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Risk Taking Behaviors In Emerging Adults And Peer, Sibling & Parental Relationships

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**RISK TAKING BEHAVIORS IN EMERGING ADULTS
AND PEER, SIBLING & PARENTAL RELATIONSHIPS**

by

MALASRI CHAUDHERY-MALGERI

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

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MAJOR: EDUCATIONAL PSYCHOLOGY

Approved by:

Advisor

Date

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DEDICATION

This dissertation is dedicated to my family members who have been by my side every step of the way.

First to my parents, Drs. Sumita Chaudhery and Virinder Chaudhery for being true sources of inspiration and support to me--both of you endured the trials and tribulations of the doctoral process, and during times of stress and uncertainty, it was your stories and experiences that inspired me, and reminded me I was not alone.

Also, to my late grandfather, Dr. Sudhanshu B. Mitra, a fellow educational psychologist, who always encouraged me to pursue my doctoral studies and took much interest in its progression and completion while he was still with us.

Finally, dearest to my heart, I would like to dedicate this to my husband Christian Malgeri. He has been my shoulder, another source of inspiration, my balance, and my love through all of this. You have endured living with a wife who has dedicated countless hours, days and weeks towards this dissertation since we first met. Thank you for putting up with me, my tears, my stress and for understanding how even your presence was a vital source of comfort and peace for me.

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CHAPTER 1

INTRODUCTION

Emerging adulthood is a key time to solidify one's sense of identity and autonomy. This age has also been identified as a time when individuals want to utilize a sense of new found freedom and explore the world around them in a way that they might have felt was not possible during adolescence. This developing autonomy and search for one's adult identity often leads individuals to engage in risk taking behaviors. Research shows that it is the emerging adulthood age group that is more likely than both the younger and older cohorts to engage in such risky behaviors (Duangpatra, Bradley, & Glendon, 2009). Examples of such risky behaviors during this emerging adult period are drug use (Arnett, 2005; Johnston, O'Malley, & Bachman, 2003), reckless sexual activities (National Center in HIV Epidemiology & Clinical Research, 2005), acquisition of sexually transmitted diseases (Arnett, 2000; Arnett, 2005; Stein, Newcomb, & Bentler, 1994), reckless driving (Arnett, 2005; Jonah, 1990), and alcohol use (i.e., binge drinking; Kong & Bergman, 2010; White et al., 2009).

The detriments that risk taking behaviors have on the lives of emerging adults can lead not only to life altering diseases, self-harm and injuries, but death as well (Arnett, 2000; Centers for Disease Control and Prevention, 2003; Cooper, 2002; Goldstein et al., 2009; White et al., 2009). Additionally, studies show that as the propensities towards involvement in risky behaviors increase, sexual assault and victimization also increase (Arnett, 2000; Cooper, 2002; Centers for Disease Control and Prevention, 2003; Goldstein et al., 2009; White et al., 2009). Other studies show that risky behaviors within the emerging adult population can lead to increases in sexually transmitted diseases and unintended pregnancies (Turchik et al., 2010).

For the purpose of the current study, risk taking behaviors are defined as drug use, alcohol use, and reckless sexual activities (i.e., casual sex, multiple sex partners, unprotected

sex). Past research identified significant predictors of risk taking behaviors during the emerging adult period. However, studies so far primarily looked at only one or a few factors at a time and failed to examine these variables simultaneously, although individuals within this age group are exposed to a variety of factors that are most likely to interact constantly. These predictors include relationships with peers, siblings, and parents (Buhrmester, 1996; Duangpatra, Bradley & Glendon, 2009; Lefkowitz, Boone, & Shearer, 2004), sensation seeking propensities (Day-Cameron et al., 2010), and self-reported perceptions of risk (i.e., cognitive appraisals, perceived risk, outcome expectancies; Friedman et al., 2007). However, studies so far primarily looked at only one or a few factors at a time and failed to examine these variables simultaneously although individuals within this age group are exposed to a variety of factors that are most likely to interact constantly. The aim of the current study is to understand which of these factors and combinations of factors can be used to explain risk-taking behaviors during the emerging adulthood.

Sensation Seeking and Risk Taking Behaviors

The transition between the high school and college years leads to significant developmental changes that allow for increased opportunities to experiment with risky behaviors. Individuals' traits involving the impulse toward sensation seeking cannot be ignored in any study on risk taking behavior. Sensation seeking can be defined as the tendency to seek out a variety of experiences (Day-Cameron et al., 2010; Zuckerman, 1994). In early research, Zuckerman (1979) defined sensation seeking as "the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and functional risks for the sake of such experiences" (p. 10).

This definition is applied consistently in research today. Sensation seeking has been identified as one of the early predictors of risk taking behaviors (Zuckerman, 1971). Zuckerman

(1971) identified four factors of sensation seeking: thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility that have been linked to risky behaviors. Individuals who score high on these factors are more likely to engage in high-risk behaviors. Such risks include sexual behaviors, alcohol use/consumption and drug use/consumption (Cooper, 2010; Smith & Brown, 1998; White et al., 2009).

Research has shown that emerging adults have stronger preferences towards sensation seeking more than young adults (Arnett, 2000) and adults (Blinn-Pike et al., 2008). In a study conducted by Bradley and Wildman (2002), risks and reckless behaviors in emerging adults were found to be prevalent. In their study, emerging adults who expose themselves to risky situations tended to score high on sensation seeking inventories (Bradley & Wildman, 2002). In a study by Todesco (2005), emerging adults also were found to engage in risky behaviors as a means to fulfill their sensation seeking urges. This finding showed an important distinction between emerging adults and young adults. While young adults exhibit beginnings of risky behavior, emerging adults have the ability to engage in such behaviors with greater freedom, the behaviors tend to taper off during adulthood as individuals settle into their lives (i.e., through marriage and work; Arnett, 2000; Duangpatra, Bradley & Glendon, 2009). These findings further the notion that emerging adulthood is its own unique developmental period. In summary, these research findings suggest that sensation seeking, a trait that is prevalent throughout development and especially in emerging adulthood, is an important factor that needs to be controlled.

The Roles of Peers, Siblings, and Parents

Early research in the field of social learning theory studied the associations between one's environment and one's development of risk taking behaviors. Specifically, Bandura (1986) explained that behavior can be learned by observing others, but he further argued that one's motivation to act on the learned behavior is also a key factor throughout one's development.

Social learning theory emphasizes how, as one develops, behaviors, attitudes, and emotional reactions, typically from peers, siblings, and parents, are elements that can be modeled, observed, learned and imitated (Bandura, 1977). As 18 to 25 year olds settle into the emerging adulthood phase, their environments typically consist of peers, while their emotional support systems stem from a combination of peers, siblings, and parents (Buhrmester, 1996; Lefkowitz, Boone & Shearer, 2004). These studies highlight that one's immediate environment, as well as one's supportive network, has an impact on behavior. Within one's network, some relationships are defined as close relationships while others are defined as more discordant in nature. Furman and Buhrmester (1985) explained close or supportive relationships include companionship, disclosure, emotional support, pleasure, approval and satisfaction between individuals in the relationship.

In addition to modeling, an individual's behavior might become more similar to a friend's, sibling's, or parent's behavior because of a change in underlying motivational processes, such as wanting to be accepted by such individuals and wanting to understand and further develop in the world around them (Barry & Wentzel, 2006; Kim et al., 2007). Therefore, individuals having quality relationships with role models are more likely to imitate their behavior, whether negative or positive. Social learning theory further proposed that individuals learn by observing others, with elements such as the environment, one's overall behavior, and one's cognition also playing a substantial and reciprocal role in influencing development (Bandura, 1986).

Peers. In 1976, Spanier described how as adolescents mature, their peers have greater influence on each other as a result of increased exposure to peer groups. Beginning in 7th grade through young adulthood, youth report exchanging more information about sex-related topics with each other (Buhrmester, 1996; Lefkowitz, Boone & Shearer, 2004). Frequency of disclosure

and discussion among peers has been noted as indicators of closeness (Buhrmester & Furman, 2008). Studies have found that as frequency of disclosure and discussion among peers fluctuate during adolescence and into emerging adulthood, so does an individual's interests and propensity to entertain activities, such as risky sexual behavior, alcohol use and drug use (Buhrmester, 1992; Buhrmester & Furman, 2008; Spanier, 1976). Peers serve as models for each other through exposure within their groups, as well as through close relationships and discussions that occur within those relationships (Buhrmester & Furman, 2008). This interaction and involvement can therefore facilitate engagement in risk taking behaviors.

By emerging adulthood, college students are reported to spend more face time with friends than parents and relationships with close friends are important, as well as salient and influential (Lefkowitz, Boone & Shearer, 2004). The presence of peers has a more significant role in risk taking behaviors among 18 to 22 year olds than in older adults (Duangpatra et al., 2009). Socialization plays a significant role in adolescent and college student alcohol use (Andrews, Tildesley, Hops, & Li, 2002). Alcohol consumption is considered a social activity and can be a platform to make friends (Wetherill & Fromme, 2007). Yet another example can be seen in the finding that college students report that their friends are the most useful source of information about sex-related topics (Lefkowitz, Boone & Shearer, 2004; Kallen et al., 1983). Additionally, evidence exists suggesting that more liberal attitudes of peers are associated with more liberal attitudes in sexual activity and contraceptive use (Lefkowitz, Boone & Shearer, 2004).

Siblings. Siblings tend to be similar in their risky sexual behaviors in areas such as age of first intercourse and degree of sexual intimacy (Haurin & Mott, 1990; McHale, Bissell & Kim, 2009; Rowe et al., 1989), and permissive attitudes towards sexual engagement and early

pregnancies (East, 1998; McHale, Bissell & Kim, 2009). Siblings act as models when discussing engagement in and experimentation in sexual intercourse (McHale, Bissell & Kim, 2009).

Specifically, studies show that younger siblings are typically at more risk for modeling an older sibling's substance abuse and sexual risk behavior (McHale, Bissel & Kim, 2009; Rende et al., 2005). Older siblings serve as sources of information and sources of advice for their younger siblings regarding topics such as norms for dating, intimacy and risks in sexual intercourse and drug use (Rodgers & Rowe, 1988; Tucker, McHale & Crouter, 2001). Therefore, siblings have been found to directly influence each other's sexual, smoking, and drinking behaviors (Conger, 2005; McHale, Bissel & Kim, 2009; Rende et al., 2005).

Sibling warmth (i.e., siblings' closeness with one another) has also been associated with sexual attitudes among adolescents (McHale, Bissel & Kim, 2009). Closer sibling relationships were related to similarities in individual attitudes toward risky sexual behavior. On the other hand, if an individual has a sibling that engaged in more risky behaviors, that individual would be more likely to engage in similarly risky behaviors. These findings suggest that siblings play modeling and supportive roles for one another, thereby influencing engagement in risk taking activities. However, an understanding of the role that siblings play during emerging adulthood is still in question. While face-time (Seiffge-Krenke, 2009) might decrease with siblings and parents due to circumstance (i.e., moving out of the parental household), one's closeness with his/her sibling(s) and parents can be maintained. These relationships can therefore continue to play a role during the emerging adult period of life and require further study. More specifically, an understanding of the closeness of peer, sibling and parental relationships in relation to individual risk taking behaviors is a subject needing additional study.

Parents. Findings suggest that peers certainly become more important as one develops; however, parents continue to play a role as their child moves through adolescence and into

emerging adulthood (Turrise, Jaccard, Taki, Dunnam, & Grimes, 2001; Wetherill & Fromme, 2007). It is understood that parents play an emotionally supportive role throughout development (Buhrmester, 1996; Lefkowitz, Boone & Shearer, 2004). The want for parental acceptance and a continuation of such support can therefore give way to imitating parents' behaviors whether negative or positive (Barry & Wentzel, 2006; Kim et al., 2007).

Parents are still seen as a secure base even though one's social network expands and investments in peer relationships and extra-curricular activities often take prominence (Bowlby, 1973). Studies show that parents can shape adolescents' drinking patterns through parental support (Barnes, Reifman, Farrell, & Dintcheff, 2000). A lack of parental support and/or a negative parental relationship has been associated with substance use and other risky behaviors (Dishion, Nelson, & Bullock, 2004; Hawkins, Catalano, & Miller, 1992; Wetherill & Fromme, 2007).

When discussing risk taking behaviors and parental relationships, it has been shown that parents influence their children's behaviors such as drinking, substance abuse, and other risky behaviors (Barnes et al., 2000; Dishion et al., 2004; Wetherill & Fromme, 2007). Some individuals in emerging adulthood establish more mature and unrestricted relationships with their parents (Aquilino, 1997; Seiffge-Krenke, 2009; Thornton, Orbuch, & Axinn, 1995), while expanding their social networks to include peers and later romantic partners (Furman, Brown, & Feiring, 1999; Seiffge-Krenke, 2003, 2009). These relations might be understood through the principles of social learning theory (Bandura, 1977) that suggests actions and behaviors exhibited by parents, siblings, and peers throughout childhood and adolescence will, to an extent, be modeled, potentially influencing social behaviors, and specifically, risk taking behaviors. However, not much research has been conducted on parents and the role their relationships play in conjunction with an individual's peer and sibling relationships. More specifically, a clear

understanding of the role that parents' supportive and close relationships play in correlation with an individual and his/her close peer and/or sibling relationships and involvement in risk taking behaviors remains in question.

Summary of Research on Peers, Siblings, and Parents and Risk Taking Behaviors

Overall, it is clear that peers, siblings and parents play some role in adolescents' lives and ultimately risk taking behaviors. As discussed above, some research has focused on one or two of the contexts (i.e., parents and siblings, siblings and peers, or any combination of these, but never all three; McHale, Bissell & Kim, 2009; Van Volkom, Machiz & Reich, 2011; Vigil & Geary, 2006). Few studies examined all three contexts simultaneously. What appears to be lacking is consideration of whether close relationships with peers, siblings and parents is correlated with emerging adults' engagement in risk taking behaviors. It is expected that correlations among them will allow for speculation about underlying dynamics in emerging adults' relationships with others that contribute to their risk taking behaviors.

One of the few studies looking at relationships of all three contexts (i.e., peers, siblings, and parents) by Buhrmester and Furman (2008) highlighted elements including criticism, dominance, exclusion, pressure, conflict, emotional support and approval of either parents, siblings and/or peers, as important factors to take into consideration during development. In their research, Buhrmester and Furman (2008) identify this list as a way to define relationships as close or discordant. These elements, therefore, define the dynamic of the relationship. An understanding of the dynamic of relationships between emerging adults and their peers, siblings and parents can further elucidate the influences they have on risky involvement.

Cognitive Appraisals: Outcome Expectancies of Risk Taking Behaviors

This study proposes to examine peer, sibling and parental relationships and risk taking behaviors. As mentioned earlier, Bandura (1986) asserted that one's cognition plays an important

role in observational learning. According to his theory, children and adults utilize their cognitive abilities to understand their environment and experiences, and that understanding then impacts their growth and development (Grusec, 1992). Outcome expectancies have been defined as an individual's beliefs about the potential positive and negative consequences of his/her behavior (Fromme, Katz, & D'Amico, 1997; Fromme, Katz & Rivet, 1997).

Outcome expectancies have proven to be reliable predictors of risk taking behaviors such as unsafe sexual behavior (Leigh, 1990), and alcohol and drug use (Brown, Goldman, Inn & Anderson, 1980; Mooney, Fromme, Kiylahan & Marlatt, 1987). Specifically, positive expectancies are associated with greater involvement in these activities, whereas negative expectancies are associated with less involvement in such practices (Fromme, Katz & D'Amico, 1997; Fromme, Stroot, & Kaplan, 1993).

An individual's outcome expectancies related to one's own risk taking behaviors are of significance. For example, expectancies of the effects of drugs and alcohol are related to the continued use of such substances. These substance use expectancies include relaxation, tension reduction, social disinhibition, and enhanced sexual experiences (Friedman et al., 2007; Schafer & Brown, 1991). There are also differences in expected outcomes by how frequently one uses substances. For example, research has explored how individuals who infrequently use marijuana, cocaine, and alcohol expect to face and feel greater consequences than do those who frequently use. The frequent users expect higher tolerance and more positive effects during and after use (Schafer & Brown, 1991; White et al., 2009).

Such expectancies with regard to sexual intercourse also are apparent within the literature. Sexual pleasure was reported to be the strongest predictor of frequent engagement in casual sex for both males and females (Davidson et al., 2008; Feigenbaum et al., 1995). Greater

enjoyment in casual sex leads to increased participation in the activity, and therefore multiple sex partners (Davidson et al., 2008; Feigenbaum et al., 1995).

Of interest in the present study is whether an emerging adult's outcome expectancies are related to their own risk taking behaviors. Furthermore, the present study explores the role of an individual's outcome expectancies in peer, sibling and parent risk taking behaviors, while taking into consideration the closeness of these relationships.

As can be seen, outcome expectancies can encourage or discourage involvement in risk taking behaviors. In addition, perceptions of peer, sibling and/or parental outcomes that are either negative or positive, also may play a role on an individual's expectancy, thereby impacting one's engagement in risk taking behaviors. For example, individuals who believe that risk taking behaviors are detrimental might observe or hear a positive outcome related to a peer, sibling or parent risk taking behavior and decide to engage in a similar behavior, expecting the same outcome. Conversely, individuals who believe that risk taking behaviors are not detrimental might observe or hear a negative outcome related to a peer, sibling or parent risk taking behavior and decide not to engage in the similar behavior. Further study regarding the mediating role of outcome expectancies is therefore needed to better understand risk taking behaviors in emerging adults.

Limitations of Past Studies/Purpose of the Current Study

Past research has touched on various individual and some combinations of components that are likely related to both adolescent and emerging adult risk taking behaviors. Peers, siblings, and parents all play important roles in an individual's life. Peers continue to be an influential context in emerging adulthood. However, there appears to be a need to understand the details of that role better, as well as to explore whether siblings and parents continue to be a primary source of advice and support for individuals as they are entering emerging adulthood.

The purposes of this study were to: (a) determine the association between emerging adults' perceptions of peers', siblings', and parents' risk-taking behaviors, and risk behavior after controlling for participants' sensation seeking tendencies, and (b) explore the moderating role of emerging adults' relationships with peers, siblings, and parents in the relation between these models' risk taking behaviors and emerging adults' risk taking behaviors. The specific research questions were:

1. What is the association between emerging adults' self-reported risk taking behaviors and the risk taking behaviors of their peers, siblings, and parents?
2. Do close relationships moderate the relations between perceived peer, sibling, and parent risk taking behaviors and the self-reported risk taking behaviors of emerging adults?
3. What is the correlation between individual outcome expectancies and each of the following:
 - a. individual risk taking behavior, and
 - b. the risk taking behaviors of peers, siblings and parents?
4. Do individual outcome expectancies of risk taking behavior mediate perceived peer, parent, sibling risk taking behavior and engagement of individual self-report of risk taking behaviors?

Hypotheses

It was expected, based on previous research, that emerging adults reporting observation of risk taking behaviors in peers, siblings and parents would have higher involvement in his/her own risk taking behaviors. It was expected that having a close relationship with your peer or sibling was related to higher risk taking behavior, while closer relationships with parents would be related to the same. Additionally, it was expected that positive outcome expectancies would

be associated with higher involvement in risk taking behaviors, while negative outcome expectancies would be associated with lower involvement in risk taking behaviors. It was also expected that positive outcome expectancies would be associated with closer peer, sibling, and parent relationships. Finally, it was predicted that individual outcome expectancies would mediate peer, sibling and parent risk taking behaviors and actual individual involvement in risk taking behaviors. In addition, it was expected that individual outcome expectancies would mediate peer, sibling, and parent risk taking behaviors and closeness of relationships with these individuals.

Significance of Study

As stated in the research, emerging adulthood is a unique stage, standing separately from adolescence, late adolescence and even adulthood. Several studies have looked at how the transition into this period and the period itself is classified as one with several inconsistencies. While some experiences lead to positive evolution, others prove to be detrimental due to greater risk potential. Additionally, these studies have looked at emerging adulthood typically with one or two other variables at a time, while this study seeks to look at emerging adulthood in relation to a combination of factors. These factors include the degree to which individuals involve themselves in risky behaviors, and the consideration of peer, sibling and parental relationships in deciding to engage in risky behaviors, and the cognitive appraisals of such risk taking behaviors. By increasing the understanding and further identifying the uniqueness of the emerging adulthood population, colleges can create more effective prevention programs for students undergoing the transition that occurs during the emerging adult time period. Finally, added understanding of peer, sibling and parental relationships, and one's cognitive appraisals or outcome expectancies, can be integrated into professional development for educators, counselors and psychologists. This understanding would support the evolution of what is provided within

self-help interventions and clinical support/group mechanisms in colleges, and other prevention efforts.

CHAPTER 2

LITERATURE REVIEW

Emerging Adulthood

Emerging Adulthood has been characterized as a time of maturational changes and exploration (Arnett, 1998). It commences at the end of one's high school career and ends potentially with commitments to long-term life choices (Arnett, 1998; 2005). This period, which carries specific characteristics that are separate from young adulthood and separate from adulthood, is simply the beginning of the development of one's cognitive, emotional and behavioral transitions into adulthood. The commencement of this developmental stage marks the ability to explore options in love/romance and significant intimate relationships, career choices, academic choices, and truly solidify the values, beliefs, and tenants of life one chooses to follow. Furthermore, societies that are more industrialized place a greater emphasis on individual growth and evolution, where trying out different options for adult life is encouraged (Arnett, 1992; 2004). Therefore, as Arnett (1994) explains, emerging adulthood exists in mainly industrialized countries. As the world continues to have a more globalized economy, emerging adulthood will continue to become more pervasive (Arnett, 2004).

Emerging Adulthood and Risk Taking Behaviors

Variations and experimentations of this emerging adult period of life have led to it being known as the "age of instability" (Arnett, pg. 14, 2007). This period of instability, as Arnett describes (2007), contributes to one's identity formation and can also include what is described as risk-taking behaviors and activities (Arnett, 2000; 2007). Risk taking behaviors have been defined as when individuals "consciously [choose] a behavior that is potentially dangerous to one's physical or mental health and may result in injury, disability, and even death" (Muuss &

Porton, p. 422, 1998). Consequently, the ability to experiment with a variety of roles and engage in risks helps create and solidify one's adult identity (Arnett, 2000a).

Additionally, emerging adults are likely to experience changes that occur in the areas of identity, residence and relationships (Arnett, 2000a). Identity exploration during emerging adulthood includes: exploration of sexual orientation, sexual beliefs during abstinence, premarital sex, monogamy, contraception and sexual behaviors (Lefkowitz & Gillen, 2006). More specifically, college students have been found to engage in behaviors that include: alcoholic consumption, smoking of cannabis and other illicit substances, sexual intercourse, and risky driving (Arnett, 2005; Zuckerman & Kuhlman, 2000).

Arnett (2005) looks at the distinguishing qualities of emerging adulthood and discusses them in regards to risky behaviors such as drug use, risky sexual behavior alcohol use and other risky behaviors during this period of life. Arnett (2005) proposes that involvement in risky behaviors is part of the experimentation that is involved during emerging adulthood, prior to settling into an adult life. He adds that identity formation, which is a key factor to this period, is a confusing and difficult time (Arnett, 2005). Arnett (2005) suggests that some emerging adults may use drugs as a way of relieving their identity confusions. Furthermore, sensation seeking has been found to be higher in emerging adulthood than in either adolescence or young adulthood (Arnett, 2000a; 2004; 2005). Arnett (2005) posited that the instability of emerging adulthood could promote drug use. Specifically, he suggested that events promoting instability, including transitions in residence, love relationships, school, and/or work, can result in anxiety, which could lead to substance use as a means of self-medication.

Arnett (2005) furthered that emerging adulthood is a highly self-focused period of life that also results in a loss of social control. Limited to little parental monitoring, frequent changes in romantic relationships, frequent changes in work and academic focus can lead to loss of social

control and a consequential likelihood of violating social norms and involving oneself in risky behaviors. Additionally, an individual's social network has been found to strengthen during emerging adulthood. Friendships may not act as a source of social control for emerging adults who use drugs or who are at risk for drug use. Arnett (2005) suggested that emerging adults who use drugs and/or who share similar characteristics that place them at risk for drug use will likely select each other as friends and these friendships will provide a social context for drug use. Arnett (2005) argued that substance use increases during emerging adulthood because those individuals who use view drug use as a behavior that is acceptable at their current age but one that they will cease once they reach adulthood.

Adams et al. (2004) state that individuals failing to form a concrete identity, or those remaining in a diffused identity state, are more likely to engage in risky behaviors such as the consumption of illicit substances. Furthermore, the use of illicit substances has been linked to having multiple sexual partners and risky sex behaviors as well as alcohol use and use of other illicit substances (Donovan & Jessor, 1985; McGee & Newcomb, 1992).

Since emerging adults are no longer adolescents, they feel that they are capable of deciding on their own in many areas of their life, including whether or not to use drugs. Additionally, given that emerging adults may not necessarily feel like adults, they may not feel committed to adult standards of behavior and an adult level of responsibility. Emerging adults perceive a freedom to do things during this period that may not be acceptable once they reach adulthood (White, McMorris, Catalano, Fleming et al., 2006).

Sensation Seeking and Risk Taking Behaviors

Zuckerman (1994) defined sensation seeking as “the seeking of varied, novel, complex, and *intense* sensations and experiences, and the willingness to take physical, social, *legal*, and *financial* risks for the sake of such experiences” (p. 27). Zuckerman (1971;1979) originally

proposed that sensation seeking increases from childhood to adolescence and would then decline after the adolescent period. On the other hand, Arnett (2005) expected sensation seeking to peak during emerging adulthood. While a decline is seen in later adulthood, peaks have been found to occur during an individual's late teens and twenties, or the emerging adult period of life (Russell et al., 2009; Zuckerman, 1994).

