills is valuable for prevention purposes. Critical thinking toward media can be taught. Therefore, increasing viewers’ critical thinking skills should lead to an improved understanding of advertisers’ intent. This in turn should lead to more beneficial attitudes (less alcohol-related and sex-related expectancies), leading to healthier behaviors. Research (e.g., Austin & Meili, 1994; Williamns, Smart & Epstein, 1979) tends to suggest that consumer sophistication regarding media, especially advertising, is especially heightened through the mediation of content by others. In this media-saturated environment, health professionals must recognize the importance of parents as change agents in their children’s lives (Fitzpatrick, Edmunds, & Dennison, 2007; Johnson, Van Jaarsveld & Wardle, 2011). The study provides empirical support to a theory that highlights the meditational effect of
parents. This is also consistent with Potter’s view (2010) that parental mediation is a form of media literacy. This led us to examine parents’ abilities to manage media and possibly help attenuate its effects on students in the context of risky behaviors.

**Recalled parental mediation**

This research highlighted the importance of parental involvement in children’s media use to help counteract the detrimental effects of alcohol advertising on behaviors. Some of this depends on the effect that parent-child interaction may have on students’ critical thinking toward media. Consistent with past research, endorsing media portrayals is not a protective factor against risky behaviors. The direct path from recalled positive mediation to critical orientation toward media content was negative after controlling for the effects of negative mediation, $\beta = -.22$, $p<.000$. Therefore, parents who want to make a difference in their children’s lives should explain and discuss what children see on TV. Experimental studies (Nathanson, 1999) in media-induced violence found that children whose mothers did not offer negative comments about violent content misperceived their lack of comment as approval of the content. When children misperceived adults’ lack of comment as endorsement of a risky behavior, they were more likely to replicate the same behavior (Siegal & Khon, 1959). Recently, Jackson (2002) found an inverse relationship between parents’ disapproval of sex and White teenagers’ report of precoital sexual behaviors. In the current study, positive mediation increased risky sexual behaviors, offering more evidence that parents should directly offer negative comments about objectionable content if they want to be effective.

Given that parents who engage in negative mediation are more likely to be concerned about the negative effects of media on their children’s behaviors (Fujioka & Austin, 2002), it makes sense that their comments and communication will be targeted toward developing defense
mechanisms to protect against the effects of risky behavior, this is critical thinking. On the other hand, parents who engage in positive mediation also tend to be less skeptical toward media. It then stands to reason that they would not make a conscious and systematic effort to help their children question objectionable content. As they become less skeptical toward advertising (Austin & Chen, 2003), those students will not develop the sets of skills to resist the persuasive appeal of advertising, thereby making them more likely to engage in risky behaviors. Students whose parents engaged in more positive mediation were also more likely to engage in risky sexual behaviors. The study provides support of an indirect effect of parents to perceptions of media portrayals and risky behaviors. This is consistent with research conducted by Ennett et al. (2005) who also reported that parents’ communication about their children’ smoking affected their behaviors.

In addition, the results of this study indicate that parents who critique media content may affect their children’s decision making and subsequently their behaviors in positive ways. Some of this depends on parents’ ability to increase their children’s critical orientation toward media. In this study, recalled negative mediation was positively correlated with both dimensions of critical orientation toward media. The direct path from negative mediation to critical orientation toward media sources was statistically significant, β = .29, p<.001. Likewise, the direct path from negative mediation to critical orientation toward media content was statistically significant, β = .57, p<.001. This means that by strengthening the logical aspect of decision making, negative mediation also contribute to weakening the effects of expectancies. The indirect effect of negative mediation to alcohol-related expectancies via critical orientation toward media sources was significant, β = -.03, p<.05. The hypothesized path from negative mediation to sex-related expectancies via critical orientation toward media content was also significant, β = -.06, p<.05.
Even though critical discussion of media did not have a direct effect on sexual behaviors as a result of drinking as did positive mediation, it predicted fewer risky behaviors via its prior effects on media literacy and expectancies. Recalled negative mediation had an indirect effect on drinking behaviors via its prior effects on critical thinking toward media sources and alcohol-related expectancies, β= -.02, p<.05. Similarly, recalled negative mediation had an indirect effect on risky sexual behaviors via its prior effects on critical orientation toward media content and sex-related expectancies, β= -.02, p<.05. What these findings suggest is that media-literacy intended to reduce young people’s risky behaviors should target parental mediation strategies, and more particularly, those that are conducive to active discussion. Parents who do nothing but approve media content are not able to help their children develop critical thinking skills. On the other hand, parents who critique media content are able to help their children develop an improved understanding of media content, and this appears to lead to less risky behaviors.

Though small, the indirect effect of parental involvement on risky behaviors is meaningful. In discussing the perceived legitimacy of parental authority on adolescents, Jackson (2002) urged that public health programs debunk the “myth of adolescent disregard for parental influence attempts” (p.42). In a similar vein, this study focusing on college students seem to buttress their finding. The positive effect of parental mediation on behavior is long-lasting. Therefore, public health programs or school-based programs should recognize and address the role that parents may play in children’s decision making. Incorporating educational materials aimed at empowering parents to make a difference in young adults’ life is appropriate. Prevention-based programs aimed at adolescents should not be discontinued. For instance, research has shown that targeting third and fourth graders may be appropriate when attempting to decrease positive expectancies toward risky behaviors (Miller, Smith & Goldman, 1989).
However, it is clear that parents who mediate their children’s media use also plant the seeds that will prove beneficial to children later in life. As consumers of media, college students still need to improve skills that will help them to navigate media more effectively in a more conscious and systematic way. The development of the media landscape has made it even more important for individuals to be able to question their experiences with media and discriminate between accurate information and things that are not in accord with their values.

In addition, this dissertation provides support to Jackson’s call to extend such material to include other aspects of parenting practices and not only focus on tips and techniques to reduce and decrease risky behaviors. This study has shown that by providing their children with skills to recognize that (1) all media content are organized to gain some influence over their thinking (“drinking alcohol will increase your sexual prowess”) and to (2) understand the techniques advertisers use to reach their goal, parents will make difference in their children’s lives for the better. While parents’ endorsement of media portrayals increased risky sexual behaviors, recalled negative mediation indirectly but consistently reduced the correspondence of perceptions of media portrayals, the persuasion tactics used by advertisers and risky behaviors. Media has been presented as the “super-peer” and without having parents counterbalance the effect of this super-peer; students are more likely to internalize and be negatively impacted by their media world.

It should be noted that negative mediation did not have a direct effect on risky behaviors. It is possible that in the realm of risky behaviors, other family communication practices may influence behaviors more than parents’ critical discussion of media content. The findings can also reflect the unintended effects that family researchers have warned about (Austin & Fujioka, 2003). Parents who critique media too much may lose credibility and therefore would have less influence on their children’s behaviors. This could also explain why recalled negative mediation
did not prevent students from aspiring to be like the characters portrayed in beer advertising. Content-analytic studies also suggest that alcohol ads do not reflect the demographic composition of the population, often depicting major characters as Caucasians. The survey consisted mainly of Caucasians, which could explain why students did not identify less with ads and perceived ad portrayals to be characteristic of their peers.

This finding parallels the positive relationship that Nathanson and Botha (2003) found between active mediation and adolescents’ anorexia. By discussing the “objectionable” content whose effects they want to reduce, parents may unintentionally help their children be aware of the appeals that advertisers are using to project values and lifestyles that play on young people’s insecurities. Recalled negative mediation thus may help children understand that these images represent the view of advertisers while still recognizing how desirable these lifestyles and values are to them. Hence, disapproval of advertising content would have no effect on identification. This finding is also consistent with developmental research suggesting that late adolescents are more likely to deny parents’ legitimacy on issues such as lifestyles. In getting viewers to think and live their fantasy (e.g. being sexy) and escape what they perceive as their real-world situation (not comfortable with aspects of their sexual life), beer advertisers are able to increase viewers’ liking of the lifestyle being portrayed. In light of past research and empirical evidence, it is clear that counter-reinforcement of objectionable content is more beneficial when active discussion also increase children’s own critical thinking.

Another related construct, “restrictive mediation” when parents forbid their children watching objectionable content was found to have a curvilinear relationship with behavior changes (Nathanson, 1999). The findings in this study provide support to Fujika and Austin’s (2002) observation that parental mediation is a necessary but not a sufficient condition for
behavior changes to happen. Indeed, passive involvement in which parents may cowatch TV with their children does not seem to be effective as much as offering comments about media content. As previously stated, children might misperceive the lack of comments as approval of the behavior.