Sensation seeking is identified as a predictor of risk taking behaviors. Zuckerman's theory identified four key factors that further define sensation seeking: thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility (Zuckerman, 1971). It has been proposed that individuals who score high on these factors are more likely to engage in high-risk behaviors. Zuckerman (1979) proposed that sensation seeking comes from an individual's need to experience new stimuli, attain rushes of physical and emotional arousal and seek out novel experiences. Zuckerman states that sensation seeking has been found to predict a variety of risk taking behaviors over a variety of populations and contexts (Zuckerman, 2007).

Arnett (1994) reconceptualized sensation seeking and created a new sensation seeking scale, focusing on risk behaviors including reckless driving, binge drinking, substance use, sex with strangers, and number of sexual partners (Arnett, 1994; Bradley & Wildman, 2002). While Zuckerman (1979) originally proposed that sensation seeking would increase from childhood to adolescence and decline thereafter, Arnett (2005) expected sensation seeking, and consequently involvement in risky behaviors, to peak during emerging adulthood. Studies have shown that sensation seeking indeed declines into adulthood and suggests that scores for such behaviors are highest in the late teens or twenties (Joinson & Nettle, 2005; Zuckerman, 1994).

In a study conducted by Ravert, Schwartz, Zamboanga, Yeong-Kim, Weisskirch, and Bersamin (2009) sensation seeking and invulnerability were seen as predictors of compromising, or risky behaviors. Among 1,690 emerging adult students in US colleges and universities, both

sensation seeking and danger invulnerability played a role in risk-taking behaviors. More specifically, sensation seeking was found to be a general risk factor predisposing emerging adults to the risks they are exposed to. In addition, age was also a significant predictor of risky behaviors, with the older portion of the emerging adult population showing increased likelihood of participation in risky behaviors (Ravert et al., 2009).

Egocentrism has also been a focus in explaining risk-taking. The egocentrism perspective explains the idea that adolescents view themselves as unique or special, to the extent that they can avoid/will not experience negative consequences (Elkind, 1967; 1985; Lapsley, Milstead, Quintana, Flannery, & Buss, 1986). Egocentrism has been considered a construct for understanding adolescent cognition (Lapsley et al., 1986). Elkind (1967) explains that egocentrism characterizes logical development from the sensorimotor to formal operations stages of development. Each stage along this sequence of development is to help an individual shed egocentrism from the previous stage, however, each stage also has its own form of egocentrism. Consequently, generally speaking, the formal operations stage is to free the individual from egocentrism (Elkind, 1967).

The concept of the imaginary audience and the personal fable, are believed to be a result of a failed formal operations stage (Lapsley et al. 1986). Imaginary audience has been described as the process where an individual anticipates the reaction of others to himself or herself in real or imagined situations (Lapsley et al. 1986). Here, the belief is that the individual is the focus of others'. The personal fable describes an individual's belief in their own uniqueness and indestructibility (Lapsley et al., 1986). Both of these concepts of egocentrism have been used to explain adolescent behaviors including: heightened self-consciousness, risk taking, idealism, and "adolescent boorishness, loudness and faddish dress" (Elkind, 1967, p. 1030; Lapsley et al., 1986).

Yet another view on adolescent risk taking behavior deals with the problem-behavior perspective. Proposed by Jessor and Jessor (1977), the problem behavior perspective discusses the factors leading individuals to engage in certain deviant behaviors (Irwin & Millstein, 1986). Specifically, a particular set of attitudes, values, and perceptions define an individual more prone to engaging in risky behaviors. For instance, Lavery, Siegel Cousins and Rubovits (1993) point out that unconventionality in values signifies adolescents who are at risk for problem behaviors. Lavery et al. (1993) add that these individuals place less importance on academic accomplishments, greater value on independence, value independence over achievement, and have greater tolerance of deviance. Generally speaking, increased involvement in problem behaviors such as drug use and delinquency are noted amongst such individuals (Donovan, Jessor, & Costa, 1991).

Yet another perspective on risk-taking behavior is the causal model of risk-taking behavior proposed by Irwin and Millstein (1986). This model discusses how biological maturation can influence psychosocial changes and thereby influence engagement in risky behavior. According to the causal model, biological maturation can have a direct influence on an individual's: cognitive scope, perceptions of their own self, perceptions of the social environment, and their personal values. Irwin and Millstein (1986) add that the timing of this maturation can have an impact on one's involvement in risk taking behaviors with the early maturing and the late maturing adolescents more likely to engage in high-risk behaviors.

As discussed earlier, Zuckerman (1994) defined sensation seekers as individuals engaging in risk-oriented behaviors such as high risk/thrill sports, reckless driving, illegal activities, dangerous careers and the like. Numerous studies show that sensation seekers are more likely to take risks while driving and consequently are individuals who receive several road violations when compared to the average, non-sensation seeking individual (Jonah, 1997).

Drinking and driving and road rage oriented behaviors may involve the use of alcohol. In addition, these behaviors may indicate an increased propensity towards using other illicit substances (Everett et al., 1999; Bingham et al., 2007). Such individuals are more aggressive, more hostile and typically use cigarettes (Bingham et al., 2007). Both males and females who were less involved in socializing or reported a lack of social support showed lower propensities towards such risky behaviors (Bingham et al., 2007).

Zuckerman (1994) stated that some sensation seekers drink alcohol for its arousing properties. Such individuals will consume alcohol until they reach optimal arousal. Accordingly, findings linking sensation seeking with frequency and quantity of consumption are apparent (Fischer & Smith, 2008; Grau & Ortet, 1999; McDaniel & Zuckerman, 2003). Additionally, sensation seeking, along with sexual disinhibition, has been positively correlated with positive alcohol expectancies (Anderson et al., 2003). Violent and aggressive behaviors are also of great concern when discussing risky behaviors. Studies show that males are more likely to engage in threatening and more aggressive and physically involved behaviors (Williams et al., 2001). Links to such aggressiveness have been made with relation to violent crimes, assault and rape, both on and off campus locations (Cass, 2007). As a result, female victimization is a growing concern on college campuses. Only recently has the victimization of college women has been considered of important note (Cass, 2007). Several long term consequences are associated with such aggressive and violent behaviors and crimes, including depression, guilt, social isolation, loss of self-esteem, distrust of others, substance abuse problems and the like (Cass, 2007).

Social Cognitive Theory

Social cognitive theory (Bandura, 1977; 1999) has offered theoretical guidance for examining human behavior and seems well suited to the examination of risky behaviors among emerging adults (Mullis, Shriner, Byno & Mullis, 2009). The theory posits that people learn how

to behave in social situations by paying attention to the environment around them. Individuals react or respond to the environment and its stimuli (Mullis, Shriner, Byno & Mullis, 2009). Bandura (1999) proposed that behavior change may be influenced by environmental factors, personal factors, and attributes of behavior itself. This interaction is referred to as reciprocal determinism that states that each factor may affect or be affected by others (Bandura, 1999). Moreover, Bandura (1999) noted that individuals may develop anticipatory responses to signaling stimuli based on what they are told about experiences without directly encountering it.

Bandura (1977) also discusses the concept of social modeling and how it relates to human motivation, thought and action (Luszczynska & Schwarzer, 2005). Bandura's (1986) theory posited that social modeling serves as a stronger and less tedious process of learning when compared to learning through trial and error. Social modeling includes the concept of mimicry and imitation, as well as discusses how individuals generate new behavior patterns by going beyond what they have seen or heard and translating it into actions.

Bandura's social learning theory (1977) elucidates that human learning and behavior can occur through the observation of models. This theory emphasizes the vital aspect of observing and modeling behaviors that can lead to the consequential modeling of others' attitudes and emotional reactions. By virtue of watching other individuals, one is able to conceptualize how a behavior is displayed. This behavior is then coded and saved as a guide for future instances (Bandura, 1977). Therefore, a peer who displays academic success, gaining a sense of confidence and self-efficacy can be a model to another individual, encouraging that individual to understand that he/she can also be academically successful (Bandura, 1977; 2001). Additionally, social modeling affects motivation by instilling behavioral outcome expectations (Luszczynska & Schwarzer, 2005).

Modeling has been shown to influence people's alcohol expectancies (Abrams & Niaura,

1987; D'Amico & Fromme, 1997) and drinking practices (Collins, Parks, & Marlatt, 1985). Studies show that prior to their own substance use or sexual experiences, individuals may conform to outcome expectancies based on the expectancies, behavior, and consequences experienced by others that are significant in their lives (D'Amico & Fromme, 1997).

More specifically, expectancy theory sheds light on how emerging adults may become involved in sexual behaviors by seeing a sexual image or imagining a sexual encounter, even if they have never actually experienced one (Mullis, Shriner, Byno & Mullis, 2009). Expectancy is an important concept that can be reinforced indirectly or vicariously (Mullis, Shriner, Byno & Mullis, 2009). Bandura (1999) states that simply observing others being reinforced for particular behaviors can encourage the observer to engage in the same or similar behavior.

The concept of outcome expectancies is another key aspect of social cognitive theory. Outcome expectancies can be briefly defined as the beliefs about the consequences of one's action (Luszczynska & Schwarzer, 2005). More specifically, physical, social and self-evaluative outcome expectancies play a role in this theory. For example, one's behavior can lead to bodily changes, responses from others, or feelings about oneself (Bandura, 1986).

Sexual Behaviors

It is believed that the emerging adult's involvement in romantic and intimate relationships creates a platform for sexual behaviors and the understanding of these behaviors at an emotional level (Lefkowitz & Gillen, 2006). The exploration of intimate relationships outside of the family also can lead to sexual exploration. Lefkowitz (2005) described the importance and significance of college attendance during the emerging adulthood period as it can lead to one's ability to further explore relationships both with parents and potential significant others. In this study, Lefkowitz (2005) found changes in sexual behavior and intimacy when transitioning from

high school to college. Specifically, changes in sexual attitude were more prominent than changes in sexual behavior.

To date, there seems to be a lack of clear development in theory related to sexual behavior in emerging adulthood (Lefkowitz & Gillen, 2006). There are several theories that discuss the possible methods of developing sexuality and sexual understanding, including biological theories and problem behavior theories, to name a few. The biological theory looks at pubertal development and hormonal activity as a cause for sexual risk taking (Rodgers & Rowe, 1993; Udry et al., 1985). This theory is consequently more applicable to the adolescent due to the timing of pubertal phase of development. As mentioned earlier, the problem behavior theory poses that adolescent sexual behavior is connected and related to other problem behaviors (Jessor & Jessor, 1975; Newcomb et al., 1986). Despite these theories, it is important to note that sexual behaviors between two consenting emerging adults can be appropriate and not have negative connections (Lefkowitz & Gillen, 2006).

Roche (1986) looked at viewpoints of engagement in sexual behaviors. After administering a 63 item dating and mate selection questionnaire to 196 female and 84 male college students, Roche (1986) found that individuals did not always act in accordance with their stated beliefs and that men who reported casual sexual encounters were inappropriate in situations that did not reflect emotional involvement.

Additionally, Roche (1986) found that when asked to consider and discuss past experiences, women revealed that they had engaged in sexual activities in situations that they had previously reported as inappropriate and would rate others' behaviors as more inappropriate. Similarly, Agostinelli and Seal (1998) found that when female college students were asked to rate their own attitudes about casual sex in comparison to their friends and other college students' behaviors and attitudes, women rated themselves as less sexually permissive

when compared to their friends, who they rated as more sexually permissive, and other typical college students as the most sexually permissive.

In a study conducted by Hill (2002) regarding sexual perception, 200 female and 122 male college students were given eight hypothetical sexual situations and were asked to report the likelihood of engaging in sexual intercourse in each situation. When emotional investment, intimacy and potential relationship involvement was a possibility, women rated sexual encounters as appropriate (Hill, 2002). On the other hand, men displayed less consideration of these more emotional and commitment bound factors. Unlike women, men reported an increased likelihood of engaging in sexual situations in more casual, newer, and less-established relationships (Hill, 2002).

In another study looking at gender differences in engagement in casual or risky sex behaviors, Surbey et al. (2000) surveyed 200 college students asking them to report willingness to engage in casual sexual encounters. The authors found that men reported greater willingness to engage in sexual intercourse regardless of the conditions, while women reported willingness to engage in sexual intercourse only when there was a possibility of forming a long-term relationship (Surbey et al., 2000).

Sexual activity and alcohol use have also been risky behaviors associated with one another. For example, individuals may regret engaging in sexual intercourse with a new partner, which may lead to alcohol use to cope with the regret and negative emotions related to the subject (Dogan, Stockdale, Widaman & Conger, 2010). Sexual activity with new partners can also lead an individual to building and growing one's social network, some of which may promote alcohol use. In support of this concept, previous research indicates that when an individual associates with older peers, earlier and heavier alcohol use is apparent in addition to exposure to more experienced sexual partners (Stattin, Gustafson, & Magnusson, 1989).

Consequently, alcohol use and sexual behavior are consistently reported to occur from adolescence through the adult years of life (Capaldi, Stoolmiller, Clark, & Owen, Cooper, 2002; 2002; Duncan, Strycker, & Duncan, 1999; Tubman, Windle, & Windle, 1996; Zuckerman & Kuhlman, 2000).

Alcohol Use

Alcohol use and alcohol use disorders are common during emerging adulthood (Arnett, 2000; Blanco et al., 2008; Rueter et al., 2007). However, studies show that the prevalence of such alcohol use and disorders are more prevalent during emerging adulthood when compared with other age groups. In the 2007 National Survey of Drug Use and Health, approximately 46% of emerging adults ages 21–25 reported such heavy intake of alcohol during the past month, and nearly 15% of those ages 18–25 reported heavy drinking on 5 or more days out of the past 30 days (Substance Abuse and Mental Health Services Administration [SAMHSA], 2008). Other findings show that approximately 70% of adolescents are reported to have consumed alcohol by their senior year in high school (Johnston et al., 2007).

Alcohol's pharmacological effects on the brain can alter cognition and behavior, which can result in sexual disinhibition (Dogan, Stockdale, Widaman & Conger, 2010). Consistent with this view, a study by Poulos, Parker, and Lê (1998) showed that consumption of alcohol reduces inhibitions, increases impulsivity and risky social behavior, and impairs cognitive functioning.

The alcohol myopia theory (Josephs & Steele, 1990; Steele & Josephs, 1990) states that behaviors such as sex with a new partner arise because alcohol prevents an individual's ability to control oneself and process information. While under the influence of alcohol, an individual's attention is focused only on the most immediate internal and external cues rather than focusing on long-term consequences or harm that may be involved with such risky behavior. Consequently, alcohol can be used to increase one's efficacy when engaging in sexual

opportunities (Josephs & Steele, 1990; Steele & Josephs, 1990). In support of the alcohol myopia theory, an experimental study by Fromme, D'Amico, and Katz (1999) found that individuals who were administered alcohol reported lower perceived risk of sex with a new partner when compared with individuals who received a placebo or water.

Yet another explanation for the effect of alcohol use on sexual behavior is the expectancy theory (Lang, 1985). According to this perspective, expectations or pre-existing beliefs that individuals have about the effects of alcohol use on behavior and specific social meanings are what contributes the use of alcohol along with its potential influence on sexual behavior. Consistent with this view, George, Stoner, Norris, Lopez, and Lehman (2000) found that when given a placebo, adult men who believed they consumed alcohol reported more sexual arousal, rated women who used alcohol as more disinhibited, and showed preferences towards sexual material.

Additionally, alcohol use has been found to predict the onset and occurrence of sexual intercourse in adolescents, as well as having multiple sexual partners (Blinn-Pike, Berger, Hewett, & Oleson, 2004; Capaldi, Crosby, & Stoolmiller, 1996; Dogan et al., 2010; Graves, 1995; Guo et al., 2005; Whitbeck, Yoder, Hoyt, & Conger, 1999). Additionally, studies also show that involvement in drinking and the formation of regular or frequent drinking habits displayed at 16 years of age positively predicted the number of sex partners during the periods from ages 16 to 21 years and from ages 21 to 25 years, or the emerging adult period of life (Dogan et al., 2010). Furthermore, frequent sexual activity has been found to predict heavy drinking from ages 16 to 25 years for female adolescents and young adults (Windle, Mun, & Windle, 2005).

Heavy drinking among undergraduates is a prevalent issue (Leeman, Toll, Taylor & Volpicelli, 2009). Both males and females are reported to consume levels above the criteria for

binge drinking (Neighbors et al., 2005). Recent research also shows that such drinking is engaged specifically for sensation seeking purposes (Baer, 2002; Ham & Hope, 2003). Such episodes of drinking have been found to lead to academic failure, unsafe sexual practices and legal complications (Jennison, 2004; Perkins, 2002; Wechsler & Nelson, 2001). While many come out of the drinking phase once undergraduate years have been completed, others still continue to experience clinically significant difficulties (Jackson, Sher, Gotham, & Wood, 2001).

Finding methods to increase the utilization of treatment among emerging adults is a research priority. Such knowledge could assist adults, practitioners, and other guidance involved individuals to refine clinical strategies, because treatment entry remains low even among youth presenting for assessment (Smith et al., 2009).

Drug Use

The Substance Abuse and Mental Health Service Administration [SAMHSA] (2007) stated that young adults ages 18-25 are more likely to engage in the use of illegal drugs when compared to adolescents ages 12 to 17 and adults over the age of 25. Wu, Schlenger, and Galvin (2006) found in a community sample of 16 to 23 year olds that individuals reported lifetime use rates of 13.6% for ecstasy, 13.2% for LSD, 4.9% for methamphetamine, 0.04% for ketamine, and 0.05% for GHB. Wu and colleagues (2006) also discovered that females are more likely than males to report using at least one club drug in the past year. Additionally, students were less likely than individuals not in school to report the use of drugs. In addition to this finding, unemployed young adults were more likely to report use of drugs when compared to those who were employed.

Studies show that drug use typically increases and peaks during the emerging adult period of life and subsequently decreases towards the latter portions of emerging adulthood, approaching adulthood (Bachman, Johnston, O'Malley, & Schulenberg, 1996). During this

period that drug use can become abuse (Martin & White, 2005). Martin and White (2005) elucidate that there are gaps in knowledge regarding the initiation of drug use among emerging adults. The authors assert that little is known regarding the patterns of drug use during emerging adulthood. Furthermore, the lack of knowledge regarding drug initiation and drug use patterns among this group has led to questions regarding how to prevent drug use and associated risks successfully.

A study by Shedler and Block (1990) shows that individuals engaging in drug use are characterized as impulsive, unable or unwilling to conform, hostile and unable to maintain or attain intimate social or romantic relationships. On the other hand, individuals who abstained from such behaviors were generally lacking social skills, unwilling to experiment and more anxious (Shedler & Block, 1990).

Furthermore, research also shows that exposure to smoking illegal substances as well as nicotine products by a sibling has also been related to an increased risk for smoking and smoking initiation (Avenevoli & Merikangas, 2003; Conrad et al., 1992; Mayhew et al., 2000). Friends also play an important role in the involvement of smoking. Smoking in peer groups has been found to influence individuals strongly to smoke (Conrad et al., 1992; Kobus, 2003; Mayhew et al., 2000).

Kliewer (2010) proposed a socialization model of adolescent substance use in order to explain the familial influence factors on adolescent coping and substance use. Kliewer's (2010) model detailed the model in which parental modeling, parental coaching, and family context work together to shape youth. These contexts and processes are closely associated with the development of drug use behaviors. Kliewer (2010) added that agents such as family, peers, and neighbors can influence drug use. Furthermore, the model identifies aspects such as an individual's situation/circumstance, biology and temperament, and culture, all of which can play

a role in shaping drug use behaviors (Kliewer, 2010).

Regarding other relationships and drug use, an early study by Bachman, Wadsworth, O'Malley, Johnston, Schulenberg (1997) found that entering into a relationship often led to increases in substance use. However, Fleming, White, Oesterle, Haggerty and Catalano (2010) found that the dissolution of romantic relationships was related to increases in substance use. Specifically, individuals between the ages of 18 to 20 years who transitioned from a dating relationship to being single increased involvement in heavy drinking, marijuana use, and cigarette smoking when compared to individuals who remained in a stable relationship. Therefore, despite the finding that individuals in a cohabiting relationship were linked with increases in substance abuse (Bachman et al., 1997), Fleming et al., (2010) found that leaving, rather than entering, cohabiting relationships was associated with substance-use increases.

In a longitudinal study of alcohol, tobacco and drug use during the transition from adolescence to emerging adulthood, Rohrbach, Sussman, Dent and Sun (2005) found that students unable to remain in mainstream high schools due to poor academic performance, and disruptive behaviors, were more likely to be involved in risky behaviors such as substance abuse, unprotected sexual intercourse, amongst others. The authors found a high prevalence of cigarette, alcohol and other drug use during adolescence. This same subject pool, when assessed during emerging adulthood, displayed the same high prevalence of substance abuse as well (Rohrbach et al., 2005). Comparatively speaking, while students attending a mainstream high school showed less involvement in drug use, involvement was still noted and still increased upon the transition into emerging adulthood (Rohrbach et al., 2005). In support of this data, earlier studies show that during the transition from late adolescence to emerging adulthood, use of alcohol increases, while other drugs have been found to remain steady or increase (Johnston et al., 2003; Newcomb & Bentler, 1988).

Peers

Spanier (1976) asserts that that as adolescents age, peers have greater influence on adolescents due to increased exposure to peer groups. Other significant factors include comparisons and discussions regarding intimate relationships, sexual activity, and other peer associations, all of which increase during adolescence and into emerging adulthood. These factors then increase interest and propensities to entertain such activities (Spanier, 1976; Buhrmester, 1992). Additionally, perceptions of peers commencing sexual activity or involvement with risk taking behaviors have been shown to increase the frequency of risk taking encounters (Treboux & Busch-Rossnagel, 1990; Karofsky, Zeng, & Kosork, 2001).

Furthermore, studies show that peers become the main sources of information for adolescents and emerging adults concerning sexuality, drugs and alcohol (Brock & Jennings, 1993; Rose, 2003). For example, in a study conducted by Bachanas et al. (2002), peers were found to influence one another's participation in sexual activities. If peers were having sex, members of the peer group would be more motivated and inclined to participate in similar activities.

Peers have the ability to understand and empathize with each other when trying to cope with the variety of challenges and stressors they face. Often, peers face the same challenges and experiences making it easier for them to follow through with such understanding. It is important to understand, however, that while they may serve as a good support system for one another, they can just as easily serve as an inappropriate role model, engaging and encouraging in risky behaviors. Still, individuals tend to seek out and be sought out by peers who have similar goals, values and behaviors (Kandel, Davies, & Baydar, 1990).

While several sources exert an important and foundational role in socialization and consequently, sexual understanding, some early studies have found that parents' impact on an

individual's life will decrease with age and time (Steinberg & Cauffman, 1996). Other studies have shown that individuals may be more likely to discuss intimate topics with peers more than with their parents, especially when discussing sexual topics (Moore & Rosenthal, 1991; Rozema, 1986).

Therefore, studies are now showing that there is more to consider when discussing how an individual is educated about life, or specifically, regarding sexual issues. Focus has moved from parents as sexual educators to the perspective that peers play an important role. Information, messages, and means of comparisons can all come from peers. Individuals may then compare their own behaviors to the behaviors of their peers when deciding what is considered acceptable and appropriate or deviant and unacceptable (Dilorio, Kelley, & Hockenberry-Eaton, 1999; Fromme & D'Amico, 1997). Some studies suggest that peer relationships may play a greater role than parents in the transmission of specific sexual values, such as how to choose dating and sexual partners and how to act in dating and sexual relationships (Harper, Gannon, Watson, Catania, & Dolcini, 2004).

To elucidate this concept further, one early study in the field suggested that several mechanisms can operate simultaneously in the determining peers' role in sexual development (Billy & Udry, 1985). Billy and Udry (1985) propose that three mechanisms can influence an individual and include: influence, acquisition and de-selection. Here, influence is considered a mechanism that can encourage individuals to match the behaviors of their peers. Second, the concept of acquisition, discusses how the desire of an individual to reduce conflict and encourage social approval, can be done by surrounding oneself with other individuals who share similar beliefs and behave in similar ways (Billy & Udry, 1985). This idea is applicable to understanding why individuals maintain friendships with those who share the same or similar levels of sexual experience. Finally, the concept of de-selection explains how individuals have

the tendency to reject individuals who have different levels of sexual experience or are dissimilar in their beliefs (Billy & Udry, 1985). This concept can be reflective of an individual's desire to remove themselves from a peer system that does not share similar beliefs, attitudes or experiences about their behaviors.

The majority of research exploring potential peer contributions to sexual socialization has focused heavily on Billy and Udry's (1985) concept of influence. This study addressed three types of peer influences: pressure received from peers, peers as conduits of sexual beliefs, and peers as behavioral norm (Billy & Udry, 1985). Of great emphasis has been how individuals connect their own sexual behaviors to that of their peers' behaviors.

In addition to investigating perceived peer behaviors, another approach to assessing peer sexual influence is to examine the effect of actual peer communications. Although the work in this particular area is somewhat limited, some attempts have been made to address this issue. In a sample of primarily Caucasian males and females in 9th through 12th grade, Holtzman and Rubnison (1995) found that increased communication with parents regarding STDs, HIV and AIDS led to decreased involvement in risky behaviors, while communication with peers had the opposite outcome. Gender differences were also found; boys relied more on peer communication while girls relied more on parental communication.

In another study by Lefkowitz, Boone and Shearer (2004), out of 205 emerging adult men and women, individuals who reported being sexually inexperienced reflected that they had more conversation regarding abstinence with their peers, while individuals who reflected initiating sexual intercourse were more likely to discuss sexual behaviors with their peers as well. This finding furthers the idea that peer communication and peer relationships are fundamental concepts to consider when looking at involvement in risk taking behaviors.

In a study by Wood, Read, Palfai, and Stevenson (2001) drinking, modeling, descriptive

social norms, and alcohol expectancies on college students' drinking behaviors were evaluated. Wood et al. (2001) found that modeling and peer norms significantly predicted alcohol use. Additionally, peers' overt offers of alcohol marginally predicted use.

Quigley and Collins (1999) found that when a model consumed large amounts of alcohol, their peers consumed more alcohol than those individuals in a control condition who were with models consuming light amounts of alcohol or those who had no model.

In a national study of college students from more than 100 institutions, Perkins, Meilman, Leichliter, Cashin, and Presley (1999) found that most students believed that their peers drank more alcohol than the actual average of consumption. It was noted that many students pay attention to the norm of heavy drinking at their school and drink to meet the levels of this norm (Perkins et al., 1999). Additionally, students were reported to believe that their peers hold personal views that support heavy drinking behaviors while simultaneously they are against binge drinking (Schroeder & Prentice, 1998).

Siblings

There are many theories that shed light on sibling relationships. Attachment theory posits that while siblings contact with one another may decrease during adulthood due to events such as marriage and raising a family, siblings are still able to maintain bonds with one another throughout their lifetime (Bowlby, 1980; Cicirelli, 2009; Van Volkom, Machiz & Reich, 2011). Even when a sibling dies, studies suggest that strong bonds still remain (Bowlby, 1980; Cicirelli, 2009). In addition, the buffering hypothesis suggests that individuals often seek closer bonds with their siblings to serve as a buffer when confronting stressors such as familial distress and parental divorce (Bush & Ehrenberg, 2003; Milevsky, 2004; Riggio, 2001).

Adult siblings can serve as invaluable resources for support, love, and friendship (Connidis, 1992; Martin et al., 2005; Riggio, 2000, 2001; Shortt & Gottman, 1997; White &

Riedmann, 1992). In a study conducted by Voorpostel and Blieszner (2008), 66% of adult siblings surveyed from a population within the United States stated that their sibling was a close friend, 50% of adults said that at least once a month they had contact with their sibling, and 33% of adults stated they could depend on their sibling in case of an emergency. It has been noted that when relationships with parents are difficult or distressed, siblings will overcompensate by having supportive relationships with one another. Support and warmth in sibling relationships varies between males and females (Milevsky et al., 2005). Women have been found to give emotional support, especially to sisters (Spitze & Trent, 2006; Voorpostel & Blieszner, 2008).

Cicirelli (1995) explored the importance of close relationships between adult siblings and how they enhance one's life by making it more enjoyable. Cicirelli's (1995) findings show that these feelings often continue into later and older adulthood. Furthermore, as siblings age, they begin to see each other more as equals (Connidis, 2007; Myers & Goodboy, 2010; Spitze & Trent, 2006; Voorpostel & Van Der Lippe, 2007) compared to their younger years when older siblings may have had more power or authority over the younger sibling. Sibling relations, on average, grow stronger from the latter part of adolescence through older adulthood (Cicirelli, 1995).

In older adulthood, individuals have been found to rely on their siblings during times of need or stress (Khodyakov & Carr, 2009). Siblings become closer in later years because they have endured several of the same milestones and life changing events such as the death of parents and coping with other (Khodyakov & Carr, 2009). Therefore, living through traumatic life experiences together makes the sibling bonds stronger. This is perhaps why the death of a sibling, at any age, can be particularly traumatic and truly feel like a loss (Cicirelli, 2009; Packman, Horsley, Davies, & Kramer, 2006).

Older siblings have been recognized to be unique sources of vicarious learning for

adolescent siblings (D'amico & Fromme, 1997). Studies show that older siblings' influence on their younger siblings was found to be independent of peer norms (Needle, McCubbin, Wilson, Reineck, Lazar, & Mederer, 1986) and parental effects (Gfroerer, 1987; Rittenhouse & Miller, 1984), and can possibly be even stronger than parental influence (Needle et al., 1986).

Sibling research has also focused on the initiation and maintenance of substance use. Brook, Whiteman, Gordon, and Brook (1990) found that younger brothers used drugs if their older brothers used drugs, even when the younger brothers' peers or parents did not. Rittenhouse and Miller (1984) found that 56% of younger siblings used alcohol when their older siblings drank moderately or heavily, while 28% of adolescents surveyed used alcohol when their older siblings were abstainers or light drinkers. Supporting this idea, data for sibling pairs from two national surveys on drug abuse in siblings between the ages of 14 and 24 years showed that 30% of younger siblings used marijuana when their older siblings used marijuana, while only 13% of younger siblings used marijuana when their older siblings did not (Gfroerer, 1987).

When older siblings engage in hazardous behaviors such as driving after drinking and unsafe sexual practices, and have apparently experienced few negative consequences, the inexperienced younger sibling may potentially acquire the belief that these behaviors are safe and desirable (D'Amico & Fromme, 1997). For example, adolescent girls were found to have more permissive attitudes regarding premarital sex if their older sisters were sexually active (East, Felice, & Morgan, 1993).

In another study by McHale, Bissel and Kim (2009), the link between sibling relationships and involvement in risky behaviors and genetic similarity and relationship quality along with involvement in risky behavior were evaluated. The study surveyed 20,747 students aged 11 to 20 years. Siblings' involvement in sexual risk was correlated. Additionally, the findings suggested that similarity in family warmth or closeness and genetic similarity showed

similarities in involvement in risky behaviors and risky attitudes (McHale, Bissel & Kim, 2009).

Parents

Researchers have identified three contrasting pairs of elements of parenting that include: affection vs. rejection, permissiveness vs. restrictiveness, and independence vs. control (Skinner, Johnson, & Snyder, 2005). These have been identified as the core dimensions that define parenting style. Consequently, these six contrasting elements help shape and define three parenting styles. The establishment of a parenting style is important as it can impact the relations throughout development (Skinner, Johnson, & Snyder, 2005). First, permissive parenting is where the parents are affectionate towards their children and very accepting of their children's actions (Baumrind, 1971, 1996). Second, authoritarian parenting has been identified as parents who are emotionally and physically distant from their children and expect obedience from their children (Baumrind, 1971, 1996). And third, authoritative parenting, a parenting style has been identified as a combination of permissive and authoritarian parenting. Authoritative parents are nurturing and responsive to their children's needs but also are able to set limits and impose structure (Baumrind, 1971, 1996). Parents who have an authoritative parenting style have been identified as providing guidance for their children in a nurturing and supportive way. These parents are neither controlling nor permissive and instead seek to strike a balance between permissive and authoritarian parenting styles (Baumrind, 1971, 1996). Authoritative parents are also known to communicate effectively with their children while providing and enforcing age-appropriate boundaries to assist them in progressing developmentally. They offer explanations for their actions and listen to their children's responses. The open and two-way communication helps to support and maintain the family unit and to encourage subsequent healthy development of the child growing into young adulthood (Baumrind, 1971, 1996).

These different parenting styles each have been shown to have a different effect on an

individual's development (McKinney & Renk, 2008). One study found that students who reported receiving authoritative parenting had less conflict with their parents and higher ability to adjust in life. Participants included 475 young adults: 151 males and 324 females, ages 18-22 (mean age of 19.22), who were students at a large Southeastern college. The results indicated that parenting style, family setting, parental expectations, and conflict have a statistically significant impact on the adjustment of young adults as they transition into adulthood (McKinney & Renk, 2008). The study also found that students who reported receiving authoritative parenting had less conflict with their parents and higher levels of adjustment.

Kliewer (2010) also considered three distinct pathways through which parents and families affect adolescent behavior: parental coaching, parental modeling, and family context. Parental coaching is defined as the messages parents relay to their children. It is influenced by demographics (e.g., parent gender, SES, age), qualities of the parent (e.g., personality, adjustment, resources, values), qualities of the child (e.g., age, gender, temperament/personality, adjustment, history of coping), and situational demands (e.g., controllability, novelty). Parental modeling, or parents' own behavior, is shaped by demographics, personality, adjustment, values, and resources. Kliewer (2010) asserted that the messages parents convey to their children are the result of multiple factors that are expressed via parental modeling and parental coaching. This model posits that parental coaching and parental modeling occur within the family context. The family context is characterized by features that either support or inhibit behavior. It does so through the establishment of rules and by setting the emotional tone of family interactions (Kliewer, 2010). Taken together, parental coaching, modeling, and family context have been linked to the development of drug use in young adults.

Kliewer (2010) proposed a socialization model of adolescent substance use in order to explain the familial influence factors on adolescent coping and substance use. The model details

how parental modeling, parental coaching, and family context work together to shape youth. These contexts and processes are closely associated with the development of drug use behaviors. Kliewer (2010) added that agents such as family, peers, and neighbors may influence drug use. Furthermore, the model identifies aspects such as an individual's situation/circumstance, biology and temperament, and culture, all of which can play a role in shaping drug use behaviors (Kliewer, 2010).

Parenting style has been shown to have an impact on identity development (Luyckx, Soenens, Vansteenkiste, Goossens, & Berzonsky, 2007; Marcia, 1966). In a study conducted by Luyckx et al., (2007), young adults who reported having authoritarian parents had greater difficulty developing an identity. This study examined how psychologically controlling parents impact their emerging adult children and their abilities to form and solidify an identity. This longitudinal study consisted of five data collection points with 65% of the original students participating in the follow ups. The study was conducted using 565 White college freshman from a large Belgium university where 482 women and 83 men were surveyed. From this pool of subjects, 84% came from two-parent households, while most were still living at home. The results of this study showed that students with more controlling parents had difficulty committing to an identity (Luyckx et al., 2007). Furthermore, psychologically controlling parents were identified as having a negative impact on the development of both the breadth and depth of identity in the population surveyed.

In another study by Levitt, Silver, and Santos, (2007) the authors surveyed high school sophomores and seniors enrolled at two urban Southeast Suburban high schools. They indicated that satisfaction with parental relations improved the transition from adolescence into emerging adulthood. This study examined the adolescent-parent relationships of non-college-bound

adolescents, and the impact of their relations on their adjustment to making the transition into adulthood.

Levitt et al. (2007) examined the high school students' satisfaction with parental relationships and their adjustment the transition to adulthood. A 2-year follow-up survey was conducted to determine if positive parental relations correlated to a better adjustment to transitioning into the emerging adult period. The results of the study indicated that satisfaction with parental relations improved transitional adjustment.

Communication amongst parents and their offspring has consistently been identified as an important factor within the formation of the relationship (Patterson, Reid, & Dishion, 1992). This review further elucidates that communication can be both a preventative and encouraging factor for offspring (Patterson, Reid, & Dishion, 1992; Partnership for a Drug- Free America, 1999). Consequently, substance use prevention programs have stressed the need to increase communication between parents and their children.

Furthermore, Turrisi, Wiersma, and Hughes (2000) examined the impact of mother-teen communication on the drinking beliefs of college freshman. Turrisi et al. (2000) found that mother-teen communication about drinking was related to drinking beliefs that prevented the experience of negative drinking consequences. Turrisi et al. (2000) concluded that parents may influence the drinking beliefs of their offspring through communication with them. Further, these beliefs may have a role in influencing the likelihood that the college students experience negative binge-drinking consequences.

In another study by Lefkowitz (2005), increases in closeness between parents and children were found during the progression from adolescents to emerging adulthood (Lefkowitz, 2005). This positive change in relations was reported to reflect a more close and mutual parent and child relationship. In addition, the social influence parents and peers have on emerging

adults has been found to affect sexual behaviors from adolescence through emerging adulthood (Lefkowitz & Gillen, 2006).

Recently, in an observational study conducted by Boone and Lefkowitz (2007) communication about health topics amongst mothers and their adolescents were looked at. The study examined mother-adolescent conversations about drugs and alcohol, sexuality, and nutrition and exercise to determine which of these topics are treated with a similar approach (Boone & Lefkowitz, 2007). Three types of mother communication strategies were identified: discussing negative consequences, asking questions, and lecturing. Boone and Lefkowitz (2007) examined that the strategies differed by the topic of conversation. They also added that parents used the strategy of discussing negative consequences and asking questions more frequently when discussing drugs and alcohol when compared to discussions on sexuality or nutrition and exercise. The study therefore showed that parents are more comfortable using certain types of strategies focusing mainly on substance abuse.

Additionally, parental sexual communication has been connected to sexual risk taking behaviors (Jaccard, Dittus, & Gordon, 1998; Sionean et al, 2002; Teitelman, Ratcliffe, & Cederbaum, 2008). Studies suggest that larger amounts of communication with both mothers and fathers about birth control, disease prevention, condom-use, abstinence, pressure from friends to have sex, and ways to handle this pressure were linked to lower rates of sexual activity and pregnancy. Hutchinson and Cooney (1998) examined the roles of parental communication regarding risky sexual behaviors and outcomes of these behaviors in a sample of 173 emerging adults. Results of this study show that increased communication with mothers and fathers regarding the use of condoms, positive attitudes towards use of condoms were both associated with increased use in the same. In a more recent study, Hutchinson and Montgomery (2007) found a significant inverse correlation between communication with mothers and sexual risk-

taking in an African American population of emerging adults, supporting Hutchinson and Cooney's (1998) findings.

Cognitive Appraisals: Outcome Expectancies of Risk-Taking Behaviors

As discussed by Katz et al. (2000), outcome expectancies are the beliefs individuals have about the consequences or results of their behaviors. For example, continued use of illicit substances will continue if an individual believes positive outcomes will occur after use (Benthin et al., 1993; Vaughan, Corbin & Fromme, 2009). Use of such substances has been associated with not only pleasure in socialization and the ability to bond with peers, but also with stress reduction and relaxation (Shafer & Brown, 1991; Vaughan, Corbin & Fromme, 2009). Furthermore, adolescents that have been reported to engage in risk taking behaviors express that they are not scared of the risks taken, and are in disbelief that the risks will have negative consequences (Benthin, Slovic & Severson, 1993; Vaughan, Corbin & Fromme, 2009).

The same has been noted with regards to alcohol use (Porter & Pryor, 2007; Vaughan, Corbin & Fromme, 2009). Reports show that individuals expect positive outcomes when using alcohol. Differences in expectancy have also been noted between males and females: males expect to be more aroused while females expect to feel relaxed and enjoy themselves (Brown et al., 1980; Kashdan et al, 2006 Zuckerman, 1994). Use of such substances is also perceived as tools or mechanisms with which to socialize, gain acceptance and form bonds with peers (Porter & Pryor, 2007; Vaughan, Corbin & Fromme, 2009).

In a study by Katz et al. (2000), individuals who were more inclined to following rules, conforming and following authority figures were less likely to engage in risky behaviors while individuals who fail to conform and seek out sensations expect to have positive outcomes from risk taking behaviors. General findings of the study by Katz et al. (2000) elucidate that individuals holding past experiences in risk taking behaviors, be it sexually or with alcohol or

illicit substances, are more prone to engaging in such behaviors repeatedly, while conformists holding negative expectancies would refrain from such activity. Research also shows that use of alcohol in excess and use of drugs both lead to increased negative effects and outcomes that can be, and are, life-threatening (Vaughan, Corbin & Fromme, 2009; White et al., 2009).

Drinking alcohol and drug use are more likely to occur when individuals believe that positive outcomes will result from these behaviors (Bentlin, Slovic, & Severson, 1993). Stress reduction and the ability to relax have been associated with the use of alcohol, marijuana, and cocaine. In turn, attitudes related to the negative consequences of drug use resulted in nonuse (Schafer & Brown, 1991). Those who engage in risky activities tend to report that they know the risks are associated with the activity. These individuals also reported that while they are aware of these risks, they do not fear them. Instead, they believe that any risks involved in taking such risks will not happen to them, thereby increasing their willingness and inclination to participate in risky behaviors frequently (Bentlin, Slovic, & Severson, 1993).

Individuals tend to hold certain preconceptions regarding alcohol use. When discussing gender, females expect to have more favorable experiences when drinking, while males expect to be more aroused and aggressive (Brown, Goldman, Inn, & Anderson, 1980). Schafer and Brown (1991) discuss how females in college who have used marijuana associated greater negative effects with the use of the drug. Men, in contrast, appeared to report more positive effects, such as reducing tension and boosting cognition.

Additional preconceptions about alcohol use involve anxiety reduction (Kashdan, Collins, & Elhai, 2006). Socially anxious individuals may use mind-altering substances in order to feel more comfortable in social situations. Such individuals holding negative expectancies of risk-taking intend to engage in these behaviors less. Further, research has shown that among

college students, engagement in risky behaviors such as sexual activities, drug use, and aggression may serve as a means to obtain acceptance from peers (Kashdan et al., 2006).

Furthermore, individuals who identified as high in sensation seeking and low in conformity may expect positive outcomes to result from risk-taking. In contrast, individuals who are more likely to conform to rules and authority are less likely to believe positive outcomes will result with risk-taking behaviors (Katz, Fromme, & D'Amico, 2000). Katz et al. (2000) found that conformity to social standards, previous experience with risk-taking behaviors, and positive expectancies have been associated with the use of substances, whereas past sexual experiences predicted sexual risk-taking. Sensation seekers also appeared to hold more positive expectancies for drinking heavily and engaging in sexual risk-taking. In contrast, individuals identified as social conformists were affiliated with negative outcome expectancies of drug use and drinking heavily. Generally, sensation seekers may underestimate the risks of their behaviors as they achieve pleasure in engaging in them (Rosenbloom, 2003). The amount of perceived risk may be reduced in high sensation seekers and their confidence to avoid consequences may be increased (Jonah, 1997).

In another study by D'Amico and Fromme (1997) younger siblings' beliefs and behavioral repertoire were predicted to be shaped by their older siblings' outcome expectancies. Thus, adolescents can form more positive expectancies about risk taking behaviors, and consequently have an increased likelihood of experimenting with a variety of life threatening and hazardous behaviors (D'Amico & Fromme, 1997). When their older siblings hold positive expectancies and engage in those behaviors they are even more likely to engage in the same (D'Amico & Fromme, 1997).

Younger siblings' positive expectancies for becoming intoxicated, receiving a DUI, engaging in illicit drug use, and having sex without a condom were significantly associated with

their older siblings' positive expectancies (D'Amico & Fromme, 1997). In addition, younger siblings' perceptions about the positive consequences their older siblings experienced from these behaviors were also apparent in this study. Regarding alcohol use, older siblings' actual behavior and consequences were found to potentially have less influence on their younger siblings' expectancies than the perceptions younger siblings have regarding their older siblings' behavioral experience (D'Amico & Fromme, 1997). Furthermore, neither younger siblings' perceptions about negative consequences experienced by their older siblings nor older siblings' negative expectancies were associated with younger siblings' negative expectancies for health risk behaviors in this study (D'Amico & Fromme, 1997). Younger siblings can therefore learn from their older siblings, paying more attention to experiences resulting in fewer negative consequences and more positive consequences. In other words, having a good time and feeling good were believed to be more likely consequences of risky behaviors when compared to negative consequences (D'Amico & Fromme, 1997).

In addition to research on siblings, examination regarding peer expectancies within the emerging adult population is limited. Studies regarding adolescents are more prevalent. In a study by Lewis, Melton, Succop, and Rosenthal (2000), the authors studied whether or not adolescents are more likely to engage in risky sexual behaviors if they assume that their peers are involved in the same. For example, in a study assessing condom use of 423 African American women recruited from low income serving community agencies, St. Lawrence et al. (1998) found that women who perceived higher percentages of their friends to be condom users were also more likely to use condoms themselves. Similarly, findings indicated that African American adolescents who perceive their peers to be engaged in more sexual activity also evidence higher levels of sexual activity (Lewis, Melton, Succop, & Rosenthal, 2000).

Similarly, research regarding perceived parental involvement and consequential expectancies amongst the emerging adult population are also limited. In a study looking at children and the consequences of parental and peer influences by Ouellette, Gerrard, Gibbons, and Reis-Bergan (1999), drinking habits and expected outcomes amongst young elementary school children were studied. The authors hypothesized that children would learn about the consequences of drinking and develop expectancies regarding alcohol by learning vicariously from their parents, peers and other environmental sources. They found this hypothesis to be true and noted that other external factors such as images in the media can also play an influential role (Ouellette et al., 1999).

Ennet and Bauman (1991) utilized longitudinal data to investigate mediators that could account for the relationships between adolescent drinking and parent and peer drinking behaviors and attitudes. Ennet and Bauman (1991) found that peer drinking indirectly influenced adolescent drinking by shaping an adolescent's concept of drinking norms, drinking preferences, and expected consequences of drinking related to friends and problem behavior. In addition, the authors discovered that parental alcohol use and peer attitude toward alcohol greatly influenced adolescent drinking as well.

Studies regarding perceived risk involvement and consequential expectancies are indeed limited. Based on the limited research, it is believed that adolescents shortly passing into the emerging adult phase of life will make decisions about engaging in risky behaviors utilizing these concepts about expectancies. Adolescents having a more positive expectancy towards experimenting with such risk taking behaviors including illicit drug use, unprotected sexual intercourse, drinking in excess or while driving, have a higher likelihood of actually following through with experimenting with these behaviors. Further research is needed to examine

perceived parental and peer involvement in risky behaviors and the consequential expectancies formed by emerging adults.

CHAPTER 3

METHODOLOGY

Participants

The participants in the study were recruited from a large community college in Southeast Michigan. The participants were unmarried male and female students between the ages of 18 and 25. The unmarried population was expected to engage in greater risk taking behaviors. There were no restrictions on ethnicity. Approximately 12,000 students were enrolled in courses for credit at the community college. Minority students comprise 14% of the student population. The catchment area for the community college included six school districts. The students who were asked to participate in the study were enrolled in liberal arts courses (e.g., psychology classes) at the college.

A power analysis using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) was used to determine the appropriate sample size for the study. Using an effect size of .15, an alpha level of .05 and nine predictor variables, a sample of 114 students was needed to achieve a power of .80. While 114 students provided adequate power for the study, 200+ participants were sought to increase the power of the analysis to make a correct decision on the null hypotheses.

A total of 314 students were invited to participate in the study. Of this number, 240 completed and returned their surveys for a response rate of 76.4%. These students were attending a community college that was located in a suburb adjacent to a large urban area located in the Midwestern section of the country. The students completed a short demographic survey. The students were asked to indicate their ages on the survey. Their responses were crosstabulated by gender of the students. Table 1 presents results of this analysis.

Table 1

Crosstabulations: Age by Gender (N = 240)

Age	<u>Gender</u>				<u>Total</u>	
	<u>Male (n = 106)</u>		<u>Female (n = 134)</u>		<u>N</u>	<u>%</u>
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
18	27	25.7	57	42.6	84	35.1
19	26	24.8	29	21.6	55	23.0
20	17	16.2	15	11.2	32	13.4
21	12	11.4	8	6.0	20	8.4
22	8	7.6	13	9.7	21	8.8
23	2	1.9	1	0.7	3	1.3
24	4	3.8	4	3.0	8	3.3
25	9	8.6	7	5.2	16	6.7
Total	105	100.0	134	100.0	239	100.0

$$\chi^2(7) = 10.21, p = .177$$

Missing Male 1

The largest group of students ($n = 84, 35.1\%$) were 18 years of age. Of this number, 27 (25.7%) were male and 57 (42.6%) were female. Fifty-five (23.0%) students, including 26 (24.8%) male and 29 (21.6%) female students, reported their age was 19. The remaining students were between 20 and 25 years of age. The results of the chi-square test for independence was not statistically significant, indicating that age was independent of gender, $\chi^2(7) = 10.21, p = .177$.

The students were asked to indicate their educational levels, enrollment status, and work status. The results of the crosstabulation of educational level by gender are presented in Table 2.

Table 2

Crosstabulations: Educational Level, Enrollment Status, and Work Status by Gender (N = 240)

Educational Level	<u>Gender</u>				<u>Total</u>	
	<u>Male (n = 106)</u>		<u>Female (n = 134)</u>		<u>N</u>	<u>%</u>
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Freshman	56	53.3	76	58.5	132	56.2
Sophomore	34	32.4	42	32.3	76	32.3
Other	15	14.3	12	9.2	27	11.5
Total	105	100.0	130	100.0	235	100.0
$\chi^2 (2) = 1.56, p = .458$						
<u>Enrollment Status</u>						
Full-time	79	74.5	119	88.8	198	82.5
Part-time	27	25.5	15	11.2	42	17.5
Total	106	100.0	134	100.0	240	100.0
$\chi^2 (1) = 8.36, p = .004$						
<u>Work Status</u>						
Full-time	15	14.6	32	24.1	47	19.9
Part-time	67	65.0	71	53.4	138	58.5
Full-time student	10	9.7	22	16.5	32	13.6
Other	11	10.7	8	6.0	19	8.1
Total	103	100.0	133	100.0	236	100.0
$\chi^2 (3) = 7.55, p = .056$						
<u>Residential Status</u>						
At parent's home	86	84.3	102	77.9	188	80.7
Independent living	6	5.9	4	3.1	10	4.3
Alone/Renting apt./house	2	2.0	8	6.1	10	4.3
Living with unrelated roomates/Renting	5	4.9	10	7.6	15	6.4
Living with a committed partner	3	2.9	7	5.3	10	4.3
Total	102	100.0	131	100.0	233	100.0
$\chi^2 (4) = 5.10, p = .277$						

The majority of the students participating in the study were freshman ($n = 132$, 56.2%). This number included 56 (53.3%) male and 76 (58.5%) female. Thirty-four (32.4%) males and 42 (32.3%) females indicated their educational level as sophomore. Of the 27 (11.5%) who indicated their educational level as other, 15 (14.3%) were male and 12 (9.2%) were female. The results of the chi-square test for independence was not statistically significant, indicating that educational level was independent of gender, $\chi^2(2) = 1.56, p = .458$.