The dissertation provides further support for a general conceptualization of critical orientation toward media in which viewers learn to discern message accuracy based on the content and the motivation of its sources. This conceptualization is more consistent with “forewarning” than McGuire’s (1964) “inoculation.” Adopting a forewarning-based approach to media literacy is more beneficial as it will teach viewers to develop a generalized mechanism toward a wide variety of persuasive appeals not limited to alcohol or sex alone. As conceptualized by the Center for Media Literacy (2011), critical viewers should be able to understand media in its many forms. Developing a generalized mechanism against media content will be more practical for media-literacy based curricula. Advertisers and health professionals convey competing messages to the audience. Viewers equipped with healthy critical thinking will be able to view the differential values of both types of messages. For instance, target audiences will be able to critically evaluate messages based on their values and characteristics before acting out or rejecting the message. The fact that parent-child communication practices were strong enough to decrease the effects of risky behaviors provides further support to this view. The findings suggest that parents do not need to specifically discuss alcohol to affect alcohol-related behaviors.

The effects of demographics are interesting in their own right. Overall, the path analysis with control variables and demographics is consistent with past research showing a positive relationship between Greek membership and more risky behaviors (Borsari et al., 2007). College
culture is a risk factor for the occurrence of drinking and risky sexual behaviors. The findings, however, suggest that more efforts should be targeted toward that population. Consistent with past research on risky sexual behaviors, people in committed and uncommitted relationships associate different qualitative meanings to topics related to sex (Corbin, et al., 2002). The relationship between risky sexual behaviors and committed relationship in the study was significant because of a suppression effect. However, past research tends to suggest that being in a romantic relationship is a protective factor against risky sexual behaviors. This may turn out to be a double-edge sword as people who might trust their romantic partners are still at risk for STDs. Being in a committed relationship is not a sufficient condition to prevent STDs or any other risky sexual behaviors such as sexual violence as manifested through date rapes, for instance.

The non-significant effects of biological sex on risky behaviors are not consistent with the literature. However, given the unequal number of males (30.9%) and females (69.1%), the null finding seems plausible. Interestingly enough, instrumentality influenced alcohol-related behaviors suggesting that future efforts should target personality traits when addressing risky behaviors. They may turn out to be more useful than biological sex.

The unequal proportion of males and females could be the reason for the small amount of variance explained in risky sexual behaviors. Content-analytic studies of sex and alcohol tend to suggest that females do not feel as much pressure to be sexually active (Carpenter, 1999; Davis, 2003) leading them to engage in fewer risky behaviors. Despite all the steps taken to safeguard anonymity and decrease social desirability bias, these female students may have reported fewer risky sexual behaviors in an attempt to conform to societal expectations. About half of female participants were in a committed relationship which was found to decrease risky sexual
behaviors. Across time, only 64 male students stayed in the research, with only 13 members of fraternity. Given the association between Greek membership and risky behaviors, it reasonable to conclude that these males were not at high-risk. In addition, about 53.12% reported having a regular sexual partner. About 32.28% of the students were freshmen. These students may still try to establish their own identity.

Alcohol-sex link

The study results suggest a bidirectional effect instead of direct effect from alcohol to sex. Alcohol-related expectancies and sex-related expectancies were related to each other. The hypothesized path from alcohol-related behaviors onto risky sexual behaviors was also statistically significant, $\beta = .18, p<.05$. The directional effect from risky sexual behaviors was not statistically significant. However, the effect does not seem to stand the test of time. In the parallel growth curve processes, two directional paths were hypothesized. The path from drinking intercept on the sex slope was not statistically significant. Neither was the path from sex intercept to drinking slope.

The results tend to support a view that these behaviors are parallel without necessarily causing each other (Cooper, 2006). As Weindhardt (2000) pointed at, “People likely to use alcohol more heavily may also be more likely to engage in more sexual risk behavior because of a specific personality trait, or a constellation of attitudes and beliefs, rather than because of a causal unique relationship between alcohol use and sexual risk behavior.” (p.115). Similarly, students who engaged in alcohol-related behaviors were also more likely to engage in risky sexual behaviors as a result of their drinking. Because correlational relationships cannot answer the question of why and how the effects occur, further research should look more into the alcohol-sex link. Such study should investigate if alcohol use impairs individuals’ decision-
making causing them to engage in unprotected sex or whether people who indulge in alcohol use are also more vulnerable to further health risks? Answering such a question is important for both theoretical and prevention purposes.

The latent trajectory of drinking and sexual behaviors may follow the pattern suggested by problem behavior theorists who argued that people who are more likely to engage in unsafe sexual practices are already those who have a drinking problem. In other words, engaging in risky sexual behaviors is not triggered by alcohol use at one particular time. This claim is hard to prove false because ethical considerations would make it challenging to test the causal path in true experiments. Most common methods (McDonald, 2000; Labrie, 2005) include the use of vignette and event-level studies. Because of their correlational nature, these findings cannot establish causality. Despite the null findings, this dissertation makes some contributions to the field by using more sophisticated models to examine causality. It is important to note that at time 1, alcohol-related behaviors influenced risky sexual behaviors. It could be that newly arrived students do not feel comfortable with the college culture and choose to use alcohol to do the things they perceive their peers are doing. However, with time, the novelty effect disappears and so does the relationship between alcohol-related behaviors and risky sexual behaviors.

Interestingly enough, only past behavior (alcohol-related behaviors at time 1) was the best predictor of future behavior. Across the semester, students’ drinking patterns decreased. However, none of the predictors of drinking at time 1 successfully predicted the decreasing pattern. Including expectancies, in the model, which was the strongest predictor of behavior, made it inadmissible. Theoretically speaking, expectancies are developed and built up through individuals’ interactions with their environment. Therefore, it is possible that the one-month interval between each data wave was too short for new expectancies to develop. For instance, at
time 2, students may have not changed their peer associations at time 1 making it unlikely that they would expect alcohol use to have different outcomes on their social and sexual life. Further research could benefit from using panel data with a longer time interval such as a semester. This would give students the chance to form new peer associations as they take new classes which would widen their social networks, thereby increasing the likelihood that their expectancies might change.

What these findings also mean for health campaigns is that college-based campaigns should target expectancies as well as risky behaviors in the first weeks of the semester. Since the link between these two risky behaviors seem to stabilize across the semester, health professionals are more likely to have an enduring effect if they successfully decrease the occurrence of negative alcohol-related behaviors and risky sexual behaviors at time 1.

The findings from the longitudinal data set also provided more information on individual differences. As shown in figure 4, the variance around the intercept was 2.17 and was statistically significant, $p<.001$. This suggests that students do not start at the same level in regard to alcohol use. The variance around the sex intercept was also significant, suggesting that students do not engage in risky sexual behaviors at the same rate. These findings are consistent with past research on risky behaviors. For instance, Borsari et al (2007) have shown that there are five latent class trajectories for alcohol use among college students. What those results mean for prevention programs is that students may need different types of training depending on their alcohol use and risky sexual behaviors.

The loadings on the slope factors reflect the hypothesis of linear growth with equal time intervals. The mean slope for drinking is -.21. This implies a linear decrease of drinking-related behaviors from time 1 to time 3. The variance around the slope was .12. The value was
marginally significant. This would suggest that students’ drinking behaviors do not decrease at the same rate. The mean slope for risky sexual behaviors is -.02. The value was not significant.

As shown in figure 5, the sample was not particularly high-risk decreasing the variance explained in negative alcohol-related behaviors and risky sexual behaviors. Risky sexual behaviors as a result of drinking were measured on a 7-point with 7 being the highest. The mean was 1.7. Further research may reach out to high-risk students by sampling schools located in areas that have been shown to be high-risk for youths and college students in particular.

Since the alcohol-sex link was not significant, the predictive model was not tested. Though disappointing, this finding constitutes a first step toward understanding the potential causality between alcohol and sex in survey research. As students become familiar with the college life which is a risk factor to alcohol use, drinking does not constitute as much of a risky behavior.

Limitations

Despite the findings, it is important to keep the limitations of this dissertation in mind. The use of nonprobability sampling limits our ability to generalize the findings across all college students, let alone young adults in the sample’s age range. In addition, the sample was not ethnically diverse. Past research has consistently shown that Caucasians engage in more drinking behaviors (Farrell & Barnes, 1996; Johnston, O’Malley & Bachman, 2000). Future research will benefit by using random sampling. Researchers have also called for more research comparing multiple colleges. The use of more advanced statistical tools will enable researchers to isolate the effects of colleges from true variance attributable to media and interpretations of media content.

The design of the survey made it challenging to minimize the following survey errors: coverage error, sampling error and measurement error. Decreasing coverage error means
selecting a survey method that enables researchers to get an adequate coverage of the entire population (Dillman, 2000; Dillman et al., 2008). Sampling error is not uncommon in surveys as researchers cannot sample everyone in the population. Because of the recruiting procedures, we could not compute the response or participation rates (Dillman et al., 2008).

Measurement error occurs when respondents gave inaccurate responses that do not reflect their true score on the construct (Dillman et al., 2008). The causes of measurement error include respondents providing socially desirable responses and order effects. Research shows that when reporting behaviors or attitudes on sensitive topics including drinking and risky sexual behaviors, respondents tend to give an answer that conforms to the norms of the group which they perceive they belong to (Dillman, 2000). This makes the issue of socially desirable responses even more important. Researchers also acknowledge that it would be quite challenging, even impossible to ensure that a survey be completely unbiased or untainted with social desirability. As documented in prior research, some safeguards built into the survey, such as anonymity, tend to decrease socially desirable responses. For instance, Woo et al. (2008) examined the potential effects of social desirability bias on self-reports about risky behaviors. Woo and his colleagues only found a small association between the two, which suggested that most of the variance that they observed in the data was not biased. These results led them to conclude that when researchers maximize anonymity, survey research on sexuality “does not appear to be particularly subject to social desirability bias” (p.15).

Students were asked to complete a 227-item questionnaire three times in the course of the semester. To decrease students’ fatigue and their frustration, the researcher tried not to make unreasonable demands on the respondents. Students were given a week to complete the survey at each time point assessment. The survey was designed in a way to allow students to go back to
their survey until they completed the questionnaire thoroughly in case they needed to take a short break. However, once students exited the questionnaire, they could not update existing responses. As with other online surveys, using Survey Monkey helped to balance the questions and information presented in each page. Research suggests that respondents tend to associate topics presented in the same with one another (Tourangeau, Cooper & Conrad, 2004). This could increase order effects (Bertrand & Mullainathan, 2001). To address concerns of order effects within each construct, the items were randomized. For instance, questions related to parental mediation behaviors (negative vs. positive) were presented in a random order so that participants had to answer these questions in a different order than that in which the questions were presented in the original scale. In conclusion, different steps were taken to minimize the four errors.

Another limitation concerned Greek membership. The current study replicated past association between Greek membership and the problematic use of alcohol (Cashin, Presley & Meilman, 1988). However, these results should be considered carefully since only 20.7% of participants reported being a member of a fraternity or a sorority. Future research addressing this topic should attempt to remedy this limitation by including a larger percentage of students who belong to Greek organizations.

The norms in this study were measured with a five-item scale that refers mostly to drinking behaviors. Only one item referred to risky sexual behaviors as a result of drinking. For instance, students were asked about their participation in drinking games that are common among college students (Johnson, Wendel & Hamilton, 1998). Even though norms related to drinking were found to influence beliefs about alcohol, they did not predict behaviors related to sex. Measuring norms related to sexual behaviors with one item may be limiting. Therefore, further research could benefit from using a sex-specific norm index.
It is important to note that the two critical thinking skills affected perceived norms differently. Critical thinking toward media content increased the likelihood that students perceived their peers have engaged in negative behaviors related to drinking and risky sexual behaviors. On the other hand, critical thinking toward media sources decreased the likelihood that students perceived their peers have engaged in negative behaviors related to drinking and risky sexual behaviors. When considered in parallel with content-analytic studies, the increase in perceived norms makes sense. Characters portrayed in alcohol advertising are often young, attractive and Caucasian which also mirror the demographics of the sample. Based on their perceived similarity to these media portrayals, students might have found alcohol portrayals quite relevant. It is also possible that the affective-based and logic-based components of critical thinking are at work here. Improved critical thinking may not necessarily prevent students from finding the portrayals desirable. As the logic-based component of critical thinking has been strengthened, critical thinking may also prompt students to question the accuracy of norms based on the sources, alcohol advertisers. The logic-based component of critical thinking was strong enough to mute effects of media exposure on norms.

Conclusions, Contributions of the Study

This research contributed to the literature in two other ways: First, it extended traditional media effects studies by explaining how and why the effects occur. Results suggest that a more process-based to understanding individuals’ responses to media will help research and health campaign practitioners create more sophisticated health promotion campaigns that have a greater likelihood of success. By using the Message Interpretation Model, researchers can isolate the elements of advertising that potentially predicted risky behaviors. Hence, the current research helped identify the skills that will help viewers resist the persuasive appeal of beer advertising.
The most effective approach to risky behaviors seems to go through media content rather than changing media directly. Past research on other risky behaviors such as tobacco use is consistent with this finding. Not only did the tobacco experience highlighted the importance of media as an important of socialization but it also showed that trying to ban advertising rather than teach people the skills to resists the claims of advertisers may not be as effective.

The *Message Interpretation Model*, which is rooted in SCT, particularly focused on the cognitive and psychological factors that potentially lead to behavior changes. Consistent with past research concerning SCT and MIP, viewers’ anticipated positive outcomes from risky behaviors were found to be strong predictors of negative alcohol-related behaviors and risky sexual behaviors as a result of their drinking. In discussing the effects of alcohol on risky sexual behaviors, Snyder and Stukas (1999) noted how expectancies could contribute to the variance explained in risky behaviors independently and above pharmacological factors. This finding is encouraging for social scientists because expectancies are developed through modeling and first-hand experiences. Therefore, they are modifiable. The MIP helps us understand their specific role in response to media message.

Second, the panel data provided more information about college students’ drinking patterns and variations within time and within individuals. Consistent with past research (Greebaum et al., 2005), the current study tends to suggest that students do not start at the same level in regard to alcohol use. Upon entering college, students have developed their own patterns of drinking. Some students drink less than others. In their research, Greenbaum et al., reported that students could be categorized into 5 different latent classes: (1) light-stable, (2) light-stable plus holiday, (3) medium-increasing, (4) high-decreasing and (5) heavy-stable. In addition, the rate of changes among college students seem to follow a different pattern that the traditional one-
year follow-up. This is important because students might need different messages based on their specific drinking patterns.

In the course of the semester, undergraduates reported fewer drinking behaviors. The negative decelerating function of drinking is consistent with past research which supported the contention that academic events such as exams and holiday breaks can have an effect on college students’ drinking patterns. As the “novelty” of drinking recedes, students seem to stabilize in their drinking behaviors. For instance, the proportion of frequent heavy episodic drinkers decreased from 16.2% to 9.7% to 5.9% at time 3. These results also underscore the need to use longitudinal data set when attempting to identify students who are at high-risk. Similarly, there were individual variations in self-reports of risky sexual behaviors as a result of drinking. This suggests that some students engage in more risky sexual behaviors than their peers. The rate of change was in the expected direction. However, the finding was not statistically significant. At time 1, students did not engage highly in risky sexual behaviors to make the decrease substantial enough to be significant. As shown in table 1, the drop in risky sexual behaviors is quite small.

Even though the effects of negative alcohol-related behaviors on risky sexual behaviors did not stand the test of time, this research offered interesting insights about the differences in which college students perceive both risky behaviors. For example, the item “rode with a driver that has been drinking” was problematic with a high kurtosis. Stated in another way, students tended to score below the mean. There is evidence suggesting that the reinforcement of laws against drinking and driving contributed to dissuading young people from engaging in the behavior. Past research has also shown how media tends to focus on the consequences of drinking and driving with celebrities running into trouble with the law. It is possible that the students who participated in the current study are aware that this behavior is both risky and
illegal. Therefore, they may be in legal trouble if they engage in like behavior. We could also see SCT at work here. The more students see how celebrities and real-life examples are being jailed because of their behaviors, the less they will emulate this particular behavior.

On the other hand, students do seem to understand the legal implications of having sex under the influence of alcohol. Someone who had used alcohol prior to sexual activity cannot legally consent to having sex. Therefore, engaging in sexual intercourse with someone who has a drink is not only risky but constitutes sexual assault. The current study thus provides further support for the need for more education targeting young men and women teaching them to be careful about alcohol in the context of sexual activity. In past research, male college students seem to absolve themselves from any wrongdoing if they committed sexual assault in the context of drinking. Not only did they report being comfortable forcing themselves upon their partner but they also perceived women they met in a bar as being promiscuous and therefore appropriate target for sexual assaults (Abbey, McAuslan & Ross, 1998; Martin & Hummer, 1989).