The greatest number of students were enrolled full-time ($n = 198$, 82.5%), including 79 (74.5%) male and 119 (60.1%) female students. The remaining 42 (17.5%) students, including 27 (25.5%) male and 15 (11.2%) female, were attending school part-time. The chi-square test for independence used to compare enrollment status by gender was statistically significant, $\chi^2(1) = 8.36, p = .004$, indicating that enrollment status was associated with gender.

Forty-seven (19.9%) students were working full-time. This number included 15 (14.6%) males and 32 (24.1%) females. Of the 138 (58.5%) students who were working part-time, 67 (65.0%) were male and 71 (53.4%) were female. Ten (9.7%) male and 22 (16.5%) female students were full-time students and not employed. The chi-square test for independence used to compare work status by gender was not statistically significant, $\chi^2(3) = 7.55, p = .056$. This result indicated that work status was independent of gender.

The largest group of students ($n = 188$, 80.7%) reported they lived at home with their parents. Included in this number were 86 (84.3%) male and 102 (77.9%) female students. Of the 10 students who were living independently, 6 (5.9%) were male and 4 (3.1%) were female. The results of the chi-square test for independence comparing residential status and student gender was not statistically significant, $\chi^2(4) = 5.10, p = .277$. This finding provided evidence that residential status was independent of gender.

The students provided their grade point averages on the survey. Their responses were summarized using descriptive statistics. Table 3 presents results of this analysis.

Table 3

Descriptive Statistics: Self-reported Grade Point Average by Gender (N = 240)

Gender	N	M	SD	Median	Range	
					Minimum	Maximum
Male	80	3.06	.52	3.00	2.00	4.00
Female	117	3.24	.53	3.30	2.00	4.00
Total	197	3.17	.53	3.20	2.00	4.00

$t(195) = -2.31, p = .022$

The male students reported a mean GPA of 3.06 (SD = .52), with a median of 3.00. The self-reported GPAs ranged from 2.00 to 4.00 for the male students. The mean self-reported GPA for the female students was 3.24 (SD = .53), with a median of 3.30. The range of self-reported GPAs for female students was from 2.00 to 4.00. The results of the t-test for two independent samples was statistically significant, $t(195) = -2.31, p = .022$. This finding provided evidence that female students self-reported statistically significant higher grade point averages than male students.

The students reported their marital status on the survey. Their responses were crosstabulated by gender for presentation in Table 4.

Table 4

Crosstabulations: Marital Status by Gender (N = 240)

Marital Status	<u>Gender</u>				<u>Total</u>	
	<u>Male (n = 106)</u>		<u>Female (n = 134)</u>		<u>N</u>	<u>%</u>
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Single, never married	81	76.4	81	60.4	162	67.5
Married	4	3.8	2	1.5	6	2.5
Committed Relationship	20	18.9	51	38.1	71	29.6
Other	1	0.9	0	0.0	1	0.4
Total	106	100.0	134	100.0	240	100.0
$\chi^2(3) = 12.10, p = .007$						
Have Children						
Yes	8	7.5	5	3.7	13	5.4
No	98	92.5	129	96.3	227	94.6
Total	106	100.0	134	100.0	240	100.0
$\chi^2(1) = 1.68, p = .195$						

The majority of the participants (n = 162, 67.5%) reported their marital status as single, never married. This number included 81 (76.4%) male and 81 (60.4%) female students. Seventy-one students, including 20 (18.9%) male and 51 (38.1%) female students, indicated they were in committed relationships. The results of the chi-square test for independence was statistically significant, indicating that marital status was not independent of gender, $\chi^2(3) = 12.10, p = .007$.

The majority of the students did not have children (n = 227, 94.6%). Included in this number were 98 (92.5%) male and 129 (96.3%) female students. The results of the chi-square test for independence used to determine if there was an association between having children and gender was not statistically significant, $\chi^2(1) = 1.68, p = .195$. Based on these findings, having children was independent of gender.

The students were asked to report on their siblings on the survey. They were asked to indicate the gender of their siblings and their ages. The results of this analysis are presented in Table 5.

Table 5

Crosstabulations: Siblings by Gender (N = 240)

Have Siblings	<u>Gender</u>					
	<u>Male (n = 106)</u>		<u>Female (n = 134)</u>		<u>Total</u>	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Yes	99	96.1	130	97.0	229	96.6
No	4	3.9	4	3.0	8	3.4
Total	103	100.0	134	100.0	237	100.0
$\chi^2 (1) = .14, p = .704$						
Sibling 1						
Male	58	59.8	62	48.4	120	53.3
Female	39	40.2	66	51.6	105	46.7
Sibling 2						
Male	35	59.3	42	51.2	77	54.6
Female	24	40.7	40	48.8	64	45.4
Sibling 3						
Male	15	55.6	15	40.5	30	46.9
Female	12	44.4	22	59.5	34	53.1
Sibling 4						
Male	1	10.0	7	50.0	8	33.3
Female	9	90.9	7	50.0	16	66.7
Sibling 5						
Male	3	42.9	3	42.9	6	42.9
Female	4	57.1	4	57.1	8	57.1
Sibling 6						
Male	1	50.0	2	50.0	3	50.0
Female	1	50.0	2	50.0	3	50.0
Sibling 7						
Male	0	0.0	2	100.0	2	100.0
Female	0	0.0	0	0.0	0	0.0

Table 6

Descriptive Statistics: Ages of Siblings by Gender (N = 240)

Gender	N	M	SD	Median	Range	
					Minimum	Maximum
Sibling 1						
Male	63	21.98	8.00	22.00	2	64
Female	126	21.07	6.46	21.00	2	51
Sibling 2						
Male	58	21.03	9.18	21.00	1	56
Female	79	21.43	7.60	21.00	7	49
Sibling 3						
Male	26	20.69	9.04	19.00	7	36
Female	35	20.37	7.72	20.00	9	35
Sibling 4						
Male	9	14.78	10.07	12.00	1	33
Female	13	19.31	8.15	17.00	9	30
Sibling 5						
Male	7	15.86	4.45	16.00	7	22
Female	7	14.86	8.99	20.00	1	24
Sibling 6						
Male	2	11.50	14.85	11.50	1	22
Female	4	16.50	10.50	21.00	1	23
Sibling 7						
Male	0	0.00	0.00	0.00	0	0
Female	2	18.50	16.26	18.50	7	30

The majority of the students (n = 229, 96.6%) reported they had siblings. Included in this number were 99 (96.1%) male and 130 (97.0%) female students. The results of the chi-square test for independence that compared having siblings by gender was not statistically significant, $\chi^2(1) = .14, p = .704$. This finding provided support that having siblings was independent of gender.

The highest number of siblings reported was 7, with most of the students indicating they had 1 sibling. The siblings ranged in age from 1 to 64 years of age.

Measures

Demographic characteristics. The personal characteristics of the participants in the study were collected using a brief demographic survey developed by the researcher. The personal information that was collected includes participants' age, gender, race/ethnicity, marital/relationship status, living arrangements, years in college, and program enrollment. The items on this survey used forced-choice format and fill-in-the-blank response formats.

Sensation seeking. Sensation seeking behaviors were defined as the tendency to seek out a variety of experiences (Day-Cameron et al., 2010). In this study sensation seeking behaviors were used as a control variable for risk taking behavior. The Arnett Inventory of Sensation Seeking (AISS; Arnett, 1994) was used to measure sensation seeking. The AISS was developed to measure sensation seeking behaviors and was created after Zuckerman (1979; 1994) created his Sensation Seeking Inventory (SSI) to assess the same construct. Sample items on the AISS include "I can see how it would be interesting to marry someone from a foreign country," "When I listen to music, I like it to be loud," and "I would have enjoyed being one of the first explorers of an unknown land."

Arnett's inventory placed greater importance on socialization than the Zuckerman scale that focuses on more biological aspects of the subject (Arnett, 1994; Ferrando & Chico, 2000). In addition, Arnett's inventory looked at dimensions marked by the need for novelty and intensity of stimulation (Arnett, 1994; Ferrando & Chico, 2000). The AISS is an alternative measure that can further research in the area of personality traits and sensation seeking (Arnett, 1994). Additionally, sensation seeking, as measured using the AISS, was found to be related to a variety of types of risk behavior (Arnett, 1994). While the AISS included no items on risk behavior, the items within it are more strongly linked to risk behavior than Zuckerman's Sensation Seeking Inventory (1979; Arnett, 1994; Zuckerman, 1994). Arnett's findings re-affirmed the usefulness

of sensation seeking as an explanatory factor with regard to risk behavior (Arnett, 1994, 1996). Arnett (1994) designed the scale for use with adolescents and emerging adults. A study by Nower, Derevensky, and Gupta (2004) used a sample of emerging adults from 17 to 21 years, while Cazenave and Paquette (2010) conducted a study using emerging adults from 18 to 28 years of age. Other studies (Arnett, 1994; 1996; Haynes, Miles, & Clements, 2000) that have used the AISS included adolescents and emerging adults from 10 years and older.

The AISS is a 20-item scale with two 10-item subscales, novelty and intensity. The responses use a Likert-type format (Arnett, 1994; Arnett, 1996). For each item, individuals will rate the extent to which the item describes them: (1) describes me very well, (2) describes me somewhat, (3) does not describe me very well, (4) does not describe me at all (Arnett, 1994). Six items were worded negatively to avoid affirmation bias (Arnett, 1994).

The numeric ratings for each of the subscales are summed to obtain a total score. The total scores are divided by the number of items on the respective subscales to create a mean score for each participant. The use of a mean score provides scores that reflect the original unit of measure (1 to 4) and allow direct comparison on the two subscales. Higher scores on the scale indicate greater possession of sensation seeking traits (Arnett, 1994; Arnett, 1996).

Two studies conducted by Arnett (1994) supported the reliability and validity of the AISS measure. In the first study, Arnett (1994) compared the AISS to the SSI using 116 adolescents from a public high school. Results indicated that for every item, the AISS was correlated more strongly with risk behavior than the SSI. Correlation between the AISS and the SSI was .41 for total scale and ranged from .08 to .47 for subscales. This study also found a correlation between the two subscales equal to .41 and an internal reliability total value of .70 (internal reliability of .64 and .50 for Intensity and Novelty subscales, respectively). Other research comparing the AISS to the SSI had found comparable results. Haynes, Miles, and Clements (2000) conducted

confirmatory factor analysis using both the AISS and SSI, and concluded that the modified and shortened AISS provided a more appropriate measure of sensation seeking when compared to the SSI.

In his second study, Arnett (1994) used the AISS in addition to the Aggression subscale of the California Psychological Inventory (CPI) to examine the construct validity of the AISS. Adolescents from 16 to 18 years and adults from 41 to 59 years were participants in this study. Results indicated that the AISS was correlated with a variety of risk behaviors. For adolescents, but not for adults, sensation seeking was significantly correlated with aggression as measured by the CPI. The Cronbach's alpha coefficient for the AISS was .70. The Cronbach's alpha coefficient for the current sample was .63.

Criterion-related validity and construct validity have been demonstrated in relation to a wide variety of types of reckless behavior among adolescents (Arnett, 1994, 1996). The correlations between the AISS risky behaviors ranged from .28 for sex with someone not known well to .51 for theft worth less than \$500.00. Similar results were found with the risky behaviors and the AISS intensity subscale. Five of the risky behaviors were significantly related to the novelty subscale of the AISS. The total scores of the SSS (Zuckerman, Eysenck, & Eysenck, 1978) were correlated with the total scores from the AISS, providing support that both scales were measuring sensation seeking.

Convergent validity has been demonstrated in the relation between the Sensation Seeking Inventory (Zuckerman, 1994; Zuckerman et al., 1978) and the Aggressiveness subscale of the California Personality Inventory (Gough as cited in Arnett, 1994). The correlation between the two scales was statistically significant in a positive direction ($r = .32, p < .001$). In addition, males were higher in sensation seeking than were females on the total scale.

Risk taking behavior. Risk taking behaviors are any behaviors that can lead to life-altering diseases, self-harm and injury, as well as death (Arnett, 2000; Center for Disease Control and Prevention [CDC-P], 2003). For the purpose of the present study, risk taking behavior is defined as drug use, alcohol use, and reckless sexual activity (i.e., casual sex, multiple sex partners, and unprotected sex). The Cognitive Appraisal of Risky Events Questionnaire (CARE; Fromme, Katz, & Rivet, 1997) will be used to measure risk taking behaviors. The CARE was developed to examine perceptions of risks and benefits associated with activities involving risks. The CARE consists of four standard scales and three experimental scales. The four standard scales, each with 30 items, include: Appraisals of expected risk and expected benefit, expected involvement and past frequency. The three experimental scales include: Appraisal of control and two evaluations of consequences scales (Fromme et al., 1997). The risky activities looked at in this scale include: illicit drug use, aggressive and illegal behaviors, risky sexual activities, heavy drinking, high risk sports, and academic or work behaviors. Each of the three scales used consists of 30 questions that participants rate using a 7-point Likert scale ranging from “Not at all Likely” (1) to “Extremely Likely” (7). In the “actual involvement” scale, response wording was changed to include from “Not at All” (1) to “A Lot” (7).

The numeric responses from each of the subscales were summed to obtain a total score. The total scores are divided by the number of items on the scales to obtain a total score. The mean scores reflect the original unit of measure, with higher scores reflecting greater risk-taking. The use of a mean score also allows direct comparison across the included subscales.

The results of both the exploratory and confirmatory factor analysis supported the six-factor model for expected risk, expected benefit, and expected involvement that provided a better fit than a one-factor model (Fromme et al., 1997). The covariation among expected risk, expected benefit, and expected involvement ratings for each subscale was examined using

Pearson correlation coefficients. The intercorrelations between the subscales ranged from $r = .02$ (expected risk for sex and sports) to $r = .68$ (expected risk for aggression and academic/work behaviors). Internal consistency reliability estimates yielded Cronbach alpha coefficients of .90 for expected risk, .90 for expected benefit, and .89 for expected involvement (Fromme et al., 1999). Fromme et al. indicated that item-total correlations (i.e., correlations between the individual scale items and total scale score) also provided support for further internal consistency as a measure of reliability, but did not detail the results. Test-retest correlations ranged from $r = .51$ to $.65$ for Expected Risk and from $r = .58$ to $.79$ for Expected Benefit (Fromme, Katz, & Rivet, 1997). The authors stated that even though modest test-retest correlations were found, they were similar to other expectancy questionnaires, such as the Marijuana Effect Expectancy Questionnaire that had a test-retest correlation of $r = .66$. risky of emerging adults in the present study. For the current sample, the internal consistency of the expected risk of activities, expected benefit of activities, and frequency of involvement was measured using Cronbach alpha coefficients. The results of these analyses are presented in Table 7.

Table 7

Cronbach Alpha Coefficients: Risky Behaviors

Group	Risky sex	Drugs	Alcohol
Expected Risk	.80	.71	.86
Expected Benefits	.90	.96	.92
Frequency of Involvement	.84	.46	.88

The Cronbach alpha coefficients for all of the subscales, with the exception of frequency of involvement for drugs ($\alpha = .46$) were similar to or higher than those reported by Fromme (1997).

Fromme et al. (1997) established construct validity for drug and alcohol use, aggression, and unsafe sex as these are considered traditional risk behaviors. Using a sample of 98 undergraduate students, Fromme et al. (1997) tested the criterion validity by examining the relation between self-reported frequency of risk-taking and their ratings for expected risk, expected benefits, and expected involvement. Self-reported risk taking during a 10-day period showed that more than 50% of the sample reported some involvement in each of the risky activities, except for illicit drug use and risky sexual practices. The results of these analyses showed that past behavior was significantly related to current behavior, except for risky sexual activities. Outcome expectancies were explaining a statistically significant incremental variance in current risk taking behavior. Fromme et al. (1997) also tested the CARE for construct validity by correlating trait measures and CARE scores. Statistically significant correlations in the anticipated direction were found for traditional risk behaviors and the expected benefits, expected involvement, and frequency of involvement. Impulsive unsocialized sensation seeking (IMPUSS; Zuckerman, Kuhlman, Joireman, Teta, & Kraft as cited in Fromme et al., 1997) scores were correlated to risky behaviors in a positive direction and negatively related to social conformity questionnaire (SCQ; Newcomb & Bentler as cited in Fromme et al., 1997) scores. The CARE proves to be psychometrically sound in measuring outcome expectancies and risk-taking among emerging adults (Fromme et al., 1997).

Outcome expectancies. The Cognitive Appraisal of Risky Events Questionnaire — Revised (CARE-R) was used to examine outcome expectancies for 24 activities (Hartzler & Fromme, 2003). Seven-point Likert scales were used to rate the likelihood of positive and negative outcomes resulting from illicit drug use, risky sexual practices with a new partner, and coercive sexual practices (1 = not at all likely, 7 = extremely likely). Sample items on the CARE-R include “Leaving a social event with someone I just met or do not know well,” “Being drunk

with someone I do not know well,” and “Having sexual intercourse while under the influence of drugs not alcohol.” Average scores were then computed for ratings of positive and negative outcomes. The CARE-R has adequate internal reliability (coefficient $\alpha = .63$ to $.86$), construct validity (Fromme et al., 1997). According to a study by Katz et al. (2000), the CARE-R can predict students’ involvement in risk behaviors reliably. Fromme, D’Amico, and Katz (1999) used the CARE-R to assess sexual risk taking while intoxicated as a way to evaluate emerging adults’ perceptions of expected risk, benefit, and involvement in unsafe sexual activities with “new” and “regular” partners. The alpha coefficients ranged from $.82$ to $.94$ for participants in this study, indicating adequate to good internal consistency for all scales. The CARE-R was used to determine sexual, alcohol and drug-related Cronbach alpha coefficients were used to establish the internal consistency of the CARE-R for the present study. Table 8 presents the alpha coefficients for the three subscales (risky sex, drugs, and alcohol) measuring expected involvement for each of the subgroups (parents, close siblings, siblings, and peers).

Table 8

Cronbach Alpha Coefficients – CARE – R – Expected Involvement

Group	Risky sex	Drugs	Alcohol
Parents	.73	.69	.69
Close Siblings	.77	.75	.88
Siblings	.80	.89	.80
Peers	.81	.82	.85

The alpha coefficients for the three subscales of the CARE-R that were being used in the present study were somewhat higher than those obtained by Fromme et al. (1997) in her studies. The alpha coefficients for parents were the lowest, with alpha coefficients for peers the highest.

Relation closeness. Relation closeness is the extent to which a supportive relation exists among an individual and his/her peers, siblings, and parents. These relations were measured using the Network of Relationships Inventory-Relationships Quality Version (NRI-RQV, Buhrmester & Furman, 2008). The NRI-RQV is a multidimensional inventory that was developed to examine specific relations and the positive and negative facets of those relations including family members and friends. The NRI-RQV has been used with children, adolescents and adults (Furman & Buhrmester, 1985).

The Network of Relationships Inventory-RQV consists of 30 questions that assess 10 relations qualities (Furman & Buhrmester, 1985). The 10 relations qualities include six social provisions: (a) reliable alliance, (b) enhancement of worth, (c) instrumental help (guidance), (d) companionship (social integration), (e) affection, and (f) intimacy (disclosure). Four other relation qualities include: (a) relative power of the child and other, (b) conflict, (c) satisfaction, and (d) importance of the relationship (Furman & Buhrmester, 1985). Ratings of satisfaction and importance were included to provide indexes of the overall nature of the relationships. Sample items on the NRI include: How often do you spend fun time with this person? How often do you tell this person that you do not want others to know? How often does this person push you to do things that you do not want to do?

Each item on the NRI-RQV is rated six times (best friend-same sex, opposite sex friend, boy/girlfriend, sibling, mother, and father) using a 5-point Likert type scale ranging from 1 (“never or hardly at all”) to 5 (“always or extremely much”). The scores for each subscale and for each relation type are obtained by summing the numeric responses for each type of relation (e.g., best friend-same sex, opposite sex friend, boy/girlfriend, sibling, mother, and father). The total score for each type of relation is then divided by 3 (the number of items on each subscale) to obtain a mean score. The mean score provides scores that reflect the original unit measure and

allow direct comparisons across the subscales for each of the six relation types. In addition to the subscale scores, a score for closeness will be obtained by obtaining the mean of five subscales: companionship, disclosure, emotional support, approval, and satisfaction. Higher scores on these scales indicate more positive relationships.

The authors report satisfactory internal consistency with Cronbach alpha coefficients for all scale scores for the six types of relationships greater than .60 except for two instances (Furman & Buhrmester, 1985). Alpha coefficients for friends ranged from .49 for exclusion (romantic friend) to .95 for closeness (female friend). Among family members, alpha coefficients ranged from .57 for exclusion (father) to .91 for satisfaction (father) and closeness (sibling). In general, the alpha coefficients for friends appeared to be somewhat higher than for family members, although most were evidence of adequate to good internal consistency. Subscale alphas averaged .80 and were above .60 for all but companionship with teacher ($\alpha = .47$) and conflict with grandparents ($\alpha = .57$). According to Toliatos, Perlmutter, Straus and Holden (2001), stability as a measure of reliability was determined using test retest correlations over a one month period. Results of these analyses provided correlations of .66 to .70 for the identified factors, indicating adequate stability as a form of reliability. Cronbach alpha coefficients were obtained for each of the subscales and for each of the relationship dyads rated by the participants. Table 9 presents results of this analysis.

Table 9

Internal Consistency: Network of Relationships Inventory-Relationships Quality Version (NRI-RQV)

Subscale	Nonromantic same sex friend	Nonromantic opposite sex friend	Romantic partner	Sibling – general	Sibling – closest to you	Mother	Father
Companion- ship	.83	.81	.91	.87	.87	.80	.83
Intimate disclosure	.67	.71	.70	.75	.75	.71	.72
Pressure	.76	.72	.77	.64	.69	.79	.78
Satisfaction	.89	.90	.95	.89	.89	.52	.77
Conflict	.67	.74	.81	.78	.82	.82	.86
Emotional Support	.85	.80	.88	.83	.83	.79	.80
Criticism	.72	.69	.68	.76	.76	.75	.77
Approval	.68	.63	.83	.78	.74	.74	.78
Dominance	.63	.69	.71	.61	.59	.66	.76
Exclusion	.67	.52	.64	.60	.51	.53	.65

The obtained Cronbach alpha coefficients for the present study were similar to those obtained for earlier studies. Criterion validity was assessed by having participants provide descriptions of their peers and then comparing these descriptions with scores on the peer section of the NRI. The correlations ranged from .34 to .63 (Touliatos, Perlmutter, Straus & Holden, 2001). Additionally, East's 1991 study found that NRI scores corresponded to groupings used to identify peer- withdrawn, peer-aggressive and sociable children.

Procedure

Following approval from the Human Investigation Committee (HIC) at Wayne State University and approval from Schoolcraft College where participants are enrolled, the researcher made initial contact with professors of the liberal arts and psychology classes in the department. At this meeting, the researcher established the time for entering each class to distribute surveys to the students.

The researcher attended classes during class periods to discuss the purpose of the current study. She distributed an information sheet that includes all elements of an informed consent form, but did not require a signature. Instead, the return of the completed surveys provided support that students were willing to participate in the study. The use of an information sheet provided additional assurances that the participants would remain anonymous as the students did not have to sign any type of form. The information sheet indicated the purpose of the study, the procedures for completing the data collection, assurances of confidentiality, and voluntary participation. In addition, it was reassured that students would not incur any negative consequences if they did not choose to participate in the study.

The information sheet was distributed to the students. They were asked to read the form and ask questions about their participation. After answering any questions, the researcher distributed survey packets that included a copy of each questionnaire to students who chose to participate in the study. The questionnaires were counterbalanced across the classes to minimize order effect.

Participants were instructed not to place any identifying information on the questionnaires. They were told that they are free to skip any questions that they may find uncomfortable. Questionnaires were completed within the class periods and returned to the researcher in a sealed envelope provided to them. The completed questionnaire packets were then collected by the researcher. No surveys were allowed out of the classrooms and students who are absent when the surveys were distributed were excluded from the study.

Data Analysis

Data collected from the participants was entered into a computer file for analysis using IBM-SPSS 19.0 (known as SPSS). The data analysis was divided into three sections for reporting in the results chapter. The first section used a combination of frequency distributions,

crosstabulations, and measures of central tendency and dispersion to provide a profile of the personal and educational characteristics of the emerging adults. The second section of the data analysis used descriptive statistics on each of the scaled variables (CARE-R, NRI-RQV, AISS) to provide baseline information on the variables that was included in the study. The results of the inferential statistical analyses, including Pearson product moment correlations, moderating analysis, and mediation analysis, were presented in the third section of the data analysis. All decisions on the statistical significance of the findings were made using a criterion alpha level of .05. Table 10 presents results of the statistical analysis that was used to address each research question and test the associated hypotheses.