Understanding the effects of alcohol on sexual assaults including dating rapes is worthwhile. Perpetrators and victims of a great majority of reported rapes (55% to 74%) have used alcohol and more than half of undergraduates will purposefully make their partner drink to have sex with them (Cooper, 2006).

Recommendations for Further Research

Because the two critical thinking scales affected attitudes and behaviors differently, further research could look more into issues of conceptualization by conducting some qualitative research on the intended audience. Such qualitative data could help flesh out the nuances that could exist between these two related constructs. The overall effect of behavior-based critical thinking scale is important. The two scales used in the dissertation assess the behaviors – skills
that viewers need to resist the persuasive effects of media. For instance, the item “It is important to think twice about TV” includes a skill that viewers need to have developed to decrease the effect of advertising on behaviors. Further research should also try to extend the media context by examining how parents would mediate social media and how this might potentially reduce the effects of viral marketing on risky behaviors.

The current study suggests that critical thinking toward media sources was more likely to decrease the negative effects of ads on behaviors. For instance, critical thinking toward media content did not prevent students from finding the ads appealing and identifying similar norms. However, when students were asked to evaluate the ads’ sources, alcohol advertisers, they were less likely to find these ads as representing peer norms. Alcohol advertisers have a business to run, therefore students may realize that advertisers use these behaviors for the specific goal, to increase purchase of alcohol. In turn, it decreases the likelihood that students engaged in risky behaviors.

The current research relied on measures of self-reports and therefore subject to recall bias. Further research could use biological measures using blood alcohol concentration (BAC) for instance. Further research could potentially compare different schools to see if these patterns of results are generalizable. Further research should examine retrospective mediation from the perspective of the parents. Recall bias may also explain why the magnitude of effect of recalled parental mediation was small. For instance, Austin et al. (1999) reported that children might overestimate the amount of negative mediation than positive mediation as they may catch more on negative mediation. Other research (Atkin, Greenberg, Baldwin, 1991) suggests that parents tend to overestimate the frequency of active mediation in an attempt to appear as good parents. On the other hand, children may underestimate these to show their independence.
Despite these limitations, this research has established that negative parental mediation is a protective factor against risky behaviors via its effects on critical orientations toward media. The current study provides further support to the conclusion that what is transmitted through early socialization practices is a general pattern of critical thinking that lasts into adulthood and that extends across different risky behaviors. Indeed, parental mediation served as a protective factor against the co-occurrence of heavy alcohol use and risky sexual behaviors. These results buttressed past research which suggests that retrospective reports of parent-child communication practices are relevant in health behaviors. However, the beneficial effects of recalled parent-child communication practices had to go through critical thinking skills. More importantly, the beneficial effects of recalled parent-child communication practices appear to work by helping people generate skepticism toward media content. By helping to generate critical thinking skills concerning media messages in children, parents are potentially equipping children to more effectively understand alluring but fictitious media portrayals and to resist their negative influence.
REFERENCES


Austin, E. W., & Knaus, C. (2000). Predicting the potential for risky behavior among those too young to drink, as the result of appealing advertising. *Journal of Health Communication, 5*, 13-27.


Austin, E., Pinkleton, B., Radanielina-Hita, M.L. & Weina, R. The Role of Parental Skepticism toward Media for Family Dietary Behaviors. Accepted for presentation to the annual meeting of the International Communication Association, May 2012, Phoenix, AZ.


Block, J (1971) Lrves thrmgh time Berioele Bancroft Bodks.


Snyder, M. A. & Stukas, A. (1999). Interpersonal processes: the interplay of cognitive,


MEMORANDUM

TO: Bruce Pinkleton and Marie Radanielina-Hita,
FROM: Patrick Conner, Office of Research Assurances (3005)
DATE: 6/3/2011

SUBJECT: Certification of Exemption, IRB Number 12031

Based on the Exemption Determination Application submitted for the study titled "The effects of alcohol advertising on college students’ behaviors: Using family communication as a protective factor against heavy drinking and risky sexual behaviors," and assigned IRB # 12031, the WSU Office of Research Assurances has determined that the study satisfies the criteria for Exempt Research at 45 CFR 46.101(b)(2).

This study may be conducted according to the protocol described in the Application without further review by the IRB.
It is important to note that certification of exemption is NOT approval by the IRB. You may not include the statement that the WSU IRB has reviewed and approved the study for human subject participation. Remove all statements of IRB Approval and IRB contact information from study materials that will be disseminated to participants.

This certification is valid only for the study protocol as it was submitted to the ORA. Studies certified as Exempt are not subject to continuing review (this Certification does not expire). If any changes are made to the study protocol, you must submit the changes to the ORA for determination that the study remains Exempt before implementing the changes (The Request for Amendment form is available online at http://www.irb.wsu.edu/documents/forms/rtf/Amendment_Request.rtf).
Exempt certification does NOT relieve the investigator from the responsibility of providing continuing attention to protection of human subjects participating in the study and adherence to ethical standards for research involving human participants.
In accordance with WSU Business Policies and Procedures Manual (BPPM), this Certification of Exemption, a copy of the Exemption Determination Application identified by this certification and all materials related to data collection, analysis or reporting must be retained by the Principal Investigator for THREE (3) years following completion of the project (BPPM 90.01).

Washington State University is covered under Human Subjects Assurance Number FWA00002946 which is on file with the Office for Human Research Protections (OHRP). Review Type: New
Review Category: Exempt
Date Received: 6/3/2011
Exemption Category: 45 CFR 46.101 (b)(2)
OGRD No.: N/A
Funding Agency: N/A

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INVITATION LETTER

Dear Dr. …,

My name is Marie Louise Radanielina-Hita. I am a doctoral candidate, majoring in Health communication. I work under the supervision of Dr. Pinkleton. In my dissertation, I am looking at how parent-child communication practices can be used as a protective factor against drinking and risky sexual behaviors by developing individuals' skepticism toward advertising of alcoholic beverages. In June 2011, the WSU IRB has reviewed and has determined that my dissertation is exempt. I plan to collect my data in fall 2011. I understand that you are teaching class …. Thus, I took the liberty to e-mail you in the hope that you might allow me to recruit students in your class.

Only legal adults (aged 18 and older) may participate in the survey. Students who volunteer to take part in the study will be asked to complete an online survey three times in the course of fall 2011 (Sept 5th, October 4th and November 27th). Students will be mailed a link to the survey so that they could complete it at home. Therefore, the data collection is going to be anonymous. No personally-identifiable information will be collected during the survey. Each time, it will take about 35 minutes to complete the survey questionnaire. Participants would then receive any extra credit that you might choose to offer.
To match the panel data, students will be asked to enter a code (the first three letters of their last name, the last three digits of their WSU ID, the two-digit month when they were born, and their favorite color). The data will be matched for statistical purposes. The data will remain unlinked to the students. The master list (with their WSU ID) that I will send to you, if you might be able to offer any extra-credit will be kept separately from the data. Therefore, it will be impossible to link specific individuals to the data.

Thank you in anticipation,

Sincerely,

Marie Louise
Marie Louise Radanielina-Hita
Doctoral Candidate
Research Assistant & Instructor
Murrow Center for Media and Health Promotion
Edward R. Murrow College of Communication
Washington State University Pullman,
WA 99164-2520
marie_radanielin@wsu.edu

EXAMPLES OF RESPONSES TO THE REQUESTS

From: x…
Sent: Monday, August 22, 2011 9:49 AM
To: Radanielina-Hita, Marie Louise
Subject: Re: asking for your permission to recruit students in your class
Dear Marie Louise,
Sorry for my delay in replying it has been a hectic week.
I am potentially willing to let you come into my classroom to pitch your study but how much time do you need? We have a fairly packed schedule.
I'm afraid I am not prepared to give extra credit for my class for participating in your study. The grading rubric has already been fixed and in any case I do not regard it to be appropriate to give class credit for something completely unrelated to my class.
Please let me know how long you would want in the classroom.
Sincerely,

From: …

From: …
Sent: Thursday, August 18, 2011 10:02 AM
To: Radanielina-Hita, Marie Louise
Subject: Re: asking for your permission to recruit students from your class

Marie Louise,

I am unwilling to give extra credit to students for a non astronomy-related activity. If you think it useful, I am willing to announce the survey during the first week of class.
From: …  
Sent: Monday, August 29, 2011 8:44 AM  
To: Radanielina-Hita, Marie Louise  
Subject: Re: asking for your permission to recruit students in your class  
Would Sept 6th work for you? That would be a better day for the class. You can give your spiel right at noon.

I will give 5 pts of extra credit to participants. I will just need to get an excel file of student id numbers from you to be able to do this.

From:  
Sent: Thursday 18 August 2011 19:38  
To: Radanielina-Hita, Marie Louise  
Cc: ….  
Objet : Re: asking for your permission to recruit students

Sept 1st should be fine, however I'll be out of town on that day, so I'm copying Dr .. (who is lecturing that day) on this email so that you can coordinate the finer details with him.

Yes, I'm prepared to give them 10 extra credit points for taking the survey. It will make almost no difference in the big scheme of things, but it should ensure that you get better participation.

Cheers,

.....
COPY OF QUESTIONNAIRE

FAMILY COMMUNICATION, ALCOHOL ADVERTISING & COLLEGE DRINKING

Time 1

FAMILY COMMUNICATION, ALCOHOL ADVERTISING & RISKY BEHAVIORS AMONG COLLEGE DRINKING

Bruce Pinkleton, Professor, E.R. Murrow College of Communication,

Washington State University, 509-335-2795, pink@wsu.edu

Marie Louise Radanielina-Hita, Graduate Student, E.R. Murrow College of Communication,

Washington State University, 509-335-3659, marie_radanielin@wsu.edu

Dear Participant,

Welcome! We are asking you to be in a research study about the processing of alcohol advertising. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully to determine whether you want to participate or not.

The project looks at how young viewers process information from alcohol advertising, how recalled parental mediation influence the information-processing and subsequent behaviors and decision making related to alcohol use and sex. As part of this research, you will be asked to complete the survey questionnaire three times in the course of fall 2011. To match the panel data, you will be asked to enter a code (the first three letters of your last name, the last three digits of your WSU ID, the two-digit of the month when you were born, and your favorite color). Please enter this code each time you complete the survey. No personally-identifiable information will be collected. The survey questions are related to your interactions with alcohol brands in the media, expectancies about alcoholic beverages and decision-making related to alcohol and sex. It will take about 30 minutes to complete the survey. At the end of the survey, you will be asked to provide your WSU ID number for purposes of notifying professors of who participated in the study. This information will be collected in a different site and will be kept separate from the data collected during the experiment. As
a result of participating in the research, you may gain more knowledge about the effect of media on behaviors and it could help you consider some of the decision making that you engage in as a result of exposure to alcohol advertising. Additionally, the information gathered from you will help researchers inform educational programs aimed at decreasing risky behaviors among college students.

Your participation is voluntary. Please note that you may withdraw anytime without risk of penalty if you feel uncomfortable. In an attempt to protect your privacy, you are asked not to provide any personally identifying information (such as SSN, name, etc.) in the survey. Any records containing WSU ID numbers will be destroyed after the completion of the survey. You should be aware; however, that while a breach of confidence is possible the research team has taken precautions to avoid it. If you become upset as a result of participating in the experiment, please contact WSU Counseling and Testing Services at 509-335-4511. All WSU students are eligible for services at Counseling and Testing Services with no additional fee required after payment of the mandatory student fees.

If you have questions about the purpose of the research, the possible risks and benefits, your rights as a volunteer, and anything else about the research, you can ask one of the researchers listed above. If you have questions regarding your rights as a participant, you can call the WSU Institutional Review Board at (509)335-3668. This project has been reviewed by the WSU IRB and was determined to be exempt.

In the survey, we will ask your opinions and thoughts about family communication practices and use of alcohol in the context of sexual interactions. Your participation is entirely voluntary. You may choose not to answer any questions you don’t like and can quit participation at any time without penalty. The success of this project depends on your help! Please answer the questions as honestly as possible.

Q1: By clicking below I agree to participate in this survey
   I agree
   I disagree

Q2: Are you 18 or older?
   Yes
   No
Q3: Please enter the first three letters of your last name, the last three digits of your WSU ID, the two-digit of the month when you were born, and your favorite color. The number will not be connected to your responses in any way and will only be used to identify the three surveys you completed as part of this study.

Q4. In the past four weeks, how often you watched/saw (1= not at all, 4= neutral, 7= very often).
Prime Time TV 1 2 3 4 5 6 7
Late-night talk shows (Saturday’s Live) 1 2 3 4 5 6 7
Sports Programs (e.g. football games, ESPN) 1 2 3 4 5 6 7
Sports Entertainment Programming (e.g. World Wrestling Entertainment) 1 2 3 4 5 6 7
News Programs 1 2 3 4 5 6 7
Alcohol Advertising 1 2 3 4 5 6 7

Q5. In the past four weeks, how often have you done each of the following (1= not at all, 4= neutral, 7= very often)?
Watched beer, wine, or liquor ad in the social media 1 2 3 4 5 6 7
Shared something online about beer, wine, or liquor 1 2 3 4 5 6 7
Interacted, visited, gone to alcohol brand pages on a social networking site like Facebook 1 2 3 4 5 6 7
Shared something online about beer, wine, or liquor 1 2 3 4 5 6 7
Visited websites for beer, wine, or liquor 1 2 3 4 5 6 7
Included alcohol brands in your social networking profiles like Facebook 1 2 3 4 5 6 7
Used your cell phone to access beer, wine, or liquor sites 1 2 3 4 5 6 7
Downloaded apps to your cell phones from beer, wine, or liquor sites 1 2 3 4 5 6 7
Clicked on ads on beer, wine, or liquor sites 1 2 3 4 5 6 7

Q5. Please think back to when you were growing up. About how often did your parents …(1= not at all, 7= very often)?
Tell you that they like a product shown on TV? 1 2 3 4 5 6 7
Tell you that they like a person or character seen on TV? 1 2 3 4 5 6 7
Tell you that they like a person or character seen on TV ad? 1 2 3 4 5 6 7
Tell you that they agree with something seen on TV? 1 2 3 4 5 6 7
Tell you that something seen on TV happens in real life? 1 2 3 4 5 6 7
Tell you that something seen on social media (e.g.; internet) happens in real life? 1 2 3 4 5 6 7
Tell you that something seen on TV ad happens in real life? 1 2 3 4 5 6 7
Repeat something heard or seen on TV to you? 1 2 3 4 5 6 7
Tell you that something seen on TV is not OK 1 2 3 4 5 6 7
Tell you that something seen on social media (e.g.; internet) is not OK
Tell you that something in a TV ad is not OK
Tell you that something in an alcohol ad is not OK
Tell you that something seen on TV is not real
Tell you that something seen in social media is not real
Tell you that something in a TV ad is not true
Tell you about something seen on TV
Tell you about what ads are trying to do
Tell you that they disagree with something shown on TV
Tell you that they disagree with something shown on social media
Tell you a TV ad is making something look better than it really is

Q6. The following questions are about your alcohol use and decision-making related to sex. Please circle the number that best describes your opinion on a scale of 1 to 7, where 1 means “strongly disagree” and 7 means “strongly agree.” Please answer the questions as honestly as possible. The data will remained unlinked to you.

Women in alcohol ads are good-looking.
Men in alcohol ads are strong.
Men in alcohol ads are good-looking.
When people in ads act sexy, it makes the products more interesting to me.
Ads that show people acting sexy get my attention.
People drinking alcohol in ads seem to be having fun.
Drinking beer helps me fit in.
Drinking beer helps me make friends.
Drinking beer helps me have fun.
Drinking makes me happy.
I will find a beer at a good party.
Drinking allows me to relax around others.
When I am drinking, it is easier to open up and express my feelings.
Drinking makes me feel good about myself.
After a few drinks it is more difficult for me to talk to a potential sexual partner about using condoms.
Drinking makes me forget about using condoms.
When I drink, it is hard to use (or have my partner) use condoms.
I often feel sexier after I’ve had a few drinks.
I am more romantic when I drink.
Drinking makes it easier for me to talk with a new sexual partner.
After a few drinks, I find it harder to say no to sexual advances.
After a few drinks, I am more likely to do sexual things I wouldn’t do when sober.
Having sex shows you are an adult.
Being sexually active makes you cool.
Having sex makes you popular.
Being sexually active helps you fit in with people you want to have as friends.
Alcohol ads are realistic sources of information for what makes people popular.
Alcohol ads are realistic sources of information for how people my age act.
Alcohol ads are realistic sources of information for what is sexually attractive.
Alcohol ads are realistic sources of information for what is trendy.
Alcohol ads are realistic sources of information for how successful people act
Alcohol ads are realistic sources of information for how popular people act
People in real life who drink alcohol are like the people shown in beer ad.
People in real life who drink alcohol act like people shown in beer ads.
People in real life who drink alcohol do the things the people shown in beer ads do.
Alcohol ads are a realistic source of information for what makes people successful.
Most college students drink alcohol.
Most college students engage in sexual activity as a result of their drinking.
Most college students play drinking games.
Most college students have ridden with a driver who has been drinking.
Most college students have been a designated driver.
Most college students have gotten sick from drinking alcohol.
People in my family are like people in beer ads.
People in alcohol ads are like people in my family.
I am like people in alcohol ads.
People in alcohol ads are like people I hang out with.
I think about WHY someone created a message I see on TV.
I think about HOW someone created a message I see on TV.
I think about what the creators of a television message wants me to believe.
I think about things I see on TV before I accept them as believable.
It's important to think twice about what TV says