Table 10
Statistical Analysis

Research Question and Hypotheses	Variables	Statistical Analysis
<p>1. What is the association between emerging adults' self-reported risk taking behaviors and the risk taking behaviors of their peers, siblings, and parents?</p> <p>H₀₁: It is expected that emerging adults reporting observation of risk taking behaviors in peers, siblings and parents will report higher involvement in his/her own risk taking behavior.</p>	<p><u>Dependent Variables</u> Self-reported involvement in risk taking behaviors</p> <ul style="list-style-type: none"> • Drugs • Alcohol • Sexual behaviors <p><u>Independent Variables</u> Observed risk taking behaviors for peers, sibs, and parents</p> <ul style="list-style-type: none"> • Drugs • Alcohol • Sexual behaviors 	<p>Pearson product moment correlations were used to determine the strength and direction of the relationships between emerging adults perceptions of their involvement in risk taking behaviors and their observations of risk taking behaviors for their peers, sibs, and parents</p>
<p>2. Do close relationships moderate the relationship between perceived peer, sibling, and parent risk taking behaviors and the self-reported risk taking behaviors of emerging adults?</p> <p>H_{02a}: Close peer relationships are related to higher involvement in risk taking behaviors.</p> <p>H_{02b}: Close sibling relationships are</p>	<p><u>Criterion Variables</u> Self-reported involvement in risk taking behaviors</p> <ul style="list-style-type: none"> • Drugs • Alcohol • Sexual behaviors <p><u>Predictor Variables</u> Observed risk taking behaviors for peers, sibs, and parents</p>	<p>Multiple linear regression analysis was used to test the extent to which close relationships (peers, sibs, and parents) moderate the relationships between self-reported involvement in risk taking behaviors and observed risk taking behaviors for peers, sibs, and parents.</p> <p>The moderation analysis used the framework developed by Kenny</p>

Research Question and Hypotheses	Variables	Statistical Analysis
<p>related to higher involvement risk taking behaviors.</p> <p>H_{02c}: Close parental relationships are related to higher involvement in risk taking behaviors.</p>	<ul style="list-style-type: none"> • Drugs • Alcohol • Sexual behaviors <p><u>Moderator Variable</u> Close relationships</p> <ul style="list-style-type: none"> • Peers • Sibs • Parents 	<p>(2011), which uses the interaction between the predictor variable (x) and the moderator variable (m) to determine the effect on the criterion variable. The moderating variable can have either a positive or negative effect on the criterion variable.</p>
<p>3. What is the correlation between individual outcome expectancies and each of the following:</p> <p>a. individual risk taking behavior, b. the risk taking behaviors of peers, siblings and parents?</p>	<ul style="list-style-type: none"> • <u>Dependent Variables</u> • Self-reported outcome expectancies for risky behavior: • Drugs • Alcohol • Sex 	<p>Pearson product moment correlations was used to determine the strength and direction of the relationships between emerging adults self-reported outcome expectancies for risky behavior and self-report of their involvement in risk taking behaviors and their observations of risk taking behaviors for their peers, sibs, and parents</p>
<p>H_{03a}: It is expected that positive outcome expectancies will be associated with higher self-report of risk taking behaviors, while negative outcome expectancies will be associated with lower self-report of risk taking behaviors.</p>	<ul style="list-style-type: none"> • <u>Independent Variables</u> • Self-reported risk-taking behavior • Drugs • Alcohol • Sex 	
<p>H_{03b}: It is expected that positive outcome expectancies will be associated with higher perceived involvement in risk taking behaviors by peers, siblings and parents while negative outcome expectancies will be associated with lower perceived involvement in risk taking behaviors by peers, siblings and parents.</p>	<ul style="list-style-type: none"> • Perceived involvement risk taking behaviors for peers, sibs, and parents • Drugs • Alcohol • Sexual behaviors 	

Research Question and Hypotheses	Variables	Statistical Analysis
<p>4. Do individual outcome expectancies of risk taking behavior mediate perceived peer, parent, sibling risk taking behavior and engagement of individual self-report of risk taking behaviors?</p> <p>H₀₄: It is expected that individual outcome expectancies will mediate the relation between peer, sibling, and parent risk taking behaviors and actual individual involvement of risk taking behaviors.</p>	<p><u>Criterion Variables</u> Self-reported risk-taking behavior</p> <ul style="list-style-type: none"> • Drugs • Alcohol • Sex <p><u>Predictor Variables</u> Perceived involvement in risk taking behaviors for peers, sibs, and parents</p> <ul style="list-style-type: none"> • Drugs • Alcohol • Sexual behaviors <p><u>Mediating Variables</u> Self-reported outcome expectancies for risky behavior:</p> <ul style="list-style-type: none"> • Drugs • Alcohol • Sex 	<p>Baron and Kenny's (2011) mediation process were used to determine if the relation between self-reported risk-taking behaviors and observed risk taking behaviors of peers, sibs, and parents was mediated by self-reported outcome expectancies for risky behavior. The four steps included:</p> <ol style="list-style-type: none"> 1. Determine if the predictor variable is significantly related to the criterion variable 2. Determine if the predictor variable is significantly related to the mediating variable 3. Determine if the mediating variable is significantly related to the criterion variable 4. Determine the change in the relation between the predictor variable and the criterion variable while holding the mediating variable constant. <p>If the relation between the predictor and criterion variable became non-significant when holding the mediating variable constant, the result was a full mediation.</p>

CHAPTER 4

RESULTS

The purposes of this study were to (a) examine the association between emerging adults' (EAs) perceptions of peers', siblings', and parents' risk-taking behaviors, and risk behavior after controlling for participants' sensation seeking tendencies, (b) explore the moderating role of EAs' relationships with peers, siblings, and parents in the relation between these models' risk taking behaviors and EAs' risk taking behaviors, and (c) test the mediating role of positive and negative expectancies for risky behaviors on the relationships between perceived peer involvement in risky behaviors and frequency of involvement in risky behaviors.

The mean scores were generally lower for the benefits of risky sex, drug, and alcohol behaviors, with higher mean scores obtained for the risks involved with these behaviors. The participants in the study had lower mean scores for the frequency with which they participated in these behaviors. When the expected involvement was compared across parents, closest siblings, siblings (general), and peers, closest siblings and peers had higher mean scores than parents who had the lowest mean scores. The mean score for sensation seeking was slightly below the midpoint of the 4-point scale. The mean scores for the 10 subscales varied across the seven respondent types. Means and standard deviations for the sample are included in Table 11.

Gender Comparisons

To determine if gender should be used as a control variable in addressing the research questions and testing the hypotheses developed for the study, the mean scores on each of the scaled variables were used as dependent variables in t-tests for independent samples. Gender was used as the independent variable in these analyses (See Table 12).

Table 11

Descriptive Statistics: Scaled Variables (N = 240)

Scale	N	M	SD	<u>Actual Range</u>		<u>Possible Range</u>	
				Minimum	Maximum	Minimum	Maximum
Risky Behaviors – Benefit							
Sex	240	2.87	.91	1.00	6.44	1.00	7.00
Drugs	237	1.69	.95	1.00	6.00	1.00	7.00
Alcohol	238	2.42	1.22	1.00	6.50	1.00	7.00
Risky Behaviors – Risk							
Sex	236	3.96	1.47	1.00	7.00	1.00	7.00
Drugs	234	4.60	2.37	1.00	7.00	1.00	7.00
Alcohol	234	4.37	1.89	1.00	7.00	1.00	7.00
Risky Behaviors – Frequency							
Sex	240	1.92	.81	1.00	7.00	1.00	7.00
Drugs	237	1.44	.67	1.00	4.67	1.00	7.00
Alcohol	238	2.12	1.08	1.00	6.25	1.00	7.00
CARE Expected Involvement							
Parents	238	1.44	.49	1.00	4.50	1.00	7.00
Closest Siblings	229	1.94	.87	1.00	5.17	1.00	7.00
Siblings (General)	227	1.89	.85	1.00	5.17	1.00	7.00
Peers	240	2.95	1.12	1.00	5.73	1.00	7.00
Sensation Seeking	240	2.39	.32	1.45	3.20	1.00	4.00
Network of Relationships Inventory – Relationship Quality Version							
Nonromantic same sex friend	238	2.67	.43	1.32	3.87	1.00	5.00
Nonromantic opp. sex friend	218	2.45	.53	1.00	3.90	1.00	5.00
Romantic partner	170	2.85	.64	1.00	3.97	1.00	5.00
Sibling general	211	2.38	.54	1.00	3.87	1.00	5.00
Sibling closest	239	2.49	.55	1.00	3.97	1.00	5.00
Mother	236	2.72	.47	1.23	5.00	1.00	5.00
Father	223	2.49	.53	1.00	3.83	1.00	5.00

Six variables differed significantly between male and female EAs: risky behaviors – benefits – sex; risky behaviors – risk – sex; CARE – expected involvement - parents; Care – expected involvement – peers; NRI-RQV – nonromantic opposite sex friend; and NRI-RQV – mother). Because the majority of the results were not statistically significant, gender was not used as a control variable in the subsequent analyses used to test the hypotheses and address the research questions.

Table 12

Comparison of Scaled Variables (N = 240) between Male and Female Emerging Adults

Scale	N	Male		Female			t
		M	SD	N	M	SD	
Risky Behaviors – Benefit							
Sex	103	3.14	1.05	134	2.68	.75	3.80**
Drugs	103	1.76	.98	134	1.63	.93	1.02
Alcohol	103	2.58	1.25	134	2.31	1.19	1.67
Risky Behaviors – Risk							
Sex	101	3.76	1.47	133	4.13	1.46	-2.06*
Drugs	101	4.44	2.43	133	4.71	2.32	-.87
Alcohol	101	4.27	1.85	133	4.44	1.91	-.67
Risky Behaviors – Frequency							
Sex	103	1.91	.91	134	1.93	.73	-.27
Drugs	103	1.52	.73	134	1.39	.62	1.50
Alcohol	103	2.27	1.10	134	2.01	1.06	1.90
CARE Expected Involvement							
Parents	101	1.32	.37	121	1.55	.55	-3.65**
Closest Siblings	101	1.77	.70	121	1.97	.95	-1.67
Siblings (General)	101	1.84	.74	121	2.02	.96	-1.97*
Peers	101	2.94	1.04	121	2.91	1.16	.41
Sensation Seeking	106	2.27	.29	134	2.48	.31	-5.31**
Network of Relationship Inventory – Relationship Quality Version							
Nonromantic same sex friend	56	2.61	.49	78	2.58	.40	.35
Nonromantic opp. sex friend	56	2.46	.57	78	2.25	.53	2.22*
Romantic partner	56	2.70	.82	78	2.92	.58	-1.94
Sibling general	56	2.30	.60	78	2.26	.53	.46
Sibling closest	56	2.41	.53	78	2.42	.51	-.90
Mother	56	2.59	.51	78	2.76	.42	-2.49*
Father	56	2.44	.61	78	2.49	.54	1.04

*p < .05; **p < .01

Research Questions and Hypotheses

Four research questions with associated hypotheses were developed for the study. Each of the hypotheses was tested using inferential statistical analyses. All decisions on the statistical significance of the findings were made using a criterion alpha level of .05.

Research question 1: What is the association between emerging adults' self-reported risk taking behaviors and the risk taking behaviors of their peers, siblings, and parents?

H₁: It is expected that emerging adults reporting observation of risk taking behaviors in peers, siblings and parents will report higher involvement in his/her own risk taking behavior.

Pearson product moment correlations were used to test the association between EAs' risky behaviors and the risk taking behaviors of their peers, siblings, and parents (See Table 13).

Table 13

Pearson Product Moment Correlations: Emerging Adults' Risky Behaviors and Risk Taking Behaviors of Peers, Siblings, and Parents

Risky Behaviors – Parents, Peers, and Siblings	<u>Emerging Adults' Risky Behaviors</u>					
	<u>Sex</u>		<u>Drugs</u>		<u>Alcohol</u>	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Sex – Parents	236	.12	233	.02	234	-.03
Drugs – Parents	236	.08	233	.23**	234	.22**
Alcohol – Parents	237	.19**	234	.07	235	.18**
Sex – Peers	240	.21**	237	.29**	223	.23**
Drugs – Peers	240	.21**	237	.55**	223	.33**
Alcohol – Peers	240	.17**	237	.37**	224	.32**
Sex – Siblings – Closest	228	.13	225	.26**	226	.28**
Drugs – Siblings – Closest	228	.24**	225	.43**	226	.34**
Alcohol – Siblings – Closest	229	.11	226	.21**	227	.38**
Sex – Siblings – General	225	.11	222	.21**	238	.43**
Drugs – Siblings – General	225	.24**	225	.39**	238	.59**
Alcohol – Siblings - General	226	.15*	223	.17*	238	.58**

* $p < .05$; ** $p < .01$

Statistically significant correlations were obtained for many of the risk taking behaviors of the EAs with their parents, peers, closest siblings, and siblings – general. Emerging adult risky behaviors related to sex were significantly correlated with parents' risky behaviors related to alcohol ($r = .19, p < .001$); peers' risky behaviors related to sex ($r = .21, p < .01$), drugs ($r = .21,$

$p = .001$), and alcohol ($r = .17, p = .01$); closest siblings' risky behaviors related to drugs ($r = .24, p < .001$); and siblings' general behaviors related to drugs ($r = .24, p < .001$) and alcohol ($r = .15, p < .05$). Risky behaviors for drugs were correlated with risky behaviors for parents, peers, and siblings. Statistically significant correlations were obtained for the relation between EAs' self-reported risk taking drug behaviors and parents' risky behaviors for drugs ($r = .23, p < .001$); peers' risky behaviors for sex ($r = .29, p < .001$), drugs ($r = .55, p < .001$), and alcohol ($r = .37, p < .001$); closest siblings' risky behaviors for sex ($r = .26, p < .001$), drugs ($r = .43, p < .001$), and alcohol ($r = .21, p < .01$); and general siblings' sex ($r = .21, p < .001$), drugs ($r = .39, p < .001$), and alcohol ($r = .17, p < .05$). Statistically significant correlations were obtained between EAs' risky alcohol behaviors and parents' risky behaviors for drugs ($r = .22, p < .001$) and alcohol ($r = .18, p < .01$); peers' risky behaviors for sex ($r = .23, p < .001$), drugs ($r = .33, p < .001$), and alcohol ($r = .32, p < .001$); closest siblings' risky behaviors for sex ($r = .28, p < .001$); drugs ($r = .34, p < .001$), and alcohol ($r = .38, p < .001$); and general siblings' risky behaviors for sex ($r = .43, p < .001$), drugs ($r = .59, p < .001$), and alcohol ($r = .58, p < .001$). Based on these findings, the null hypothesis is rejected. The findings show that self-reported risky behaviors are related to risky behaviors of their parents, peers, and siblings.

Research question 2. Do close relationships moderate the relation between perceived peer, sibling, and parent risk taking behaviors and the self-reported risk taking behaviors of emerging adults?

H_{2a}: Close peer relationships moderate the relation between perceived peer risk taking behaviors and self-reported risk taking behaviors of emerging adults.

The moderation analysis used the framework developed by Kenny (2011), which uses the interaction between the predictor variable (x) and the moderator variable (m) to determine the effect on the criterion variable (y). The moderating variable can have either a positive or negative

effect on the criterion variable. The first set of moderating analyses used self-reported involvement in risky sex, drugs, and alcohol as the criterion variables. Perceived involvement of peers in risky sex, drugs, and alcohol behaviors was used as the predictor variable, with peer relations used as the moderating variable (see Table 14).

Table 14

Moderation Analysis: Moderating Effect of Peer Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Peers in Risky Behaviors

Step	Criterion Variable	Predictor Variable	<i>b</i>	<i>SE_b</i>	β
<i>Moderating Effect of Peer Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Peers in Risky Behaviors</i>					
Risky Sex Behaviors					
1	Frequency of Risky Sex Behaviors	Perceived Involvement of Peers in Risky Sex Behavior	.13	.04	.21**
2	Frequency of Risky Sex Behaviors	Perceived Involvement of Peers in Risky Sex Behavior X Peer Relations	.08	.04	.37
Risky Drug Behaviors					
1	Frequency of Risky Drug Behaviors	Perceived Involvement of Peers in Risky Drug Behavior	.19	.02	.55**
2	Frequency of Risky Drug Behaviors	Perceived Involvement of Peers in Risky Drug Behavior X Peer Relations	.09	.02	.72**
Risky Alcohol Behaviors					
1	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Peers in Risky Alcohol Behavior	.31	.03	.58**
2	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Peers in Risky Alcohol Behavior X Peer Relations	.16	.03	.80**

* $p < .05$; ** $p < .01$

As expected, peers involvement in risky behaviors was a significant predictor of EAs' risky behaviors for all areas: Sex ($\beta = .21$, $p < .001$), drug ($\beta = .55$, $p < .001$), and alcohol ($\beta = .58$, $p < .001$). The results of the moderating analysis provided evidence of two statistically significant moderation effects of close peer relations on self-reported involvement in risky drug

behavior ($\beta = .72, p < .01$) and risky alcohol behaviors ($\beta = .80, p < .01$). Close peer relations did not moderate the relation between EAs' involvement in risky sex behaviors and perceived involvement of peers in risky sex behaviors.

H_{2b}: Close and general sibling relationships moderate the relation between perceived close and general sibling risk taking behaviors and self-reported risk taking behaviors of emerging adults.

Separate moderating analyses were conducted for close and general sibling relations, self-reported involvement in risky sex, drugs, and alcohol were the criterion variables and perceived involvement of close and general siblings in these risky behaviors were used as the predictor variable.

Table 15 presents the results of moderating analyses for close sibling relationship. The relation between perceived involvement of close siblings in risky sex behaviors and EAs' self-reported involvement in these behaviors was not statistically significant, ($\beta = .13, p > .05$). Because of the nonsignificant relation on the first step, the moderation analysis was not completed. One statistically significant moderation effects of close sibling relations on self-reported frequency of involvement in risky drug behavior ($\beta = .25, p < .01$) resulted from the moderating analysis. The relation between perceived peer involvement in risky alcohol behaviors and frequency of emerging adult involvement in risky alcohol behavior was statistically significant ($\beta = .72, p < .01$). The results of the second step of the moderation analysis was not statistically significant ($\beta = .27, p > .05$), indicating that close sibling relations was not moderating the relation between perceived close sibling involvement in risky alcohol behaviors and frequency of involvement in these behaviors.

Table 15

Moderation Analysis: Moderating Effect of Siblings (Close) Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Siblings (Close) in Risky Behaviors

<i>Moderating Effect of Siblings (Close) Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Siblings (Close) in Risky Behaviors</i>					
Step	Criterion Variable	Predictor Variable	<i>b</i>	<i>SE_b</i>	β
Risky Sex Behaviors					
1	Frequency of Risky Sex Behaviors	Perceived Involvement of Siblings (Close) in Risky Sex Behavior	.12	.06	.13
Risky Drug Behaviors					
1	Frequency of Risky Drug Behaviors	Perceived Involvement of Siblings (Close) in Risky Drug Behavior	.20	.03	.43**
2	Frequency of Risky Drug Behaviors	Perceived Involvement of Siblings (Close) in Risky Drug Behavior X Siblings (Close) Relations	.09	.07	.25**
Risky Alcohol Behaviors					
1	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Siblings (Close) in Risky Alcohol Behavior	.22	.04	.38**
2	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Siblings (Close) in Risky Alcohol Behavior X Siblings (Close) Relations	.06	.05	.27

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

Table 16 presents the results of moderating analyses for general sibling relationship. The relation between perceived involvement of siblings (general) in risky sex behavior and EAs' frequency of involvement in risky sex behaviors was not statistically significant, ($\beta = .07$, $p > .05$). Because of the nonsignificant findings on this step of the moderating analysis, the second step was not completed. Two statistically significant moderation effects were obtained for general sibling relations on the relation between perceived general siblings risky drug and alcohol behaviors and EAs' self-reported involvement in risky drug behaviors ($\beta = .56$, $p < .01$)

and risky alcohol behaviors ($\beta = .28, p < .05$). The findings of the moderating analysis for risky drug and risky alcohol behaviors were statistically significant, indicating that general sibling relations were moderating the relationship between the EAs' self-report of involvement in risky drug and alcohol behaviors and perceived involvement of general siblings in risky drug and alcohol behaviors.

Table 16

Moderation Analysis: Moderating Effect of Siblings (General) Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Siblings (General) in Risky Behaviors

<i>Moderating Effect of Siblings (General) Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Siblings (General) in Risky Behaviors</i>					
Step	Criterion Variable	Predictor Variable	<i>b</i>	<i>SE_b</i>	β
Risky Sex Behaviors					
1	Frequency of Risky Sex Behaviors	Perceived Involvement of Siblings (General) in Risky Sex Behavior	.10	.07	.11
Risky Drug Behaviors					
1	Frequency of Risky Drug Behaviors	Perceived Involvement of Siblings (General) in Risky Drug Behavior	.21	.03	.39**
2	Frequency of Risky Drug Behaviors	Perceived Involvement of Siblings (General) in Risky Drug Behavior X Siblings (General) Relations	.11	.03	.56**
Risky Alcohol Behaviors					
1	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Siblings (General) in Risky Alcohol Behavior	.19	.04	.32**
2	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Siblings (General) in Risky Alcohol Behavior X Siblings (General) Relations	.09	.02	.28**

* $p < .05$; ** $p < .01$

H_{2c}: Parent relations moderate the relation between perceived parent risk taking behaviors and self-reported risk taking behaviors of emerging adults.

Separate moderating analyses used self-reported benefit of involvement in risky sex, drugs, and alcohol as the criterion variables and expected involvement of parents in these risky behaviors was used as the predictor variable. Parent relationship was used as the moderating variable in these analyses (See Table 17).

Table 17

Moderation Analysis: Moderating Effect of Parents Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Parents in Risky Behaviors

Step	Criterion Variable	Predictor Variable	<i>b</i>	<i>SE_b</i>	β
<i>Moderating Effect of Parents Relations in the Relation between Self-reported Frequency of Risky Behaviors and Perceived Involvement of Parents in Risky Behaviors</i>					
Risky Sex Behaviors					
1	Frequency of Risky Sex Behaviors	Perceived Involvement of Parents in Risky Sex Behavior	.18	.09	.12
Risky Drug Behaviors					
1	Frequency of Risky Drug Behaviors	Perceived Involvement of Parents in Risky Drug Behavior	.17	.05	.23**
2	Frequency of Risky Drug Behaviors	Perceived Involvement of Parents in Risky Drug Behavior X Parent Relations	-.06	.06	-.21
Risky Alcohol Behaviors					
1	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Parents in Risky Alcohol Behavior	.17	.06	.18**
2	Frequency of Risky Alcohol Behaviors	Perceived Involvement of Parents in Risky Alcohol Behavior X Parents Relations	-.05	.10	-.14

* $p < .05$; ** $p < .01$

The relation between perceived parent involvement in risky sex and EAs' self-reported involvement in risky sex behaviors was not statistically significant, ($\beta = .12, p > .05$). Because of the lack of a statistically significant relation on the first step of the moderation analysis, the

second step was not completed. The relation between perceived parent involvement in risky drug behaviors and frequency of involvement in these behaviors was statistically significant, ($\beta = .23$, $p < .01$). However, on the second step of the moderation, the result was not statistically significant, indicating that parent relations was not moderating the relation between perceived parent involvement in risky drug behaviors and frequency of involvement in risky drug behaviors, ($\beta = -.21$, $p > .05$). A statistically significant relation was found between perceived involvement of parents in risky alcohol behavior and frequency of involvement in risky alcohol behavior on the first step of the mediation analysis, ($\beta = .18$, $p < .01$). On the second step, parent relations was not moderating the relation between perceived involvement of parents in risky alcohol behavior and frequency of involvement in risky alcohol behavior ($\beta = -.14$, $p = .62$).

Research question 3. What is the relation among individual outcome expectancies, individual risk taking behavior, and the risk taking behaviors of peers, siblings and parents?

H_{3a}: It is expected that positive outcome expectancies will be associated with higher self-report of risk taking behaviors, while negative outcome expectancies will be associated with lower self-report of risk taking behaviors.

Pearson product moment correlations were used to test the strength and direction of the relation between positive outcome expectancies, negative outcome expectancies and frequency of involvement in risky sex, drug, and alcohol behaviors (See Table 18).

Table 18

Pearson Product Moment Correlations: Positive and Negative Outcome Expectancies and Frequency of Involvement in Risky Sex, Drug, and Alcohol Behaviors

Positive and Negative Expectancies	<u>Emerging Adults' Frequency of Involvement in Risky Behaviors</u>					
	<u>Sex</u>		<u>Drugs</u>		<u>Alcohol</u>	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Sex – Positive	240	.30**	237	.25**	238	.27**
Drugs – Positive	237	.51**	237	.83**	237	.56**
Alcohol – Positive	238	.54**	237	.60**	238	.75**
Sex – Negative	236	-.01	234	-.05	234	.01
Drugs – Negative	233	-.02	233	.01	233	.02
Alcohol – Negative	234	-.02	234	.03	234	.03

** $p < .01$; * $p < .05$

Positive expectancies for risky sex, drug, and alcohol behaviors were significantly correlated in a positive direction with EAs' frequency of involvement in risky sex, drug, and alcohol behaviors. The strongest correlations were between frequency of involvement in risky drug behaviors and positive expectancies for risky drug behaviors ($r = .83, p < .001$) and frequency of involvement in risky alcohol behaviors and positive expectancies for risky alcohol behaviors ($r = .75, p < .001$). In contrast, the correlations between negative expectancies for risky sex, drug, and alcohol behaviors and EAs' frequency of involvement in risky sex, drugs, and alcohol behaviors were not statistically significant. These findings indicated that positive expectancies for risky behaviors are associated with greater involvement in these behaviors, while negative expectancies for risky behaviors are not related to these behaviors.