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I look for more information before I believe something I see on television

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I think about the truthfulness of advertisements about alcohol before I accept them as believable.

| 6 | 7 |

I think about the purpose behind advertisements about alcohol I see in the media.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I think about who created the advertisements about alcohol I see in the media.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I think about what the creators of advertisements about alcohol wants me to believe.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I wish I could be like people I see in alcohol ads.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I wish I could do the things people in alcohol ads do.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I wish I could look like people I see in alcohol ads.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I like what people in alcohol ads like.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I wish I could be as successful as people in alcohol ads.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I wish I could be as sexy as people in alcohol ads.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

When I don’t know something I don’t at all mind admitting it

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I am always courteous even to people who are disagreeable

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Q.7. How many of your friends…

- Get drunk once in a while
- Get drunk almost every weekend

| 1 | None |
| 2 | One or two |
| 3 | Some of them |
| 4 | Most of them |

Q.8. Please circle the number that best describes your opinion on a scale of 1 to 7, where 1 means “strongly disagree” and 7 means “strongly agree.” Please answer the questions as honestly as possible. The data will remained unliked to you.

- I would not have sex when my partner and I are too intoxicated to give consent.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- I would discourage a friend if he/she was planning to get a person drunk to have sex.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- I would warn someone if I saw a drug being slipped into their drink.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would be careful with how much I drink at a party so I can continue to make good decisions. | 1 2 3 4 5 6 7 |
| I would respect my partner and stop sexual activity when asked to even when I am drunk. | 1 2 3 4 5 6 7 |
| I would seek services after being sexually assaulted even if I am intoxicated at the time of the assault. | 1 2 3 4 5 6 7 |
| I would report a sexual assault even if I were intoxicated at the time of the of the assault | 1 2 3 4 5 6 7 |
| I am assertive about the sexual aspects of my life | 1 2 3 4 5 6 7 |
| I’m concerned about the sexual appearance of my body | 1 2 3 4 5 6 7 |
| I am direct about voicing my sexual desires | 1 2 3 4 5 6 7 |
| I am concerned about what other people think of my sex appeal | 1 2 3 4 5 6 7 |
| I do not hesitate to ask for what I want in a sexual relationship | 1 2 3 4 5 6 7 |
| If I wanted to practice safe sex with someone, I would insist on doing so | 1 2 3 4 5 6 7 |
| If I were to have sex with someone, I’d let my partner take the initiative | 1 2 3 4 5 6 7 |
| If I were sexually interested in someone, I’d let that person know | 1 2 3 4 5 6 7 |
| - I wonder whether others think I’m sexy | 1 2 3 4 5 6 7 |
| - I usually worry about making a good sexual impression on others | 1 2 3 4 5 6 7 |
| - I rarely think of my sex appeal | 1 2 3 4 5 6 7 |
| I don’t care what others think of my sexuality | 1 2 3 4 5 6 7 |
| I rarely think about the sexual aspects of my life. | 1 2 3 4 5 6 7 |
| I don’t think about my sexuality very much | 1 2 3 4 5 6 7 |
| Other people’s opinions of my sexuality don’t matter very much to me. | 1 2 3 4 5 6 7 |
| I’m the type of person who insists on having my sexual needs met | 1 2 3 4 5 6 7 |
| When it comes to sex, I usually ask for what I want | 1 2 3 4 5 6 7 |
| If I were to have sex with someone, I’d tell my partner what I like. | 1 2 3 4 5 6 7 |
| I think condoms look ridiculous | 1 2 3 4 5 6 7 |
| Condoms are inconvenient | 1 2 3 4 5 6 7 |
| Condoms ruin the sex act | 1 2 3 4 5 6 7 |
| Having to stop to put on a condom takes all the romance our of sex | 1 2 3 4 5 6 7 |
| I don’t think condoms interfere with the enjoyment of sex | 1 2 3 4 5 6 7 |
| Contraceptives make intercourse seem too planned | 1 2 3 4 5 6 7 |
| I feel more relaxed if a contraceptive is used | 1 2 3 4 5 6 7 |
| I prefer to use contraceptives during intercourse | 1 2 3 4 5 6 7 |
Contraceptives makes sex seem less romantic  1  2  3  4  5  6  7  
I feel better about myself when I use contraceptives  1  2  3  4  5  6  7  
I think it’s gross and unfair for a man to use alcohol and drugs to convince a woman to have  
Sex with him  1  2  3  4  5  6  7  
When a man spends a lot of money on a date, he should expect to get sex for it  1  2  3  4  5  6  7  
Sometimes it doesn’t matter what you do to get sex  1  2  3  4  5  6  7  
Using alcohol or drugs to convince someone to have sex is wrong  1  2  3  4  5  6  7  

Please circle the number that best describes your opinion on a scale of 1 to 7, where 1 means “not at all characteristic of me” and 7 means “very characteristic of me.” Please answer the questions as honestly as possible. The data will remained unliked to you.

I think that there is too much sexual freedom given to adults these days  1  2  3  4  5  6  7  
I think that increased sexual freedom undermines the American family.  1  2  3  4  5  6  7  
I think that people my age have been given too much information about sex.  1  2  3  4  5  6  7  
I think there is too much freedom given to people my age these days.  1  2  3  4  5  6  7  
I think that people indulge in sex too much  1  2  3  4  5  6  7  
I think sex should be reserved for marriage  1  2  3  4  5  6  7  
There is too much sex on television  1  2  3  4  5  6  7  
Sometimes it doesn’t matter what you do to get sex  1  2  3  4  5  6  7  
Women should show off their bodies  1  2  3  4  5  6  7  
Most women use their sexuality to get men to do what they want  1  2  3  4  5  6  7  

Q.9. Please consider the following characteristics. Identify how well the characteristic describes you, with 1 being Not Well At All and 7 being Very Well.

I am …

Self-confident 1  2  3  4  5  6  7  
Independent 1  2  3  4  5  6  7  
Competitive 1  2  3  4  5  6  7  
Stand up well under pressure 1  2  3  4  5  6  7  
Passive (reverse coded) 1  2  3  4  5  6  7  
Give up easily (reverse coded) 1  2  3  4  5  6  7  
Have difficulty making decisions (reverse coded) 1  2  3  4  5  6  7  
feelings not easily hurt 1  2  3  4  5  6  7
worldly 1 2 3 4 5 6 7
emotional 1 2 3 4 5 6 7
gentle 1 2 3 4 5 6 7
friendly 1 2 3 4 5 6 7
understanding of other 1 2 3 4 5 6 7
kind 1 2 3 4 5 6 7
helpful to others 1 2 3 4 5 6 7
submissive 1 2 3 4 5 6 7
cry easily 1 2 3 4 5 6 7
need others’ approval 1 2 3 4 5 6 7
strong need to feel secure 1 2 3 4 5 6 7
aware of others’ feelings 1 2 3 4 5 6 7
excitable in a major crisis 1 2 3 4 5 6 7
able to devote self completely to others 1 2 3 4 5 6 7

Q. 10. Now, please indicate how often you have done each of the following things in the past week(s) ... (1=never, 6= twice a week)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink an alcoholic beverage</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Have 4 or more drinks in a row</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Attend a party where alcohol is served</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Rode with driver drinking alcohol</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Got sick from drinking alcohol</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Prefunked (drank alcohol before going out or going to a party)</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

Q.12. Now, please indicate how often you have done each of the following things in the past week(s) ... (1=not at all, 7= very often)