H_{3b}: It is expected that positive outcome expectancies will be associated with higher perceived involvement in risk taking behaviors by peers, siblings and parents while negative outcome expectancies will be associated with lower perceived involvement in risk taking behaviors by peers, siblings and parents.

The scores for positive and negative expectancies were correlated with perceived involvement in risk taking behaviors by parents, siblings (close and general), and parents using Pearson product moment correlations. The correlation analysis for peers is presented first (See Table 19).

Table 19

Pearson Product Moment Correlations: Positive and Negative Outcome Expectancies and Frequency of Involvement in Risky Sex, Drug, and Alcohol Behaviors by Peers

Positive and Negative Expectancies	<u>Perceived Peer Involvement in Risky Behaviors</u>					
	<u>Sex</u>		<u>Drugs</u>		<u>Alcohol</u>	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Sex – Positive	229	.44**	240	.44**	240	.36**
Drugs – Positive	237	.36**	237	.59**	226	.37**
Alcohol – Positive	238	.37**	238	.57**	238	.56**
Sex – Negative	236	-.03	236	.02	225	.03
Drugs – Negative	234	.03	234	.07	223	.05
Alcohol – Negative	234	.04	234	.01	223	<.01

** $p < .01$; * $p < .05$

Statistically significant correlations in a positive direction were obtained for correlations between positive expectancies for sex, drug, and alcohol behaviors and perceived peer involvement in risky behaviors. The strongest correlations were found between positive expectancies for drug behaviors and perceived peer involvement in risky drug behaviors ($r = .59$, $p < .001$) and between positive expectancies for alcohol behaviors and perceived peer involvement risky drug ($r = .57$, $p < .001$) and risky alcohol behaviors ($r = .56$, $p < .001$). In contrast, the correlations for negative expectancies for sex, drug, and alcohol behaviors and perceived peer involvement in risky behaviors were not statistically significant.

Pearson product moment correlations were used to determine the strength and direction of the relations between positive and negative expectancies for risky behaviors and perceived involvement of close siblings in risky behaviors. See Table 20 for the results of this analysis.

Table 20

Pearson Product Moment Correlations: Positive and Negative Outcome Expectancies and Frequency of Involvement in Risky Sex, Drug, and Alcohol Behaviors by Close Siblings

Positive and Negative Expectancies	Perceived Close Siblings Involvement in Risky Behaviors					
	<u>Sex</u>		<u>Drugs</u>		<u>Alcohol</u>	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Sex – Positive	228	.23**	228	.29**	229	.30**
Drugs – Positive	225	.29**	225	.41**	226	.20**
Alcohol – Positive	224	.22**	226	.24**	227	.34**
Sex – Negative	224	-.01	224	.07	225	.01
Drugs – Negative	222	-.09	222	.03	223	-.06
Alcohol – Negative	222	-.08	222	.04	223	<.01

**p < .01; *p < .05

The results of the correlation analysis provided support that EAs' positive expectancies regarding risky sex, drug, and alcohol behaviors was significantly related to perceived closest siblings involvement in risky sex, drug, and alcohol behaviors. The strongest correlation was between positive expectancies for risky drug behaviors and perceived closest siblings involvement in risky sex behaviors ($r = .41, p < .001$) and positive expectancies for risky alcohol behaviors and perceived closest siblings involvement in risky alcohol behaviors ($r = .34, p < .001$). Negative expectancies for risky sex, drug, and alcohol behaviors were not related to perceived closest sibling risky sex, drug, and alcohol behaviors.

The next set of analyses correlated perceived general siblings involvement in risky sex, drug, and alcohol behaviors with positive and negative expectancies for risky sex, drug, and alcohol behaviors. Table 21 includes the results of this analysis.

Table 21

Pearson Product Moment Correlations: Positive and Negative Outcome Expectancies and Frequency of Involvement in Risky Sex, Drug, and Alcohol Behaviors by General Siblings

Positive and Negative Expectancies	Perceived General Siblings Involvement in Risky Behaviors					
	<u>Sex</u>		<u>Drugs</u>		<u>Alcohol</u>	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Sex – Positive	225	.28**	225	.31**	226	.34**
Drugs – Positive	222	.29**	222	.38**	223	.21**
Alcohol – Positive	223	.20**	223	.26**	224	.32**
Sex – Negative	221	.07	221	.06	222	.03
Drugs – Negative	219	.09	219	.08	220	.06
Alcohol – Negative	219	.07	219	.12	220	.05

** $p < .01$; * $p < .05$

Statistically significant correlations in a positive direction were obtained for the relations between positive expectancies for risky sex, drug, and alcohol behaviors and perceived general siblings involvement in these types of risky behaviors. The strongest correlation was between positive expectancies for risky drug behaviors and perceived general siblings involvement in risky drug behaviors ($r = .38, p < .001$). A strong correlation was obtained between positive expectancies for risky sex behavior and perceived general siblings involvement in risky behaviors ($r = .34, p < .001$). In contrast, the correlations between negative expectancies for risky sex, drug, and alcohol behaviors and perceived general siblings involvement in these types of behaviors were not statistically significant.

The next set of analyses used Pearson product moment correlations to test the relations between positive and negative expectancies for risky sex, drugs, and alcohol behaviors and perceived parental involvement in risky sex, drugs, and alcohol behaviors. See Table 22.

Table 22

Pearson Product Moment Correlations: Positive and Negative Outcome Expectancies and Frequency of Involvement in Risky Sex, Drug, and Alcohol Behaviors by Parents

Positive and Negative Expectancies	<u>Perceived Parents' Involvement in Risky Behaviors</u>					
	<u>Sex</u>		<u>Drugs</u>		<u>Alcohol</u>	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Sex – Positive	236	.01	236	.27**	237	.16*
Drugs – Positive	233	.05	233	.39**	234	.14*
Alcohol – Positive	234	-.05	234	.28**	235	.17**
Sex – Negative	232	.07	232	-.12	233	-.02
Drugs – Negative	230	-.04	230	.03	231	.05
Alcohol – Negative	230	-.09	230	.02	231	.05

** $p < .01$; * $p < .05$

The correlations between positive and negative expectancies for risky sex behaviors were not related to perceived parent involvement in risky sex behaviors. Positive expectancies for risky drug and alcohol behaviors were significantly related to perceived parent involvement in risky drug and alcohol behaviors. The strongest correlations were between positive expectancies for risky drug behaviors and perceived parent involvement in risky drug behaviors ($r = .39, p < .001$). The correlation between positive expectancies for risky alcohol behavior and perceived parent involvement in risky drug behaviors was statistically significant ($r = .28, p < .001$). The correlations between negative expectancies for risky sex, drug, and alcohol behaviors and perceived parent involvement in these risky type behaviors were not related.

Research question 4. Do individual outcome expectancies of risk taking behavior mediate perceived peer, parent, sibling risk taking behavior and engagement of individual self-report of risk taking behaviors?

H_{4a}: It is expected that individual outcome expectancies will mediate the relation between peer, sibling, and parent risk taking behaviors and actual individual involvement of risk taking behaviors.

Mediation analysis using the Baron and Kenny procedures were used to determine if individual positive outcome expectancies for risky sex, drug, and alcohol behaviors mediated the relation between risk taking sex, drug, and alcohol behaviors by peers, siblings, and parents and actual involvement of the emerging adult (EA) in these types of behaviors. The results for positive expectations and each of the relation types (peer, sibling, and parent) are presented separately. The first set of analyses used the perceived parent risky sex behaviors as the predictor variables in the mediation analysis and the results are presented in Table 23.

Table 23

Mediation Analysis: Mediating Role of Positive Outcome Expectancies for Risky Sex Behaviors on the Relation between Perceived Parent Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Parent Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.01	3.44	.12

On the first step of the mediation analysis, the relation between parent involvement in risky sex behaviors and EA's risky sex behaviors was not statistically significant, $\beta = .12$, $F =$

3.44, $p = .065$. Because the relation between the criterion and predictor variables was not statistically significant, the next step of the mediation analysis was not completed.

The second mediation analysis used perceived parent involvement in risky drug behavior as the predictor variable and frequency of involvement in risky drug behavior. Positive outcome expectancies for risky drug behavior was used as the mediating variable. See Table 24.

On the first step of the mediation analysis, perceived parent involvement in risky drug behaviors predicted EA's involvement in risky drug behaviors, $\beta = .23$, $F = 13.35$, $p < .001$. On the second step, perceived parent involvement in risky drug behaviors was a significant predictor of positive expectancies for risky drug behavior and $\beta = .39$, $F = 40.73$, $p < .001$. When positive expectancies for risky drug behaviors was used as the predictor variable and frequency of involvement in risky drug behaviors was used as the criterion variable, the result was statistically significant, $\beta = .83$, $F = 515.12$, $p < .001$. In Step 4, when holding positive expectancies for risky drug behaviors constant, the standardized beta weight for frequency of involvement in risky drug behaviors was reduced from .23 (step 1) to -.10 (step 4), $R^2 = .70$, $p < .01$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 6.45 ($p < .001$) was statistically significant, indicating that positive expectancies for risky drug behavior was partially mediating the relation between perceived parents' risky drug behavior and risky drug behaviors.

Table 24

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Drug Behaviors on the Relation between Perceived Parent Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Parent Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.06	13.35	.23**
<u>Step 2</u>				
Perceived Parent Involvement in Risky Drug Behaviors	Positive Expectancies for Risky Drug Behaviors	.15	40.73	.39**
<u>Step 3</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.69	515.12	.83**
<u>Step 4</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.70	262.611	.87**
Perceived Parent Involvement in Risky Drug Behaviors				-.10*

Sobel Test = 6.45, $p < .001$

* $p < .05$; ** $p < .01$

Next, perceived parents' involvement in risky alcohol behaviors was used as the predictor variable in a mediation analysis. The criterion variable in this analysis was frequency of involvement in risky alcohol behaviors, with positive expectancies of risky alcohol behavior used as the mediating variable. See Table 25.

Table 25

Mediation Analysis: Mediating Role of Positive Outcome Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Parent Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Parent Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.03	7.77	.18**
<u>Step 2</u>				
Perceived Parent Involvement in Risky Alcohol Behaviors	Positive Expectancies for Risky Alcohol Behaviors	.08	19.60	.28**
<u>Step 3</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.56	307.26	.75**
<u>Step 4</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.57	151.60	.74**
Perceived Parent Involvement in Risky Alcohol Behaviors				.05
Sobel test = 4.46, $p < .001$				

** $p < .01$

Perceived parent involvement in risky alcohol behaviors predicted EA's involvement in risky alcohol behaviors, $\beta = .18$, $F = 7.77$, $p < .001$. On the second step of the mediation analysis, the relation between positive expectancies for risky alcohol behaviors and perceived parent involvement in risky alcohol behaviors was statistically significant, $\beta = .28$, $F = 19.60$, $p < .001$. When positive expectancies for risky alcohol behaviors was used as the predictor variable and frequency of involvement in risky alcohol behaviors was used as the criterion variable on the third step of the mediation analysis, the outcome was statistically significant, $\beta = .75$, $F = 307.26$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for EA's involvement in risky alcohol behaviors was reduced from .18 (step 1) to .05 (step 4), $R^2 = .57$, $p > .05$. To determine if a mediator

variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 4.46 ($p < .001$) was statistically significant, indicating that positive expectancies for risky alcohol behavior was partially mediating the relation between perceived parents' involvement in risky alcohol behavior and EA's risky alcohol behaviors.

The next set of mediation analyses used perceived involvement of their siblings (general) as the predictor variable. A mediation analysis was used to determine if positive expectancies for risky sex behaviors was mediating the relation between perceived involvement of siblings (general) in risky sex behaviors and EA's involvement in risky sex behaviors. See Table 26.

Table 26

Mediation Analysis: Mediating Role of Positive Expectancies Risky Sex Behaviors on the Relation between Perceived Sibling (General) Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (General) Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.01	2.48	.11 (ns)

Perceived sibling (general) involvement in risky sex behaviors was not a predictor of the frequency of EA's involvement in risky sex behaviors was not statistically significant, $\beta = .11$, $F = 2.48$, $p > .05$. The mediation analysis could not be continued because of the lack of a significant relation between perceived sibling (general) involvement in risky sex behaviors and EA's involvement in risky sex behaviors.

The mediation analysis to determine if positive expectancies for risky drug behavior was mediating the relation between perceived sibling (general) involvement in risky drug behaviors and EA's involvement in risky drug behaviors. See Table 27.

Table 27

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Drug Behaviors on the Relation between Perceived Sibling (General) Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (General) Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.15	40.16	.39**
<u>Step 2</u>				
Perceived Sibling (General) Involvement in Risky Drug Behaviors	Positive Expectancies for Risky Drug Behaviors	.14	36.69	.38**
<u>Step 3</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.69	515.12	.83**
<u>Step 4</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.70	259.43	.83**
Perceived Sibling (General) Involvement in Risky Drug Behaviors				.09*

Sobel Test = 5.56, $p < .001$

* $p < .05$; ** $p < .01$

Perceived sibling (general) involvement in risky drug behaviors was a predictor of frequency of EA's involvement in risky drug behaviors on the first step of the mediation analysis, $\beta = .39$, $F = 40.16$, $p < .001$. On the second step of the analysis, a statistically significant relation was found between perceived sibling (general) involvement in risky drug behaviors and positive expectancies for risky drug behaviors, $\beta = .38$, $F = 36.69$, $p < .001$. The results of the third step of the analysis produced a statistically significant relation between positive expectancies for risky drug behaviors and EA's involvement in risky drug behaviors, $\beta = .83$, $F =$

515.12, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for frequency of involvement in risky drug behaviors was reduced from .39 (step 1) to .09 (step 4), $R^2 = .70$, $p < .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 5.56 ($p < .001$) was statistically significant, indicating that positive expectancies for risky drug behavior was partially mediating the relation between perceived siblings' (general) involvement in risky drug behavior and EA's involvement in risky drug behaviors.

A mediation analysis was used to determine if positive expectancies for risky alcohol behaviors was mediating the relation between perceived sibling (general) involvement in risky drug behaviors and EA's involvement in risky drug behaviors. See Table 28.

Perceived sibling (general) involvement in risky alcohol behaviors was a predictor of EA's involvement in risky alcohol behaviors tested on the first step of the mediation analysis was statistically significant, $\beta = .32$, $F = 25.90$, $p < .001$. Statistically significant results were obtained on the second step that examined the relation between perceived sibling (general) involvement in risky alcohol behaviors and positive expectancies for risky alcohol behaviors, $\beta = .32$, $F = 26.04$, $p > .05$. The relation between positive expectancies for risky alcohol behaviors and frequency of involvement in risky alcohol behaviors was statistically significant, $\beta = .75$, $F = 307.26$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for frequency of involvement in risky alcohol behaviors was reduced from .32 (step 1) to .08 (step 4), $R^2 = .60$, $p > .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the

mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 4.44 ($p < .001$) was statistically significant, indicating that positive expectancies for risky drug behavior was partially mediating the relation between perceived siblings' (general) involvement in risky alcohol behavior and EA's involvement in risky alcohol behaviors.

The next set of analyses used perceived sibling (closest) involvement in risky behaviors as the predictor variable. A mediation analysis was used to determine if positive expectancies for risky sex was mediating the relation between perceived sibling (closest) involvement in risky sex and EA's involvement in risky sex. See Table 29.

Perceived sibling (closest) involvement in risky sex behaviors was a predictor of EA's involvement in risky sex behaviors was not statistically significant, $\beta = .13$, $F = 3.66$, $p > .05$. Because the relation between the perceived sibling (closest) involvement in risky sex behaviors and EA's involvement in risky sex behaviors was not statistically significant, the mediation analysis was not continued.

Table 28

Mediation Analysis: Mediating Role of Positive Outcome Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Sibling (General) Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (General) Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.10	25.90	.32**
<u>Step 2</u>				
Perceived Sibling (General) Involvement in Risky Alcohol Behaviors	Positive Expectancies for Risky Alcohol Behaviors	.11	26.04	.32**
<u>Step 3</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.59	307.26	.75**
<u>Step 4</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.60	165.77	.75**
Perceived Sibling (General) Involvement in Risky Alcohol Behaviors				.08
Sobel Test = 4.44, $p < .001$				
* $p < .05$; ** $p < .01$				

Table 29

Mediation Analysis: Mediating Role of Positive Expectancies Risky Sex Behaviors on the Relation between Perceived Sibling (Closest) Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (Closest) Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.02	3.66	.13 (ns)

A mediation analysis was used to determine if positive expectancies for risky drug behaviors was mediating the relation between perceived sibling (closest) involvement in risky drug behaviors and EA's involvement in risky drug behaviors. See Table 30.

Table 30

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Drug Behaviors on the Relation between Perceived Sibling (Closest) Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (Closest) Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.18	49.26	.43**
<u>Step 2</u>				
Perceived Sibling (Closest) Involvement in Risky Drug Behaviors	Positive Expectancies for Risky Drug Behaviors	.17	44.69	.41**
<u>Step 3</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.69	515.12	.83**
<u>Step 4</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.70	259.88	.83**
Perceived Sibling (Closest) Involvement in Risky Drug Behaviors				.10*

Sobel Test = 6.38, $p < .001$

* $p < .05$; ** $p < .01$

On the first step of the mediation analysis, a statistically significant relation was found between perceived sibling (closest) involvement in risky drug behaviors and EA's involvement in risky drug behaviors, $\beta = .43$, $F = 49.26$, $p < .001$. The relation between perceived sibling (closest) involvement in risky drug behaviors and positive expectancies for risky drug behaviors tested on the second step of the mediation analysis was statistically significant, $\beta = .41$, $F = 44.69$, $p < .001$. On the third step, the relation between the mediator, positive expectancies for risky drug behaviors and EA's involvement in risky drug behaviors was statistically significant, $\beta = .83$, $F = 515.12$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for frequency of involvement in risky drug behaviors was reduced from .43 (step 1) to .10 (step 4), $R^2 = .70$, $p < .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable

(i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 6.38 ($p < .001$) was statistically significant, indicating that positive expectancies for risky drug behavior was partially mediating the relation between perceived siblings (closest) involvement in risky drug behavior and EA's involvement in risky drug behaviors.

A mediation analysis was used to determine if positive expectancies associated with risky alcohol behaviors was mediating the relationship between perceived sibling (closest) involvement in risky alcohol behaviors and EA's involvement in risky alcohol behaviors. See Table 31.

Perceived sibling (closest) involvement in risky alcohol behaviors was a predictor of EA's involvement in risky alcohol behaviors was statistically significant, $\beta = .38$, $F = 38.55$, $p < .001$. The relation between perceived sibling (closest) involvement in risky alcohol behaviors and positive expectancies for risky alcohol behaviors, $\beta = .34$, $F = 29.28$, $p < .001$. On the third step of the mediation analysis, a statistically significant relation was found between positive expectancies for risky alcohol behaviors and EA's involvement in risky alcohol behaviors, $\beta = .75$, $F = 307.26$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for frequency of involvement in risky alcohol behaviors was reduced from .38 (step 1) to .16 (step 4), $R^2 = .59$, $p < .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 5.54 ($p < .001$) was statistically significant, indicating that positive expectancies for risky alcohol behavior was partially mediating the relation between perceived siblings' (closest) involvement in risky alcohol behavior and EA's involvement in risky alcohol behaviors.

Table 31

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Sibling (Closest) Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (Closest) Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.15	38.55	.38**
<u>Step 2</u>				
Perceived Sibling (Closest) Involvement in Risky Alcohol Behaviors	Positive Expectancies for Risky Alcohol Behaviors	.12	29.28	.34**
<u>Step 3</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.57	307.26	.75**
<u>Step 4</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.59	184.91	.75**
Perceived Sibling (Closest) Involvement in Risky Alcohol Behaviors				.16**
Sobel Test = 5.44, $p < .001$				

* $p < .05$; ** $p < .01$

The next set of analyses used perceived peer involvement in risky behaviors as the predictor variables. EA's involvement in risky sex behaviors was used as the criterion variable in a mediation analysis, with perceived peer involvement in risky sex behaviors used as the predictor variable. The mediating variable in this analysis was positive expectancies for risky sex behaviors. See Table 32.

Table 32

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Sex Behaviors on the Relation between Perceived Peer Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Peer Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.05	11.19	.21**
<u>Step 2</u>				
Perceived Peer Involvement in Risky Sex Behaviors	Positive Expectancies for Risky Sex Behaviors	.20	58.00	.44**
<u>Step 3</u>				
Positive expectancies for Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.09	22.77	.30**
<u>Step 4</u>				
Positive expectancies for Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.10	12.51	.30**
Perceived Peer Involvement in Risky Sex Behaviors				.10
Sobel Test = 3.75, $p < .001$				

* $p < .05$; ** $p < .01$

Perceived peer involvement in risky sex behaviors was a predictor of EA's involvement in risky sex behaviors, $\beta = .21$, $F = 11.19$, $p < .001$. The relation between perceived peer involvement in risky sex behaviors and positive expectancies for risky sex behaviors was tested on the second step of the mediation analysis. The result was statistically significant, $\beta = .44$, $F = 58.00$, $p < .001$. On the third step of the mediation analysis that tested the relation between positive expectancies for risky sex behaviors and EA's involvement in risky sex behaviors, the result was statistically significant, $\beta = .30$, $F = 22.77$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for frequency of involvement in risky sex behaviors was reduced from .21 (step 1) to .10 (step 4), $R^2 = .10$, $p > .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant) Sobel's test was calculated. The

obtained test statistic of 3.75 ($p < .001$) was statistically significant, indicating that positive expectancies for risky sex behavior was partially mediating the relation between perceived peers' involvement in risky sex behavior and EA's involvement in risky sex behaviors.

Perceived peer involvement in risky drug behaviors was used as the predictor variable in a mediation analysis, with EA's involvement in risky drug behaviors used as the criterion variable. The mediating variable in this analysis was positive expectancies for risky drug behaviors. See Table 33.

Perceived peer involvement in risky drug behaviors was a predictor of EA's involvement in risky drug behaviors p , $\beta = .55$, $F = 99.92$, $p < .001$. The relation between perceived peer involvement in risky drug behaviors and positive expectancies for risky drug behaviors was statistically significant on the second step of the mediation analysis, $\beta = .59$, $F = 128.28$, $p < .001$. On the third step of the mediation analysis, positive expectancies was a statistically significant predictor of frequency of involvement in risky drug behaviors, $\beta = .83$, $F = 515.12$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for EA's involvement in risky drug behaviors was reduced from .55 (step 1) to .08 (step 4), $R^2 = .70$, $p > .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant), Sobel's test was calculated. The obtained test statistic of 10.24 ($p < .001$) was statistically significant, indicating that positive expectancies for risky drug behavior was partially mediating the relation between perceived peers' involvement in risky drug behavior and EA's involvement in risky drug behaviors.

Table 33

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Drug Behaviors on the Relation between Perceived Peer Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Peer Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.30	99.92	.55**
<u>Step 2</u>				
Perceived Peer Involvement in Risky Drug Behaviors	Positive Expectancies for Risky Drug Behaviors	.35	128.28	.59**
<u>Step 3</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.69	515.12	.83**
<u>Step 4</u>				
Positive expectancies for Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.70	261.87	.83**
Perceived Peer Involvement in Risky Drug Behaviors				.08
Sobel Test = 10.24, $p < .001$				

** $p < .01$

A mediation analysis was used to determine if positive expectancies for risky alcohol behaviors was mediating the relation between perceived peer involvement in risky alcohol behaviors and EA's involvement in alcohol behaviors. See Table 34.

Table 34

Mediation Analysis: Mediating Role of Positive Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Peer Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Peer Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.33	118.16	.58**
<u>Step 2</u>				
Perceived Peer Involvement in Risky Alcohol Behaviors	Positive Expectancies for Risky Alcohol Behaviors	.31	108.16	.56**
<u>Step 3</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.57	307.26	.75**
<u>Step 4</u>				
Positive expectancies for Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.60	177.05	.63**
Perceived Peer Involvement in Risky Alcohol Behaviors				.23**
Sobel Test = 9.57, $p < .001$				

* $p < .05$; ** $p < .01$

Perceived peer involvement in risky alcohol behaviors was a predictor of EA's involvement in risky alcohol behaviors, $\beta = .58$, $F = 118.16$, $p < .001$. On the second step of the mediation analysis, a statistically significant relation was found between perceived peer involvement in risky alcohol behaviors and positive expectancies for risky alcohol behaviors, $\beta = .56$, $F = 108.16$, $p < .001$. The relation between positive expectancies for risky alcohol behaviors and EA's involvement in risky alcohol behaviors was statistically significant on the third step of the mediation analysis, $\beta = .75$, $F = 307.26$, $p < .001$. After holding the mediating variable constant on the fourth step of the mediation analysis, the standardized beta weight for EA's involvement in risky alcohol behaviors was reduced from .58 (step 1) to .23 (step 4), $R^2 = .60$, $p < .05$. To determine if a mediator variable significantly carries the influence of a predictor variable to a criterion variable (i.e., if the indirect effect of the predictor variable on the dependent variable through the mediator variable is significant) Sobel's test was calculated. The

obtained test statistic of 9.57 was statistically significant, indicating that positive expectancies for risky alcohol behavior was partially mediating the relation between perceived peers' involvement in risky alcohol behavior and EA's involvement in risky alcohol behaviors.

The negative expectancies for risky sex, drug, and alcohol behaviors were used as the mediating variables in the next set of mediation analyses. The perceived involvement of parents, siblings (general), siblings (closest), and peers for each of the three risky behaviors were used as the predictor variables, with EA's involvement in each of these behaviors used as the criterion variables.

The first set of mediation variables used perceived parent involvement in risky sex, drug, and alcohol behaviors as the predictor variables. A mediation analysis was used to determine if negative expectancies for risky sex behavior could mediate the relation between perceived parent involvement in risky sex behaviors and EA's involvement in risky sex behaviors. See Table 35.

Table 35

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Sex Behaviors on the Relation between Perceived Parent Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Parent Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.01	3.44	.12NS

* $p < .05$; ** $p < .01$

Perceived parent involvement in risky sex behaviors was not a predictor of EA's involvement in risky sex, $\beta = .12$, $F = 3.44$, $p > .05$. Because of the nonsignificant relation on the first step, the mediation analysis could not be continued.

Perceived parent involvement in risky drug behaviors was used as the predictor variable in a mediation analysis with EA's involvement in risky drug behaviors used as the criterion

variable. Negative expectancies for risky drug behaviors was used as the mediating variable. See Table 36.

Table 36

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Drug Behaviors on the Relation between Perceived Parent Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Parent Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.06	13.35	.23**
<u>Step 2</u>				
Perceived Parent Involvement in Risky Drug Behaviors	Negative Expectancies for Risky Drug Behavior	<.01	.14	.03NS

* $p < .05$; ** $p < .01$

Perceived parent involvement in risky drug behaviors was a predictor of EA's involvement in risky drug behaviors on the first step of the mediation analysis, $\beta = .23$, $F = 13.35$, $p < .001$. On the second step of the mediation analysis, the relation between perceived parent involvement in risky drug behaviors and negative expectancies for risky drug behavior was not statistically significant, $\beta = .03$, $F = .14$, $p > .05$. Because of the nonsignificant findings on the second step, the mediation analysis could not be continued.

A mediation analysis was used to determine if negative expectancies for risky alcohol behaviors was mediating the relation between perceived parent involvement in risky alcohol behaviors and EA's involvement in risky alcohol behaviors. See Table 37.

Table 37

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Parent Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Parent Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.03	7.71	.18**
<u>Step 2</u>				
Perceived Parent Involvement in Risky Alcohol Behaviors	Negative Expectancies for Risky Alcohol Behavior	<.01	.48	.05NS

** $p < .01$

Perceived parent involvement in risky alcohol behaviors was a predictor of involvement in risky alcohol behaviors on the first step of the mediation analysis, $\beta = .18$, $F = 7.71$, $p < .01$. On the second step of the mediation analysis, the relation between perceived parent involvement in risky alcohol behaviors and negative expectancies for risky alcohol behavior was not statistically significant, $\beta = .05$, $F = .48$, $p > .05$. The mediation analysis could not be continued because of the lack of a statistically significant relation on the second step of the analysis.

The next set of mediation analyses used perceived sibling (general) involvement in risky sex behaviors as the predictor variables. A mediation analysis was used to determine if negative expectancies for risky sex behavior could mediate the relation between perceived sibling (general) involvement in risky sex behaviors and EA's involvement in risky sex behaviors. See Table 38.

Table 38

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Sex Behaviors on the Relation between Perceived Sibling (General) Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (General) Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.01	2.48	.10

* $p < .05$; ** $p < .01$

Perceived sibling (general) involvement in risky sex behaviors was not a predictor of EA's involvement in risky sex behaviors tested on the first step of the mediation analysis, $\beta = .10$, $F = 2.48$, $p > .05$. Because of the nonsignificant finding on the first step, the mediation analysis could not be continued.

Perceived sibling (general) involvement in risky drug behaviors was used as the predictor variable in a mediation analysis, with EA's involvement in risky drug behaviors used as the criterion variable. Negative expectancies for risky drug behaviors was used as the mediating variable. See Table 39.

On the first step of the mediation analysis, a statistically significant relation was found between perceived sibling (general) involvement in risky drug behaviors and EA's involvement in risky drug behaviors, $\beta = .39$, $F = 40.16$, $p < .001$. When the relation between perceived sibling (general) involvement in risky drug behaviors and negative expectancies for risky drug behaviors was tested on the second step of the mediation analysis, the result was not statistically significant, $\beta = .08$, $F = 1.48$, $p > .05$. Because of the nonsignificant relation on the second step of the analysis, the mediation analysis could not be continued.

Table 39

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Drug Behaviors on the Relation between Perceived Sibling (General) Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (General) Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.15	40.16	.39**
<u>Step 2</u>				
Perceived Sibling (General) Involvement in Risky Drug Behaviors	Negative Expectancies for Risky Drug Behavior	.01	1.48	.08NS

* $p < .05$; ** $p < .01$

Perceived sibling (general) involvement in risky alcohol behaviors was used as the predictor variable in a mediation analysis, with EA's involvement in risky alcohol behaviors used as the criterion variable. Negative expectancies for risky alcohol behavior was used as the mediating variable. See Table 40.

Perceived sibling (general) involvement in risky alcohol behaviors was a predictor of involvement in risky alcohol behaviors on the first step of the mediation analysis, $\beta = .32$, $F = 25.90$, $p < .001$. On the second step of the mediation analysis, the relation between perceived sibling (close) involvement in risky alcohol behaviors and negative expectancies for risky alcohol behavior was not statistically significant, $\beta = .05$, $F = .65$, $p > .01$. The mediation analysis could not be continued because of the nonsignificant finding on the second step of the analysis.

Table 40

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Sibling (General) Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (General) Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.10	25.90	.32**
<u>Step 2</u>				
Perceived Sibling (General) Involvement in Risky Alcohol Behaviors	Negative Expectancies for Risky Alcohol Behavior	<.01	.65	.05NS

* $p < .05$; ** $p < .01$

The next set of mediation analyses used perceived sibling (close) involvement in risky behaviors as the predictor variables. A mediation analysis was used to determine if negative expectancies for risky sex behaviors was mediating the relation between perceived sibling (close) involvement in risky sex behaviors and EA's involvement in risky sex behaviors. See Table 41.

Table 41

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Sex Behaviors on the Relation between Perceived Sibling (Close) Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (Close) Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.02	3.66	.13NS

* $p < .05$; ** $p < .01$

Perceived sibling (close) involvement in risky sex behaviors was a not a statistically significant predictor of involvement in risky sex behaviors tested on the first step of the mediation analysis, $\beta = .13$, $F = 3.66$, $p > .01$. Because of the nonsignificant finding on the first step, the mediation analysis could not be continued.

Perceived sibling (close) involvement in risky drug behavior was used as the predictor variable in a mediation analysis. The criterion variable in this analysis was EA's involvement in risky drug behaviors, with negative expectancies for risky drug behavior used as the mediating variable. See Table 42.

Table 42

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Drug Behaviors on the Relation between Perceived Sibling (Close) Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (Close) Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.18	49.26	.43**
<u>Step 2</u>				
Perceived Sibling (Close) Involvement in Risky Drug Behaviors	Negative Expectancies for Risky Drug Behavior	<.01	.20	.03NS

* $p < .05$; ** $p < .01$

Perceived sibling (close) involvement in risky drug behaviors was a predictor of involvement in risky drug behaviors, $\beta = .43$, $F = 49.26$, $p < .001$. The relation between perceived sibling (close) involvement in risky drug behaviors and negative expectancies for risky drug behavior, tested on the second step of the mediation analysis, was not statistically significant, $\beta = .03$, $F = .20$, $p > .05$. Because the relation on the second step of the mediation analysis was not statistically significant, the mediation analysis was discontinued.

A mediation analysis was used to determine if negative expectancies for risky alcohol behaviors was mediating the relation between perceived sibling (close) involvement in risky alcohol behaviors and EA's involvement in risky alcohol behaviors. See Table 44.

Table 43

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Sibling (Close) Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Sibling (Close) Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.15	38.56	.38**
<u>Step 2</u>				
Perceived Sibling (Close) Involvement in Risky Alcohol Behaviors	Negative Expectancies for Risky Alcohol Behavior	<.01	<.01	<.01NS

* $p < .05$; ** $p < .01$

Perceived sibling (close) involvement in risky alcohol behaviors was a predictor of EA's involvement in risky alcohol behaviors, $\beta = .38$, $F = 38.56$, $p < .001$. On the second step of the mediation analysis, the relation between perceived sibling (close) involvement in risky alcohol behaviors and negative expectancies for risky alcohol behaviors was not statistically significant, $\beta < .01$, $F < .01$, $p > .05$. Because of the nonsignificant finding on the second step, the mediation analysis could not be continued.

The next set of mediation analyses used perceived peer involvement in risky sex, drug, and alcohol behaviors as the mediating variables. EA's involvement in risky sex behaviors used as the criterion variable, with perceived peer involvement in risky sex behaviors was used as the predictor variable in a mediation analysis. Negative expectancies for risky sex behaviors was used as the mediating variable in this analysis. See Table 44.

Table 44

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Sex Behaviors on the Relation between Perceived Peer Involvement in Risky Sex Behaviors and Frequency of Involvement in Risky Sex Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Peer Involvement in Risky Sex Behaviors	Frequency of Involvement in Risky Sex Behaviors	.05	11.89	.21**
<u>Step 2</u>				
Perceived Peer Involvement in Risky Sex Behaviors	Negative Expectancies for Risky Sex Behavior	<.01	.15	-.03NS

* $p < .05$; ** $p < .01$

Perceived peer involvement in risky sex behaviors was a predictor of frequency of involvement in risky sex behaviors, $\beta = .21$, $F = 11.89$, $p = .001$. The relation between perceived peer involvement in risky sex behaviors and negative expectancies for risky sex behaviors tested on the second step of the mediation analysis was not statistically significant, $\beta = -.03$, $F = .15$, $p > .05$. As a result of the nonsignificant finding on the second step of the analysis, the mediation analysis could not be continued.

A mediation analysis was used to determine if negative expectancies for risky drug behaviors was mediating the relation between perceived peer involvement in risky drug behaviors and EA's involvement in risky drug behaviors. Results of this analysis are presented in Table 45.

Perceived peer involvement in risky drug behaviors was a predictor of EA's involvement in risky drug behaviors, $\beta = .55$, $F = 99.92$, $p = .001$. On the second step of the mediation analysis, the relation between perceived peer involvement in risky drug behaviors and negative expectancies for risky drug behavior was not statistically significant, $\beta = .07$, $F = 1.07$, $p > .05$. The mediation analysis could not be continued due to the nonsignificant finding on the second step of the analysis.

Table 45

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Drug Behaviors on the Relation between Perceived Peer Involvement in Risky Drug Behaviors and Frequency of Involvement in Risky Drug Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Peer Involvement in Risky Drug Behaviors	Frequency of Involvement in Risky Drug Behaviors	.30	99.92	.55**
<u>Step 2</u>				
Perceived Peer Involvement in Risky Drug Behaviors	Negative Expectancies for Risky Drug Behavior	.01	1.07	.07NS

* $p < .05$; ** $p < .01$

A mediation analysis was used to determine if the relation between perceived peer involvement in risky alcohol behaviors and EA's involvement in risky alcohol behaviors was mediated by negative expectancies for risky alcohol behavior. See Table 46.

Table 46

Mediation Analysis: Mediating Role of Negative Expectancies for Risky Alcohol Behaviors on the Relation between Perceived Peer Involvement in Risky Alcohol Behaviors and Frequency of Involvement in Risky Alcohol Behaviors

Predictor	Criterion	R^2	F	Standardized β
<u>Step 1</u>				
Perceived Peer Involvement in Risky Alcohol Behaviors	Frequency of Involvement in Risky Alcohol Behaviors	.33	118.16	.58**
<u>Step 2</u>				
Perceived Peer Involvement in Risky Alcohol Behaviors	Negative Expectancies for Risky Alcohol Behavior	<.01	.01	-.01NS

* $p < .05$; ** $p < .01$

Perceived peer involvement in risky alcohol behaviors was a predictor of involvement in risky alcohol behaviors, $\beta = .58$, $F = 118.16$, $p < .001$. On the second step of the mediation analysis, the relation between perceived peer involvement in risky alcohol behaviors and negative expectancies for risky alcohol behavior was not statistically significant, $\beta < -.01$, $F =$

.01, $p < .05$. As a result of the nonsignificant findings on the second step of the analysis, the mediation analysis could not be continued.

CHAPTER 5

DISCUSSION

The purpose of this study was to examine risk taking behaviors within multiple contexts to better understand how it is related to the emerging adult population when considering the influence of peer, sibling and parental relations. A specific goal was to determine the association between emerging adults' perceptions of peers', siblings', and parents' risk-taking behaviors, and their self-reported risk behavior after controlling for participants' sensation seeking tendencies. In addition, the emerging adults' relations with peers, siblings, and parents was used as a moderating variable in examining the relation between self-reported risk-taking sex, drugs, and alcohol behavior and their perceptions of peers, siblings, and parents participation in the same risk taking behaviors. In general, results of this study were as anticipated.

Results supported the first hypothesis that emerging adults' risky behaviors were associated with risky behaviors of those related to them. Previous studies have documented that emerging adults' risky behaviors were associated with risky behaviors of those related to them. This finding supported the concept of modeling that has been shown to influence expectancies of, and engagement in, risky behaviors (Abrams & Niaura, 1987; Collins, Parks, & Marlatt, 1985; D'Amico & Fromme, 1997). Specifically, Bandura (1986) explained that behavior can be learned by observing others, and further argued that individuals' motivation to act on the learned behavior was a key factor throughout one's development. Social learning theory emphasizes that an individual's behaviors, attitudes, and emotional reactions typically are learned from peers, siblings, and parents. These elements can be modeled, observed, learned, and imitated (Bandura, 1977). For example, an individual's behavior might become more similar to a friend's, sibling's, or parent's behavior as a result of changes in underlying motivational processes, such as wanting

to be accepted by such individuals and wanting to understand and further develop in the world around them (Barry & Wentzel, 2006; Kim et al., 2007).

An additional purpose of this study was to explore the moderating effects of close relationships on the relation between perceived peer, sibling, and parent risk taking behaviors and the self-reported risk taking behaviors of emerging adults. It was hypothesized that close relations with peers, siblings, and parents would be related to higher involvement in risk taking behaviors. Results indicated that close peer relations moderated relations between involvement in risky drug behaviors and risky alcohol use and self-reported involvement in these risk taking behaviors. As peer relations increased, the relation between perceived peer involvement in risky drug and alcohol use and frequency of involvement in these behaviors also increased. This supports the ideas presented earlier that peers serve as models for each other through exposure within their groups, as well as through close relationships and discussions that occur within those relationships (Buhrmester & Furman, 2008). This interaction and involvement, therefore, could facilitate engagement in risk taking behaviors, specifically related to drugs and alcohol. However, these findings did not extend to risky sexual behaviors.

Similarly, results indicated that close sibling relationships moderated the relations between risky drug use and self-reported drug use. The sibling analyses were divided into two: close siblings and general siblings. The participants were asked to focus on the sibling with whom he/she had the closest relations when responding to the survey, while he/she was asked to consider all of his/her siblings in responding to questions related to their general siblings. The close relations with siblings (closest) decreased the relation between perceived close sibling risky drug and alcohol use and self-reported drug alcohol use. In contrast, close relations with all siblings resulted in increased relations between perceived siblings (general) risky drug behaviors and self-reported drug behaviors. The relation between siblings (general) risky alcohol behaviors

and self-reported alcohol behaviors decreased when siblings (general) relations was added to the analysis as a moderator. When siblings enjoy close relations, they are more likely to share ideas and role model for each other. Older close siblings appear to be role models for emerging adults who are more likely to engage in risky behaviors if they are aware that their close siblings are also participating in these behaviors. When the close siblings are younger, the emerging adult may choose to be a positive role model to control risky behaviors of their younger siblings. Conversely, when emerging adults have close relations with their general siblings, they are more likely to model their siblings' risky drug behavior. However, their self-reported involvement in risky alcohol behavior is more related to their perceived siblings' (general) involvement in these behaviors when the emerging adults have close relations with their general siblings. However, these findings did not extend to risky sexual behaviors. Studies focusing on sibling involvement in risk taking behavior did not consider the closeness of the relations and how these relations could influence other siblings' risk taking behaviors. These findings supported earlier research that established the idea that further understanding of sibling relations and individual risk taking behaviors was needed.

Finally, amount of closeness between parents and adolescents was tested for its potential moderating effects and, contrary to peers and close siblings, it did not moderate the relations between self-reported involvement in risky sex, drug, and alcohol behaviors and parent involvement in these behaviors. When parent involvement in risky sex, drug, and alcohol behaviors was correlated with self-reported involvement in these behaviors, the results were statistically significant in a positive direction. After adding the interaction between close parent relations and perceived parent involvement in these behaviors, the results were no longer statistically significant, but the direction of the relation had changed from positive to negative. Emerging adults who had close relations with parents were less likely to be involved in risky

drug and alcohol behaviors. These findings did not extend to sexual behaviors. These findings were inconsistent with the related literature. According to researchers (Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001; Wetherill & Fromme, 2007), parents continue to play a role as their child moves through adolescence and into emerging adulthood. Additionally, parents can shape patterns of risky behaviors by displaying involvement with risky behaviors (Dishion, Nelson & Bullock, 2004; Hawkins, Catalano, & Miller, 1992; Wetherill & Fromme, 2007).

The third set of aims in this study involved testing the relations between individual outcome expectancies and one's own risk taking behaviors as well as individual outcome expectancies and the perceptions of the risk taking behaviors of peers, siblings, and parents. The findings were consistent with previous literature. Prior to participation in their own risk taking experiences, individuals may conform to outcome expectancies based on the expectancies, behavior, and consequences experienced by others who are significant in their lives (D'Amico & Fromme, 1997). Positive expectancies have been associated with greater involvement in risk taking behaviors while negative expectancies generally were associated with less involvement (Fromme, Katz & D'Amico, 1997; Fromme, Stroot, & Kaplan, 1993). A more specific aspect of what has been lacking in the literature was tested – the mediating role of positive and negative outcome expectancies on the relation between perceived parent, sibling, and peer involvement in sex, drug, and alcohol risk taking behaviors and self-report involvement in these types of behaviors by emerging adults.

Mediation analyses were used to determine if positive and negative outcome expectancies were fully or partially mediating the relation between the perceived involvement of peers, parents, and siblings involvement in risky sex, drug, and alcohol behaviors and EAs' involvement in these types of behaviors. A full mediation occurs when the effect of a third variable (i.e., positive outcome expectancies) elucidates the relation between the predictor (i.e.,

perceptions of peers, parents, and siblings involvement in risky behaviors) and criterion (i.e. EAs' involvement in risky behaviors) variables. A partial mediation implies that the mediating variable is accounting for some, but not all, of the variance between the predictor and criterion variables.

Positive outcome expectancies for risky drug behaviors partially mediated the relation between perceived parent involvement in risky drug and alcohol behaviors and frequency of involvement in risky drug and alcohol behaviors. Positive expectancies for risky drug behaviors was a partial mediator on the relation between perceived sibling (general and close) involvement in risky drug behaviors, while a full mediation effect was found for risky alcohol use for siblings (general). A partial mediation was found for positive expectancies for risky alcohol behaviors on the relation between perceived sibling (closest) involvement in risky alcohol behaviors and frequency of involvement in risky alcohol behaviors. Positive expectancies for risky sex behaviors and drug use were found to mediate the relation between perceived peer involvement in risky sex behaviors and frequency of involvement in risky behaviors. Positive expectancies for risky alcohol behaviors were partially mediating the relation between perceived peer involvement in risky alcohol behaviors and frequency of involvement in risky alcohol behaviors.

When emerging adults perceive that outcomes associated with risky behaviors were positive (have good feelings when drinking or using drugs, enjoy a close intimate relationship with a girl/boyfriend, etc.), they are more likely to want to indulge in those behaviors. When they perceive that individuals with whom they are related, either by blood or friendship, are also participating in the risky behaviors, they have increased impetus to participate in the risky behavior. When the individual is a sibling or a peer, they may feel that they have to be involved to be included in future opportunities involving sex, drugs, and alcohol.

In contrast to the results of the mediation analyses that used positive outcome expectancies as the mediating variable, none of the mediation analyses that used negative outcome expectancies provided results that were statistically significant. Although the relation between perceived involvement in risky behaviors by parents, siblings, and peers and self-reported involvement in risky behaviors generally were significant, the relation between negative expectancies for risky behavior was not related to perceived involvement in risky behaviors by parents, siblings, and peers.

These mediation analyses provided support that when EAs think that the outcomes for involvement in risky behaviors will yield positive results, they are more likely to follow the lead of their parents, siblings, and peers in participating in the behaviors. However, when they perceive that participation in risky behaviors will result in negative outcomes, they are less likely to be involved in these types of behaviors.

However, if they perceive their parents are involved in risky behaviors, such as drugs or alcohol, they may be more apt to participate in these types of behaviors. Parents often act as role models for their children and if the EA has watched their parents using drugs and alcohol, he/she may feel this type of behavior is normal and not risky. Like the role of parents, siblings have an influence on EAs involvement in risky behaviors. The combination of perceived involvement in risky behaviors by siblings and positive expectancies for the behaviors may result in the EA being more willing to participate in the behaviors. Peers have a greater influence on EAs involvement in risky sex, drug, and alcohol behaviors. These findings were not unexpected as EAs were more likely to follow their peers' lead in involvement in risky behaviors.

Limitations of the Study and Directions for Future Research

Several limitations in this study should be considered when interpreting the results. The expansion of the study to other groups of emerging adults would be an ideal next step in

continuing research on risky behaviors of this group. Using students in baccalaureate colleges or in community colleges located in different areas of the state are possible ways to get a more diverse sample of emerging adults. The use of a sample of emerging adults who are not enrolled in college could provide useful insights regarding the risky behaviors of a broader representation of people from 18 to 25 years of age. The racial and socioeconomic makeup of the emerging adult sample used in this study consisted of a majority of Caucasian individuals. Because the sample was primarily Caucasian, generalizations are made to that racial group. It would be important for future studies to be conducted with a more heterogeneous racial and socioeconomic makeup.

Another limitation of the study was the lack of identifying if the sibling listed as closest was younger or older than the emerging adult. If the closest sibling was younger, he/she might be modeling the emerging adults' behaviors. If the closest sibling was older, he/she might be acting as a role model for the emerging adult. In addition, the age differences between the closest sibling and the gender of the sibling were not obtained in the study. Future research needs to compare the interactions among close siblings relative to their birth positions and the age differences in the siblings. If a considerable age difference is noted between the closest sibling and the emerging adult, the relations may be different than if the closest sibling is a twin or very close in age to the emerging adult. Further research should also focus on if the siblings are of the same or different gender. The relation and the influence of the sibling could be different if sibling and emerging adults are of different genders.

The lack of information about the relation status of the emerging adult and his/her parents might be another weakness. The student was not asked if he/she was living with or had a relation with both biological parents, a single parent, or a parent/step parent dyad. Further research may

want to focus on the family structure to determine if there was an association between emerging adults' willingness to take risks and the type of family.

Methodology in future studies could focus on establishing causal relationships and developmental patterns via longitudinal studies and broader demographics. Studying changes over time could provide better information on the developmental changes that occur in emerging adults from 18 to 25 years of age.

Overall, the lack of statistically significant findings for both the moderating and mediating roles of peers, parents, and siblings and risk taking behaviors need additional study. Further research is needed to determine if specific variables are moderating the relations between peer, parent, and sibling involvement in risky behaviors and the emerging adults' involvement in risky behaviors.

Lastly, future research could continue to study other intrapersonal factors, such as educational aspirations and locus of control. Elements such as self-efficacy, educational aspirations, locus of control, confidence, frequency of engagement in risk taking behaviors and personality could function as potential mediators of outcomes and outcome expectancies.

Implications for Clinical Practice and Educators

This study attempted to gain a greater understanding of emerging adults and perceptions of peer, sibling, and parental involvement in risk taking behaviors on emerging adults' involvement in risk taking behaviors. In doing so, this research provides practitioners and educators with a useful and expanded understanding of the manner in which an emerging adult's perceptions of risk taking behaviors is related to involvement in such behaviors. Understanding the role of risk taking in an emerging adult's life, as well as the role that peers, siblings, and parents play in such involvement may help shape clinical- and college/university-based interventions to educate, support, and possibly deter individuals from faulty perceptions about

risk taking behaviors. Prevention programs should consider the sensation seeker's traits and tailor programs to meet their needs. For example, extracurricular activities (i.e., sports, performing arts, etc.) could provide individuals with safe and satisfying stimuli within controlled settings.

Implications from this research could encourage colleges to reinforce consequences that occur as a result of involvement in risk taking behaviors. Seminars, workshops, and opportunities for discussion on related topics, as well as outreach programs led by professionals and students attending the college, may be helpful in risk prevention efforts. These prevention approaches and strategies may be successful in preventing both risk taking behaviors as identified in this study, but also other related behaviors, such as dropout rates, unemployment, incarceration, harm to health, and even death.

Finally, development of programs assisting parents with effective parenting skills to handle, support, and guide emerging adult offspring during their transitional period would be of great benefit. Psychologists and other mental health professionals could create parenting programs that consider the entire family. Such programs could enhance the recognition and understanding of the importance of familial relationships as adolescents approach adulthood. Use of media, brochures through government agencies, public health offices, and schools could encourage attendance at such educational programs to increase knowledge and understanding of this stage of development.

Overall, clinicians, educators, and related individuals can benefit from understanding the outcomes of this research. Additional research using the constructs of this study would be beneficial to confirm and further clarify these findings.