In the past four weeks, how often has your drinking caused you to

<table>
<thead>
<tr>
<th>Activity</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Engage in unplanned sexual intercourse?</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>2) Not use protection when you had sex?</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>3) Not use condoms when you had sex?</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>4) Did something sexual that you later wished you hadn’t?</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>5) Engage in sexual relationships with different partners</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>6) Say yes to sexual activity that you wouldn’t have pursued otherwise</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>7) Have sexual intercourse when you were so intoxicated you were unable to consent.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>
8) Pursue sexual activity that you wouldn't have otherwise pursued.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.13. the last questions are for statistical purposes only.</td>
<td></td>
<td></td>
<td></td>
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<td>What is your age, in years? (please write in the blank)</td>
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<td>How do you think you do in school? (please place an X in the correct blank)</td>
<td>Mostly As---------</td>
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<td>Mostly As and Bs---------</td>
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<td>Mostly Bs---------</td>
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<td>Mostly Bs and Cs---------</td>
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<td>Mostly Cs---------</td>
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<td></td>
<td>Mostly Cs and Ds---------</td>
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<td>Mostly Ds---------</td>
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<td>Mostly Ds and Fs---------</td>
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<td>Mostly Fs---------</td>
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<tr>
<td>How far do you think you will go in school? (place an X in the correct blank)</td>
<td>Some college, but less than 4 years---------</td>
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<td></td>
<td>Graduate with my bachelor degree---------</td>
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<td></td>
<td>Graduate from a 4 year college or university-</td>
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<td>Graduate or professional school ---------</td>
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<td>I am not sure ----------------------</td>
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<tr>
<td>Which are you? (Place an X in the correct blank)</td>
<td>Male---------</td>
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<td></td>
<td>Female---------</td>
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<td>Do you consider your family: (place an X in the correct blank)</td>
<td>Very low income -----------</td>
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<td>Low income-------------</td>
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<td>Middle income---------</td>
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<td>High income -----------</td>
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<td></td>
<td>Very high income--------</td>
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</tbody>
</table>
Please indicate your race or ethnicity (Place an X in the blank beside all that apply)

Not sure---------------------
African American ------------
Asian/Pacific Islander ------
Caucasian (White)------------
Latino/Latina/Hispanic-------
Native American/Alaskan Native----
Other --------------------------------

Greek membership

Yes    No

Relationship Status

Not dating
Single, but dating
Unmarried, but in a committed relationship
Married

Age at first drink: ---- years old
Do you have a current sexual partner? Y/N

Thank you!
COPY OF QUESTIONNAIRE (Time 2 and Time 3)

At time 2 and time 3, the questionnaire included the time-varying covariates and the constructs modelled across time.

FAMILY COMMUNICATION, ALCOHOL ADVERTISING & RISKY BEHAVIORS AMONG COLLEGE DRINKING

Bruce Pinkleton, Professor, E.R. Murrow College of Communication,
Washington State University, 509-335-2795, pink@wsu.edu
Marie Louise Radanielina-Hita, Graduate Student, E.R. Murrow College of Communication,
Washington State University, 509-335-3659, marie_radanielin@wsu.edu

Dear Participant,

Welcome! We are asking you to be in a research study about the processing of alcohol advertising. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully to determine whether you want to participate or not.

The project looks at how young viewers process information from alcohol advertising, how recalled parental mediation influence the information-processing and subsequent behaviors and decision making related to alcohol use and sex. As part of this research, you will be asked to complete the survey questionnaire three times in the course of fall 2011. To match the panel data, you will be asked to enter a code (the first three letters of your last name, the last three digits of your WSU ID, the two-digit of the month when you were born, and your favorite color). Please enter this code each time you complete the survey. No personally-identifiable information will be collected. The survey questions are related to your interactions with alcohol brands in the media, expectancies about alcoholic beverages and decision-making related to alcohol and sex. It will take about 30 minutes to complete the survey. At the end of the survey, you will be asked to provide your WSU ID number for purposes of notifying professors of who participated in the study. This information will be collected in a different site and will be kept separate from the data collected during the experiment. As a result of participating in the research, you may gain more knowledge about the effect of media on behaviors and it could help you consider some of the decision making that you engage in as a result of exposure to alcohol advertising. Additionally, the information gathered from you will help researchers inform educational programs aimed at decreasing risky behaviors among college students.

Your participation is voluntary. Please note that you may withdraw anytime without risk of penalty if you feel uncomfortable. In an attempt to protect your privacy, you are asked not to provide any personally identifying information (such as SSN, name, etc.) in
the survey. Any records containing WSU ID numbers will be destroyed after the completion of the survey. You should be aware; however, that while a breach of confidence is possible the research team has taken precautions to avoid it. If you become upset as a result of participating in the experiment, please contact WSU Counseling and Testing Services at 509-335-4511. All WSU students are eligible for services at Counseling and Testing Services with no additional fee required after payment of the mandatory student fees.

If you have questions about the purpose of the research, the possible risks and benefits, your rights as a volunteer, and anything else about the research, you can ask one of the researchers listed above. If you have questions regarding your rights as a participant, you can call the WSU Institutional Review Board at (509)335-3668. This project has been reviewed by the WSU IRB and was determined to be exempt.

In the survey, we will ask your opinions and thoughts about family communication practices and use of alcohol in the context of sexual interactions. Your participation is entirely voluntary. You may choose not to answer any questions you don’t like and can quit participation at any time without penalty. The success of this project depends on your help! Please answer the questions as honestly as possible.

**Q1: By clicking below I agree to participate in this survey**
1. I agree
2. I disagree

**Q2: Are you 18 or older?**
1. Yes
2. No

**Q3: Please enter the first three letters of your last name, the last three digits of your WSU ID, the two-digit of the month when you were born, and your favorite color.** The number will not be connected to your responses in any way and will only be used to identify the three surveys you completed as part of this study.

**Q4. In the past four weeks, how often you watched/saw (1= not at all, 4= neutral, 7= very often).**

<table>
<thead>
<tr>
<th>Channel Description</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>Prime Time TV</td>
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<td>Late-night talk shows (Saturday’s Live)</td>
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<td>Sports Programs (e.g. football games, ESPN)</td>
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<tr>
<td>Sports Entertainment Programming (e.g. World Wrestling Entertainment)</td>
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<tr>
<td>News Programs</td>
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</tbody>
</table>

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### Alcohol Advertising

#### Q.5. In the past four weeks, how often have you done each of the following (1= not at all, 4= neutral, 7= very often)?

<table>
<thead>
<tr>
<th>Activity</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watched beer, wine, or liquor ad in the social media</td>
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<tr>
<td>Shared something <strong>online</strong> about beer, wine, or liquor</td>
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<tr>
<td>Interacted, visited, gone to alcohol brand pages on a social networking site like Facebook</td>
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<tr>
<td>Shared something online about beer, wine, or liquor</td>
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<tr>
<td>Visited websites for beer, wine, or liquor</td>
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<tr>
<td>Included alcohol brands in your social networking profiles like Facebook</td>
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<tr>
<td>Used your cell phone to access beer, wine, or liquor sites</td>
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<tr>
<td>Downloaded apps to your cell phones from beer, wine, or liquor sites</td>
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<tr>
<td>Clicked on ads on beer, wine, or liquor sites</td>
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</table>

#### Q6. Please think back to when you were growing up. About how often did your parents …(1= not at all, 7= very often)

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tell you that they like a product shown on TV?</td>
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<tr>
<td>Tell you that they like a person or character seen on TV?</td>
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<tr>
<td>Tell you that they like a person or character seen on TV ad?</td>
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<tr>
<td>Tell you that they agree with something seen on TV?</td>
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<tr>
<td>Tell you that something seen on TV happens in real life?</td>
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<tr>
<td>Tell you that something seen on social media (e.g.; internet) happens in real life?</td>
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<tr>
<td>Tell you that something seen on <strong>TV ad</strong> happens in real life?</td>
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<tr>
<td>Repeat something heard or seen on TV to you?</td>
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<tr>
<td>Tell you that something seen on TV is not OK</td>
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<tr>
<td>Tell you that something seen on social media (e.g.; internet) is not OK</td>
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<tr>
<td>Tell you that something in a <strong>TV ad</strong> is not OK</td>
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<tr>
<td>Tell you that something in an <strong>alcohol ad</strong> is not OK</td>
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<tr>
<td>Tell you that something seen on TV is not real</td>
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<tr>
<td>Tell you that something seen on in social media is not real</td>
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<tr>
<td>Tell you that something in a TV ad is not true</td>
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<tr>
<td>Tell you about something seen on TV</td>
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<td>Tell you about what ads are trying to do</td>
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<td>Tell you that they disagree with something shown on TV</td>
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<tr>
<td>Tell you that they disagree with something shown on social media</td>
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</table>
Tell you a TV ad is making something look better than it really is

Q7. The following questions are about your alcohol use and decision-making related to sex. Please circle the number that best describes your opinion on a scale of 1 to 7, where 1 means “strongly disagree” and 7 means “strongly agree.” Please answer the questions as honestly as possible. The data will remained unliked to you.