Conclusion

The outcomes of this study have provided evidence that relations between parents, siblings, and peers can influence an emerging adult's involvement in risky sex, drug, and alcohol behaviors. These outcomes are preliminary, with further research needed to understand the mediating effects of positive and negative expectancies on the relation between perceived involvement of parents, siblings, and peers on the frequency of emerging adults' involvement in these types of risky behaviors. Mental health professionals working in college settings with emerging adults may find the results of this study helpful in developing programs and interventions to reduce negative effects of participation in risky behaviors.

APPENDIX A**RISK TAKING BEHAVIORS IN EMERGING ADULTS
AND PEER, SIBLING & PARENTAL RELATIONSHIPS**

Principle Investigator: Malasri Chaudhery-Malgeri

RESEARCH INFORMATION LETTER**I. Introduction and Purpose**

The purpose of this study is to examine the relationship between risk taking behaviors and peer, sibling and parental relationships among emerging adults (individuals between the ages of 18 and 25 years of age).

II. Procedure

Participants will be asked to complete five questionnaires: a demographic information sheet, the Sensation Seeking Inventory, the Cognitive Appraisal of Risky Activities, the Cognitive Appraisal of Risky Activities-Revised, and the Network of Relationships Inventory-Relationship Quality Version. The questionnaires should not require more than 20 minutes to complete.

III. Benefits

There are no benefits to the participants.

IV. Risks

No risks or additional effects are likely to result from your participation in the study. In the unlikely event of an injury arising from participation in this study, no reimbursement, compensation or free medical treatment is offered by Wayne State University or the researcher.

V. Voluntary Participation/Withdrawal

Your participation in this study is voluntary, with the return of your completed survey as evidence of your willingness to participate in the study. Once you have returned your completed survey, you can withdraw until the end of the data collection period. Following this period, your survey will not be identifiable, preventing your withdrawal.

VI. Costs

There are no costs involved in your participation in this study.

VII. Compensation

There is no compensation being offered for participation in the study.

Title: **THE CORRELATIONS BETWEEN RISK TAKING BEHAVIORS IN EMERGING ADULTS AND PEER, SIBLING & PARENTAL RELATIONSHIPS**

Principle Investigator: Malasri Chaudhery-Malgeri

VIII. Confidentiality

All information collected during the course of this study will be kept confidential to the extent permitted by law. All information will be presented in aggregate, with no individual participant identifiable in the study.

IX. Questions

If you have any questions regarding the items on the surveys or the purpose of the study, please feel free to contact me at your earliest convenience. I can be reached at (248) 912-7434 or by email at ai7169@wayne.edu. If you would like information regarding your rights regarding participation in this study, please contact the chairperson of the Wayne State University Behavioral Investigation Committee at (313) 577-1628.

X. Consent to Participate in a Research Trial

The return of your completed survey is evidence of your willingness to participate in this study. If you would like to receive a copy of the results, please contact me (using the contact information provided above). Please retain this information sheet in case you have any questions or would like additional information regarding this study.

APPENDIX B

Assessment Battery

Demographic Survey

Age

Gender

- Male
- Female

Ethnicity

- African American
- Asian/Pacific Islander
- Caucasian
- Hispanic
- Middle Eastern
- Other _____

Educational Level

- Freshman
- Sophomore
- Other _____

Enrollment Status

- Full-time
- Part-time

Work Status

- Full-time
- Part-time
- Full-time student
- Other _____

What is your current GPA? _____

Marital Status

- Single, never married
- Married
- Committed Relationship
- Divorced
- Widowed
- Other _____

Residential Status

- At parent's home
- Independent living
 - Alone and Renting Apartment/House
 - Living with unrelated roommates – Renting
 - Living with a committed partner

Do you have children

- Yes
- No

If yes, how many children?

Do you have siblings

- Yes
- No

If yes, please list your siblings, their gender, and ages

<u>First Name</u>	<u>Gender</u>	<u>Age</u>
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____
_____	<input type="checkbox"/> M <input type="checkbox"/> F	_____

FREQUENCY OF INVOLVEMENT

Please complete the following sentence:

- A. A regular partner is someone that I have dated for at least _____ (specify number) weeks.
- B. We would like to know how often you participated in the following activities during the past 6 months. Please **circle the number of times** that you engaged in each behavior **over the past 6 months**.
- C. When asked about a regular partner, **use the definition of a regular partner you gave in Question A.**

	Number of Times in the Past 6 Months						
1. Had sex with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
2. Had sex without protection against pregnancy with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
3. Had sex without protection against sexually transmitted diseases with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
4. Used condoms for sexual intercourse with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
5. Had sexual intercourse while under the influence of alcohol with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
6. Had sexual intercourse while under the influence of drugs other than alcohol with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
7. Had sex without a condom with:							
... a regular partner (as defined in A)	0	1	2-4	5-9	10-20	21-30	31+
... someone I just met or did not know well	0	1	2-4	5-9	10-20	21-30	31+
Please circle the number of times you engaged in each behavior over the past 6 months .							
8. Left a social event with someone I just met or did not know well.	0	1	2-4	5-9	10-20	21-30	31+
IF FEMALE, GO TO QUESTION 9. IF MALE, GO TO QUESTION 14.							
9. Had sexual intercourse because partner used verbal pressure or threats	0	1	2-4	5-9	10-20	21-30	31+
10. Had sexual intercourse because partner used physical force	0	1	2-4	5-9	10-20	21-30	31+

11. Was drunk with someone I did not know well	0	1	2-4	5-9	10-20	21-30	31+
12. Had sexual intercourse because partner was too aroused to stop	0	1	2-4	5-9	10-20	21-30	31+
13. Had sexual intercourse because of partner's continual pressure (e.g., threats to end relationship)	0	1	2-4	5-9	10-20	21-30	31+

IF FEMALE, GO TO QUESTION 19

14. Convinced partner to have sexual intercourse through verbal pressure or threats	0	1	2-4	5-9	10-20	21-30	31+
15. Convinced partner to have sexual intercourse through use of physical force	0	1	2-4	5-9	10-20	21-30	31+
16. Made sexual advances toward a drunk date	0	1	2-4	5-9	10-20	21-30	31+
17. Convinced partner to have sexual intercourse because I was too aroused to stop	0	1	2-4	5-9	10-20	21-30	31+
18. Convinced partner to have sexual intercourse through continual pressure (e.g., threats to end relationship)	0	1	2-4	5-9	10-20	21-30	31+

Please **circle the number of times** that you engaged in each behavior **over the past 6 months**.

19. Tried/used drugs other than alcohol:

a. Marijuana	0	1	2-4	5-9	10-20	21-30	31+
b. Cocaine	0	1	2-4	5-9	10-20	21-30	31+
c. Hallucinogens	0	1	2-4	5-9	10-20	21-30	31+
d. Amphetamines (speed)	0	1	2-4	5-9	10-20	21-30	31+
e. Inhalants	0	1	2-4	5-9	10-20	21-30	31+
f. Other (Specify _____)	0	1	2-4	5-9	10-20	21-30	31+

20. Drove after drinking:

a. 1-2 alcoholic beverages	0	1	2-4	5-9	10-20	21-30	31+
b. 3-4 alcoholic beverages	0	1	2-4	5-9	10-20	21-30	31+
c. 5 or more alcoholic beverages	0	1	2-4	5-9	10-20	21-30	31+
21. Drank more than 5 alcoholic beverages	0	1	2-4	5-9	10-20	21-30	31+
22. Drank alcohol too quickly	0	1	2-4	5-9	10-20	21-30	31+
23. Mixed drugs and alcohol	0	1	2-4	5-9	10-20	21-30	31+
24. Played drinking games	0	1	2-4	5-9	10-20	21-30	31+
25. Rode in a car with someone who had consumed alcohol	0	1	2-4	5-9	10-20	21-30	31+

To complete Questionnaires 1 and 2, please refer to this page for examples.

A list of illicit drugs and drugs used to get “high” including some of their street names:

Marijuana: pot, weed, hashish, hash oil

Cocaine: coke, crack, rock, freebase; any form of cocaine

Hallucinogens: LSD (acid), PCP (angel dust), psilocybin (mushrooms), mescline

Amphetamines: uppers, bennies, beans, speed, crank, crystal meth, diet pills

Inhalants: glue, gases, solvents, aerosol sprays

Opiates: heroin (smack, junk, horse)

Other drugs:

Club and rave drugs: ecstasy, methamphetamine, ketamine (Special K, K, or Ket), and

sedatives: commonly known as date rape drugs: GHB (G, liquid ecstasy, liquid X, Liquid

E) and Rohypnol (rophy, ruffles, roach 2, roachies, roche, roofies, ruffies, ruff up, rib,

rope, ropies, circle, circes, “forget it”, “forget-me-pill”, “Mexican Valium”)

Anabolic steroids (roids, juice)

Prescription drugs used to get high:

pain killers (Oxycontin, Vicodin), anti-anxiety drugs (Xanax, Valium), stimulants (Adderall, Ritalin)

One alcoholic drink is equal to:

one 12 ounce beer, one 8 oz. malt liquor, one 5 oz. glass of wine, or 1.5 oz. or a “shot” of liquor (for example; gin, rum, scotch, vodka, whiskey)

BENEFIT OF ACTIVITIES

Please complete the following sentence:

- A. A regular partner is someone that I have dated for at least _____ (specify number) weeks.
- B. Using the scale of 1 (not at all likely) to 7 (extremely likely), please rate how likely it is that you would experience **some positive consequence** (e.g., experience pleasure, feel good about yourself, spend time with friends) if you engaged in the following activities.
- C. When asked about a regular partner, **use the definition of a regular partner you gave in Question A.**

1. Having sex with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

2. Having sex without protection against pregnancy with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

3. Having sex without protection against sexually transmitted diseases with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

4. Using condoms for sexual intercourse with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

5. Having sexual intercourse while under the influence of alcohol with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

6. Having sexual intercourse while under the influence of drugs other than alcohol with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

7. Having sex without a condom with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

8. Sexual monogamy

1	2	3	4	5	6	7
---	---	---	---	---	---	---

9. Sex with a variety of partners

1	2	3	4	5	6	7
---	---	---	---	---	---	---

10. Leaving a social event with someone I just met or do not know well.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

11. Sexual abstinence.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

IF FEMALE, GO TO QUESTION 12. IF MALE, GO TO QUESTION 17.

12. Having sexual intercourse because partner used verbal pressure or threats

1	2	3	4	5	6	7
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13. Having sexual intercourse because partner used physical force	1	2	3	4	5	6	7
14. Being drunk with someone I did not know well	1	2	3	4	5	6	7
15. Having sexual intercourse because partner was too aroused to stop	1	2	3	4	5	6	7
16. Having sexual intercourse because of partner's continual pressure (e.g., threats to end relationship)	1	2	3	4	5	6	7
IF FEMALE, GO TO QUESTION 22							
17. Convincing partner to have sexual intercourse through verbal pressure or threats	1	2	3	4	5	6	7
18. Convincing partner to have sexual intercourse through use of physical force	1	2	3	4	5	6	7
19. Making sexual advances toward a drunk date	1	2	3	4	5	6	7
20. Convincing partner to have sexual intercourse because I was too aroused to stop	1	2	3	4	5	6	7
21. Convincing partner to have sexual intercourse through continual pressure (e.g., threats to end relationship)	1	2	3	4	5	6	7
22. Trying/using drugs other than alcohol:							
g. Marijuana	1	2	3	4	5	6	7
h. Cocaine	1	2	3	4	5	6	7
i. Hallucinogens	1	2	3	4	5	6	7
j. Amphetamines (speed)	1	2	3	4	5	6	7
k. Inhalants	1	2	3	4	5	6	7
l. Other (Specify _____)	1	2	3	4	5	6	7
23. Driving after drinking:							
d. 1-2 alcoholic beverages	1	2	3	4	5	6	7
e. 3-4 alcoholic beverages	1	2	3	4	5	6	7
f. 5 or more alcoholic beverages	1	2	3	4	5	6	7
24. Drinking more than 5 alcoholic beverages on one occasion	1	2	3	4	5	6	7
25. Drinking alcohol too quickly	1	2	3	4	5	6	7
26. Mixing drugs and alcohol	1	2	3	4	5	6	7
27. Playing drinking games	1	2	3	4	5	6	7
28. Riding in a car with someone who had consumed alcohol	1	2	3	4	5	6	7

RISK OF ACTIVITIES

Please complete the following sentence:

- A. A regular partner is someone that I have dated for at least _____ (specify number) weeks.
- B. Using the scale of 1 (not at all likely) to 7 (extremely likely), please rate how likely it is that you would experience **some negative consequence** (e.g., become sick, be injured, be embarrassed, suffer legal consequences, or feel bad about yourself) if you engaged in the following activities.
- C. When asked about a regular partner, **use the definition of a regular partner you gave in Question A.**

1. Having sex with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

2. Having sex without protection against pregnancy with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

3. Having sex without protection against sexually transmitted diseases with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

4. Using condoms for sexual intercourse with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

5. Having sexual intercourse while under the influence of alcohol with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

6. Having sexual intercourse while under the influence of drugs other than alcohol with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

7. Having sex without a condom with:

... a regular partner (as defined in A)	1	2	3	4	5	6	7
... someone I just met or do not know well	1	2	3	4	5	6	7

8. Sexual monogamy

1	2	3	4	5	6	7
---	---	---	---	---	---	---

9. Sex with a variety of partners

1	2	3	4	5	6	7
---	---	---	---	---	---	---

10. Leaving a social event with someone I just met or do not know well.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

11. Sexual abstinence.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

IF FEMALE, GO TO QUESTION 12. IF MALE, GO TO QUESTION 17.

12. Having sexual intercourse because partner used verbal pressure or threats

1	2	3	4	5	6	7
---	---	---	---	---	---	---

13. Having sexual intercourse because partner used physical force	1	2	3	4	5	6	7
14. Being drunk with someone I did not know well	1	2	3	4	5	6	7
15. Having sexual intercourse because partner was too aroused to stop	1	2	3	4	5	6	7
16. Having sexual intercourse because of partner's continual pressure (e.g., threats to end relationship)	1	2	3	4	5	6	7
IF FEMALE, GO TO QUESTION 22							
17. Convincing partner to have sexual intercourse through verbal pressure or threats	1	2	3	4	5	6	7
18. Convincing partner to have sexual intercourse through use of physical force	1	2	3	4	5	6	7
19. Making sexual advances toward a drunk date	1	2	3	4	5	6	7
20. Convincing partner to have sexual intercourse because I was too aroused to stop	1	2	3	4	5	6	7
21. Convincing partner to have sexual intercourse through continual pressure (e.g., threats to end relationship)	1	2	3	4	5	6	7
22. Trying/using drugs other than alcohol:							
m. Marijuana	1	2	3	4	5	6	7
n. Cocaine	1	2	3	4	5	6	7
o. Hallucinogens	1	2	3	4	5	6	7
p. Amphetamines (speed)	1	2	3	4	5	6	7
q. Inhalants	1	2	3	4	5	6	7
r. Other (Specify _____)	1	2	3	4	5	6	7
23. Driving after drinking:							
g. 1-2 alcoholic beverages	1	2	3	4	5	6	7
h. 3-4 alcoholic beverages	1	2	3	4	5	6	7
i. 5 or more alcoholic beverages	1	2	3	4	5	6	7
24. Drinking more than 5 alcoholic beverages on one occasion	1	2	3	4	5	6	7
25. Drinking alcohol too quickly	1	2	3	4	5	6	7
26. Mixing drugs and alcohol	1	2	3	4	5	6	7
27. Playing drinking games	1	2	3	4	5	6	7
28. Riding in a car with someone who had consumed alcohol	1	2	3	4	5	6	7

NRI-RQV

We all have a number of people who are important to us. You will be rating your relationships with some of these people in the coming pages. Right now, we want you to describe the people you will rate.

1. Best Same Sex Non-romantic Friend

- a. _____ First name and last initial
- b. _____ How long have you been friends (Please specify weeks, months or years)
- c. _____ How old is she/he? (in years)

2. Best Opposite Sex Non-romantic Friend

- a. _____ First name and initial
- b. _____ How long have you been friends (Please specify weeks, months or years)
- c. _____ How old is she/he? (in years)

3. Romantic Partner (Do you currently have a boyfriend/girlfriend or romantic friend?)

- Yes No
- a. _____ What is his/her first name and last initial?
- b. _____ How long have you been romantic friends? (Specify weeks, months, or years)
- c. _____ How old is she/he? (in years)

Which of the following are true of your relationship with this person? (check all that are true)

- I like him/her, but I'm not sure he/she really likes me.
- We frequently spend time together or talk a lot by phone.
- We spend lots of time together, feel strongly for each other, and say we are "going together"
- We are seriously committed; we love each other and expect to spend our future lives together.

4. Sibling. Please pick the sibling that you consider to be most important/closest to you. (If several are equally important/close, just select one.) **If you do not have a sibling, leave these questions blank.**

- a. _____ Your sibling's first name
- b. _____ How old is she/he? (In years)

5. Mother Figure. Check the one **mother figure** you will be describing. (If you have more than one, choose the one you think of as your primary mother figure.)

- Biological/adopted mother
- Step-mother (or father's significant other)
- Other _____

6. Father Figure. Check the one **father figure** you will be describing. (If you have more than one, choose the one you think of as your primary father figure.)

- Biological/adopted father
- Step-father (or mother's significant other)
- Other _____

Instructions: The questions below ask about your relationships with the six types of people listed on the right. On each blank line, write one number from 1 to 5. Look at the top left page to see what each number means. Rate the “father figure” or “mother figure” who **lives in your home** if you live with someone who is not your natural parent.

Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or Extremely much							
1	2	3	4	5							
					Non-romantic same sex friend	Non-romantic opposite sex friend	Romantic Partner	Sibling(s) General	Sibling Closest to you	Mother	Father
Initials or first name											
1. How often do you spend fun time with these people?											
2. How often do you tell these people things that you don't want to.											
3. How often do these people push you to do things that you don't want to do?											
4. How happy are you with your relationship with these people?											
5. How often do you and these people disagree and quarrel with each other?											
6. How often do you turn to these people for support with personal problems?											
7. How often do these people point out your faults or put you down?											
8. How often do these people praise you for the kind of person you are?											
9. How often do these people get their way when you two do not agree about what to do?											
10. How often do these people <i>not</i> include you in activities?											
11. How often do you and these people go places and do things together?											
12. How often do you tell these people every-think that you are going through?											
13. How often do these people try to get you to do things that you don't like?											
14. How much do you like the way things are between you and these people?											
15. How often do you and these people get mad at or get in fights with each other?											

Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or Extremely much			
1	2	3	4	5			
	Non-romantic same sex friend	Non-romantic opposite sex friend	Romantic Partner	Sibling(s) General	Sibling Closest to you	Mother	Father
Initials or first name							
16. How often do you depend on these people for help, advice, or sympathy?							
17. How often do these people criticize you?							
18. How often do these people seem really proud of you?							
19. How often do these people end up being the one who makes the decisions for both of you?							
20. How often does it seem like these people ignore you?							
21. How often do you play around and have fun with these people?							
22. How often do you share secrets and private feelings with these people?							
23. How often do these people pressure you to do the things that he or she wants?							
24. How satisfied are you with your relationship with these people?							
25. How often do you and these people argue with each other?							
26. When you are feeling down or upset, how often do you depend on these people to cheer things up?							
27. How often do these people say mean or harsh things to you?							
28. How much do these people like or approve of the things you do?							
29. How often do these people get you to do things their way?							
30. How often does it seem like these people <i>do not</i> give you the amount of attention that you want?							

Arnett Inventory of Sensation Seeking

For each item, indicate which response best applies to you:

- (A) Describes me very well
- (B) Describes me somewhat
- (C) Does not describe me very well
- (D) Does not describe me at all

- ___ 1. I can see how it would be interesting to marry someone from a foreign country.
- ___ 2. When the water is very cold, I prefer not to swim even if it is a hot day. **RS**
- ___ 3. If I have to wait in a long line, I'm usually patient about it. **RS**
- ___ 4. When I listen to music, I like it to be loud.
- ___ 5. When taking a trip, I think it is best to make as few plans as possible and just take it as it comes.
- ___ 6. I stay away from movies that are said to be frightening or highly suspenseful. **RS**
- ___ 7. I think it's fun and exciting to perform or speak before a group.
- ___ 8. If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides.
- ___ 9. I would like to travel to places that are strange and far away.
- ___ 10. I would never like to gamble with money, even if I could afford it. **RS**
- ___ 11. I would have enjoyed being one of the first explores of an unknown land.
- ___ 12. I like a movie where there are a lot of explosions and car chases.
- ___ 13. I don't like extremely hot and spicy foods. **RS**
- ___ 14. In general, I work better when I'm under pressure.
- ___ 15. I often like to have the radio or TV on when I'm doing something else, such as reading or cleaning up.
- ___ 16. It would be interesting to see a car accident happen.
- ___ 17. I think it's best to order something familiar when eating in a restaurant. **RS**
- ___ 18. I like the feeling of standing next to the edge on a high place and looking down.
- ___ 19. If it were possible to visit another planet or the moon for free, I would be among the first in line to sign up.
- ___ 20. I can see how it must be exciting to be in a battle during a war.

RS denotes reverse score items (Combine responses to items, with A = 4, B = 3, C = 2, D = 1, so that higher scores = higher sensation seeking).

Odd numbered items are part of the Novelty subscale; even numbered items are part of the Intensity subscale.

APPENDIX C

Wayne State University Institutional Review Board Approval

WAYNE STATE
UNIVERSITY

IRB Administration Office
R7 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

CONCURRENCE OF EXEMPTION

To: Melissa Ciardullo
Theoretical & Behavior Foundations
16937 Heather Ridge

From: Dr. Scott Millis *S. Millis, PhD*
Chairperson, Behavioral Institutional Review Board (BIB)

Date: November 18, 2011

RE: IRB #: 114911B3X
Protocol Title: Risk Taking Behaviors in Emerging Adults and Peer, Sibling and Parental Relationships
Sponsor:
Protocol #: 1111010330

The above-referenced protocol has been reviewed and found to qualify for **Exemption** according to paragraph #2 of the Department of Health and Human Services Code of Federal Regulations [45 CFR 46.101(b)].

- Revised Protocol Summary Form (received in the IRB Office 11/17/2011);
- Protocol (received in the IRB Office 11/07/2011)
- The request for a waiver of the requirement for written documentation of informed consent has been granted according to 45 CFR 46.117(1)(2). Justification for this request has been provided by the PI in the Protocol Summary Form. The waiver satisfies the following criteria: (i) The only record linking the participant and the research would be the consent document; (ii) the principal risk would be potential harm (resulting from a breach of confidentiality); (iii) each participant will be asked whether he or she wants documentation linking the participant with the research, and the participant's wishes will govern; (iv) the consent process is appropriate; (v) when used requested by the participants consent documentation will be appropriate; (vi) the research is not subject to FDA regulations; and (vii) an information sheet disclosing the required and appropriate activities elements of consent disclosure will be provided to participant(s) not requesting documentation of consent.
- Research Information Sheet (dated 11/17/2011)
- Receipt of letter of support from Schoolcraft College (dated 12/13/2010)
- Data collection tools: Demographic Survey, Arnold Inventory of Sensation Seeking (AISS), Network of Relationships Inventory: Relationship Quality Version (NRI-RQV), Cognitive Appraisal of Risky Activities (CARC), Cognitive Appraisal of Risky Activities-Revised (CARC-R), and Cognitive Appraisal of Risky Activities: Benefit of Activities Scale Modified (CARE)

This proposal has not been evaluated for scientific merit, except to weigh the risk to the human subjects in relation to the potential benefits.

- Exempt protocols do not require annual review by the IRB.
- All changes or amendments to the above-referenced protocol require review and approval by the IRB BEFORE implementation.

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ABSTRACT**RISK TAKING BEHAVIORS IN EMERGING ADULTS
AND PEER, SIBLING & PARENTAL RELATIONSHIPS**

by

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Research shows emerging adults are more likely than younger and older cohorts to engage in such risky behaviors. However, research on the outcomes of emerging adults and their relations with peers, parents, and siblings is less conclusive. The purpose of this study was to examine the association between emerging adults' perceptions of peers', siblings', and parents' risk-taking behaviors, and risk behavior after controlling for participants' sensation seeking tendencies. This study explored the moderating role of emerging adults' relationships with peers, siblings, and parents in the relation between these models' risk taking behaviors and emerging adults' risk taking behaviors, The mediating role of positive and negative expectancies for risky behaviors on the relationships between perceived peer involvement in risky behaviors and frequency of involvement in risky behaviors was also examined.

Data were collected from a sample of 240 participants who were attending a suburban community college in the Midwestern section of the country. Results indicated that emerging adults' risky behaviors were associated with risky behaviors of those related to them. Close peer relations moderated relations between involvement in risky drug behaviors and risky alcohol use and self-reported involvement in risk taking behaviors. Close relations with siblings (closest)

appear to be role models for emerging adults who tended to engage in risky behaviors if their close siblings were participating in these behaviors. Conversely, when emerging adults have close relations with their general siblings, they tended to model their siblings' risky drug behavior. Close parental relations did not moderate relations between self-reported involvement in risky sex, drug, and alcohol behaviors and parent involvement in these behaviors. Emerging adults who had close parent relations were less likely to be involved in risky drug and alcohol behaviors. These findings did not extend to sexual behaviors.

Results also indicated partial and full mediations for positive outcome expectancies and the relation between perceived parent, peer, and sibling involvement in risky behaviors and emerging adults' frequency of involvement in risky behaviors. None of the mediation analyses that used negative outcome expectancies provided results that were statistically significant. Implications of these findings and suggestions for future research are included.

AUTOBIOGRAPHICAL STATEMENT

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