When people in ads act sexy, it makes the products more interesting to me.
Ads that show people acting sexy get my attention.
People drinking alcohol in ads seem to be having fun.
Drinking beer helps me fit in.
Drinking beer helps me make friends.
Drinking beer helps me have fun.
Drinking makes me happy.
I will find a beer at a good party.
After a few drinks it is more difficult for me to talk to a potential sexual partner about using condoms.
Drinking makes me forget about using condoms.
When I drink, it is hard to use (or have my partner) use condoms.
I often feel sexier after I’ve had a few drinks.
I am more romantic when I drink.
Drinking makes it easier for me to talk with a new sexual partner.
After a few drinks, I find it harder to say no to sexual advances.
After a few drinks, I am more likely to do sexual things I wouldn’t do when sober.
Having sex shows you are an adult.
Being sexually active makes you cool.
Having sex makes you popular.
Being sexually active helps you fit in with people you want to have as friends.
Alcohol ads are realistic sources of information for what makes people popular.
Alcohol ads are realistic sources of information for how people my age act.
Alcohol ads are realistic sources of information for what is sexually attractive.
Alcohol ads are realistic sources of information for what is trendy.
Alcohol ads are realistic sources of information for how successful people act.
Alcohol ads are realistic sources of information for how popular people act.
People in real life who drink alcohol are like the people shown in beer ad.
People in real life who drink alcohol act like people shown in beer ads.

People in real life who drink alcohol do the things the people shown in beer ads do.

Alcohol ads are a realistic source of information for what makes people successful.

Most college students drink alcohol.

Most college students engage in sexual activity as a result of their drinking.

Most college students play drinking games.

Most college students have ridden with a driver who has been drinking.

Most college students have been a designated driver.

People in my family are like people in beer ads.

People in alcohol ads are like people in my family.

I am like people in alcohol ads.

People in alcohol ads are like people I hang out with.

I think about WHY someone created a message I see on TV.

I think about HOW someone created a message I see on TV.

I think about what the creators of a television message wants me to believe.

I think about things I see on TV before I accept them as believable.

It's important to think twice about what TV says.

I look for more information before I believe something I see on television.

I think about the truthfulness of advertisements about alcohol before I accept them as believable.

I think about the purpose behind advertisements about alcohol I see in the media.

I think about who created the advertisements about alcohol I see in the media.

I think about what the creators of advertisements about alcohol wants me to believe.

I wish I could be like people I see in alcohol ads.

I wish I could do the things people in alcohol ads do.

I wish I could look like people I see in alcohol ads.

I like what people in alcohol ads like.

I wish I could be as successful as people in alcohol ads.

I wish I could be as sexy as people in alcohol ads.

When I don’t know something I don’t at all mind admitting it.

I am always courteous even to people who are disagreeable.
Q.8. Please consider the following characteristics. Identify how well the characteristic describes you, with 1 being Not Well At All and 7 being Very Well.

I am …

<table>
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<th>Characteristic</th>
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<td>Self-confident</td>
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<td>Independent</td>
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<td>Competitive</td>
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<td>Stand up well under pressure</td>
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<td>Passive (reverse coded)</td>
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<td>Give up easily (reverse coded)</td>
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<td>Have difficulty making decisions (reverse coded)</td>
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<td>understanding of other</td>
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<td>need others’ approval</td>
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<td>excitable in a major crisis</td>
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<td>able to devote self completely to others</td>
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Q. 11. Now, please indicate how often you have done each of the following things in the past week(s) … (1=never, 2= 6= twice a week)

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<tr>
<th>Activity</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>Prefunked with alcohol (drunk alcohol before going out or attending a party)</td>
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<tr>
<td>Drink an alcoholic beverage</td>
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<tr>
<td>Have 4 or more drinks in a row</td>
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<tr>
<td>Attend a party where alcohol is served</td>
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<tr>
<td>Rode with driver drinking alcohol</td>
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</table>
Q.12. 1) Engage in unplanned sexual intercourse? 1 2 3 4 5 6 7
2) Not use protection when you had sex? 1 2 3 4 5 6 7
3) Not use condoms when you had sex? 1 2 3 4 5 6 7
4) Did something sexual that you later wished you hadn’t? 1 2 3 4 5 6 7
5) Engage in sexual relationships with different partners 1 2 3 4 5 6 7
6) Say yes to sexual activity that you wouldn’t have pursued otherwise 1 2 3 4 5 6 7
7) Have sexual intercourse when you were so intoxicated you were unable to consent. 1 2 3 4 5 6 7
8) Pursue sexual activity that you wouldn't have otherwise pursued. 1 2 3 4 5 6 7

Q.14. the last questions are for statistical purposes only.

What is your age, in years? (please write in the blank) -----------years
How do you think you do in school? (please place an X in the correct blank)

 Mostly As---------
 Mostly As and Bs------
 Mostly Bs---------
 Mostly Bs and Cs-------
 Mostly Cs----------
 Mostly Cs and Ds--------
 Mostly Ds---------
 Mostly Ds and Fs--------
 Mostly Fs----------

How far do you think you will go in school? (place an X in the correct blank)

 Some college, but less than 4 years---------
 Graduate with my bachelor degree---------
 Graduate from a 4 year college or university-
 Graduate or professional school ---------
 I am not sure ------------------

Which are you? (Place an X in the correct blank)
Do you consider your family: (place an X in the correct blank)

[ ] Male
[ ] Female

Very low income
Low income
Middle income
High income
Very high income
Not sure

Please indicate your race or ethnicity (Place an X in the blank beside all that apply)

[ ] African American
[ ] Asian/Pacific Islander
[ ] Caucasian (White)
[ ] Latino/Latina/Hispanic
[ ] Native American/Alaskan Native
[ ] Other

Greek membership

[ ] Yes
[ ] No

Relationship Status

[ ] Not dating
[ ] Single, but dating
[ ] Unmarried, but in a committed relationship
[ ] Married

Age at first intercourse: ---- years old
Number of lifetime partners:
Do you have a current sexual partner? Y/N

Thank you!

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RESULTS OF MONTE CARLO SIMULATION STUDIES

I) Risky sexual behaviors

Mplus VERSION 5.2
MUTHEN & MUTHEN
05/06/2011  8:42 PM

INPUT INSTRUCTIONS

TITLE:
SEM SEM Model NORMAL DATA, NO MISSING VALUES

Sample equal 250 for the 10,000 replications

MONTECARLO:

NAMES ARE expect ident similar norm real desire skeptic POSMEDIA sex;
NOBSERVATIONS = 250;
NREPS = 10000;
SEED = 145298;

MODEL POPULATION:

expect on norm*.16;
expect on similar*.30;
expect on ident*.17;
norm*1.00;
similar*1.00;
ident*1.00;
expect*.78;

desire on skeptic*.23;
desire on norm*.30;
desire on expect*.20;
desire*.80;
skeptic*1.00;
norm*1.00;
expect*1.00;
ident on desire*.19;
ident on similar*.43;
ident on skeptic*.16;
ident*.70;
desire*1.00;
similar*1.00;
skeptic*1.00;
similar on real*.33;
similar*.88;
real*1.00;
norm on skeptic* -.19;
norm*.95;
skeptic*1.00;
SKEPTIC ON POSMEDIA*.11;
mediation*1.00;
sex on mediation*-.11;
mediation*1.00;
sex*.30;
sex on expect*.21;
expect*1.00;

MODEL:
expect on norm*.16;
expect on similar*.30;
expect on ident*.17;
norm*1.00;
similar*1.00;
ident*1.00;
expect*.78;

desire on skeptic*.23;
desire on norm*.30;
desire on expect*.20;
desire*.80;
skeptic*1.00;
norm*1.00;
expect*1.00;
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ident on skeptic*.16;
ident*.70;
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similar*1.00;
skeptic*1.00;
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similar*.88;
real*1.00;
norm on skeptic* -.19;
norm*.95;
skeptic*1.00;
SKEPTIC ON MEDIATION*.11;
mediation*1.00;
sex on mediation*-.11;
mediation*1.00;  
sex*.30;  
sex on expect*.21;  
expect*1.00;

**ANALYSIS:**

ESTIMATOR = ML;  
OUTPUT:  
TECH9;

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<th>Coverage</th>
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TITLE:
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mediaTION*1.00;
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alcohol on expect*.21;
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OUTPUT:
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