THE EFFECT OF SIBLING DELINQUENCY ON RISKY BEHAVIORS DURING EMERGING ADULTHOOD: AN INVESTIGATION OF THE MEDIATING AND MODERATING INFLUENCES

by

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(Under Direction of Leslie Gordon Simons)

ABSTRACT

This study examines the relationship between sibling delinquency and respondent risky behavior of emerging adults. This study attempts to understand the influence a sibling has on deviant behavior, sexual permissiveness, and substance use. Sibling support and sibling contact were the two components of a sibling relationships that were examined. A social learning theory framework was used to organize the hypotheses and to discuss findings. It was hypothesized that an individual who has high contact and support from a deviant sibling would be more likely to engage in deviant behavior, be more sexually permissive, and have increased alcohol use. The sample was comprised of over 700 undergraduates enrolled in a large state university. A test of the mediating and moderating effects of sibling support and contact was conducted. Results indicate that there is a mediating effect and a moderating relationship between the influence of sibling delinquency and respondent deviance, sexual permissiveness, and alcohol use for females. This means that as contact and support with a delinquent sibling increases, the level of respondent deviance, sexual permissiveness, and alcohol use also increases.

INDEX WORDS: Emerging Adulthood, Siblings, Delinquency, Alcohol Use, Sexual Permissiveness, Mediating, Moderating

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DEDICATION

I dedicate this dissertation to my spouse and best friend, Erin Peterson, and our two wonderful kids Kade and Kambree. The support and patience you have demonstrated over the past ten years of married student life has been awesome. Thank you.

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CHAPTER I

INTRODUCTION

The sibling relationship is an important component of individual and family development because of the longevity of the relationship and the level of shared intimacy (Brody, 1998; Dunn, 2005; McHale, Updegraff, Helms-Erickson, & Crouter, 2001, Kramer & Bank, 2005). Extant research has primarily focused on the sibling relationship from childhood and adolescence as well as late adulthood but the period of emerging adulthood (age 18-25) has been understudied. The research that has focused on sibling influence during emerging adulthood has largely been limited to the developmental transition to adulthood (Arnett & Tanner, 2005) and psychosocial outcomes (Arnett, 2000). Family is very influential in terms of individual development, attitudes, and behaviors (Furman & Giberson, 1995) and a profusion of studies has addressed the impact of the parent child relationship but few have investigated the unique ways in which siblings exert influence at all stages of development.

The sibling relationship is the longest lasting relationship most individuals will have throughout their life (Cicirelli, 1980, Goetting, 1986). About 80 to 90% of individuals are estimated to grow up with a sibling (Cicirelli, 1982). McHale and Crouter (1996) reported that 11 year old children spend more of their free time with their siblings, approximately 33%, than with their parents or friends. Because a large portion of their free time is spent with siblings, siblings have the potential to be highly influential. Dunn (1996) explained the role of sibling relationships in child development. The shared sibling environment provides the opportunity for similar experiences and continual contact. Children gain understanding of power and conflict

from these relationships but also learn vicariously about their own worth and esteem in comparison to their siblings by observing the treatment of siblings by their parents and others. The potential for siblings to be powerful influences on one another (Stocker, 1993) has resulted in the sibling being referred to as the "the first society" (Dunn, 1996).

On an individual level, self-esteem, depression, and anxiety are a few of the characteristics that are directly influenced by a sibling relationship (McHale & Gamble, 1989). Overall, the stronger the sibling relationship is, the better the general psychological functioning (Stocker, Lanthier, & Furman, 1997). In addition to psychological outcomes, behavioral outcomes are also influenced by the sibling relationship. For example, participating in risky behaviors such as deviance, substance use, and risky sexual behavior are influenced by the sibling relationship (Kramer & Bank, 2005). Brody (2004) suggested that further research is needed in understanding the ways in which sibling relationships contribute to involvement in high-risk behaviors.

A recent edition of the *Journal of Family Psychology* (2005) devoted an entire issue to sibling relationships. One of the primary reasons why the issue was devoted to sibling relationships was the result of the finding that sibling conflict was a "robust predictor" of later deviance, delinquency, and other behavior problems in adolescence and early adulthood (Kramer & Bank, 2005). The special issue focused primarily on childhood and adolescent sibling relations, but it would be expected that siblings in emerging adulthood would remain influential. The findings were summarized by Judy Dunn (2005). First, there is an accumulation of evidence that there is an association between the quality of sibling relationships and children's externalizing behavior even when the quality of parent-child relationship is controlled. Second, there is a better understanding in how siblings' experiences differ and has led to a focus on

differential relationships with parents. These advances have been necessary in order to better understand environmental influences on the development of individual differences regarding behavior. Third, the important associations between sibling relationships in childhood and their experiences with peers outside the family were illustrated. In general, individuals with strong sibling relationships early in life have fewer externalizing behavior problems.

At the general population level, antisocial behavior is low during childhood, increases during adolescence, and rapidly increases during emerging adulthood (Elliot, Huizinga, & Menard, 1989). Risky behavior has been s source of concern for many years. The quality of a sibling relationship has an influence on whether or not an individual will engage in deviant behavior. Extant studies have looked at sibling relationship influences on risky behavior primarily during adolescence. Studies addressing this population have reported that sibling substance use is associated with adolescent use (Rajan, Leroux, Peterson, Bricker, Andersen, Kealey, et al., 2003). For substance use and deviant behavior in general, sibling influence has been shown to be stronger than parental influence (Widdle, 2000). In addition, it has been shown to be equal to or greater than the influence of peers (Needle, McCubbin, Wilson, Reineck, Lazar, & Mederer, 1986). These relationships have been found when controlling for factors that siblings share such as same household, family structure, and income (Fagan & Najman, 2003; Pomery, Gibbons, Gerrard, Cleveland, Brody, & Wills, 2005).

The sibling relationship also plays a primary role at the family level as it contributes to the positive and negative functioning of the family. Sibling relationships provide a glimpse at the within family processes that are often difficult to understand (Paulhus, Trapnell, & Chen, 1999). Brody (1998) identified the sibling relationship as one important aspect of family that can provide information about developmental trajectories. A strong sibling relationship in childhood

will result in better outcomes for an individual during adolescence. There has been substantial evidence that the influence of a sibling lasts throughout the entire lifespan (Cicirelli, 1995). Interestingly, few studies have attempted to investigate the period of emerging adulthood as an important phase of the sibling relationship.

Cicirelli (1995) suggested the greatest gap in knowledge about sibling relationships is during young adulthood. Shortt and Gottman (1997) concurred and suggested that the sibling relationship in emerging adulthood is the least studied relationship in the family. Recently, emerging adulthood has received more attention and some of the research gaps have begun to be addressed (Arnett, 2005). The primary focus, thus far, of the extant literature on emerging adulthood sibling relationships addresses the developmental transition to adulthood or psychosocial outcomes. For example, Milevsky (2005a, b, c) recently reported on the influence siblings have during emerging adulthood on internalizing outcomes. She demonstrated that individuals who receive high sibling support scored significantly lower on loneliness and depression, and significantly higher on self-esteem and life satisfaction, than those under low sibling support conditions (Milevsky, 2005c). In addition, it has also been reported that many contextual variables, such as age, gender, and sibling position have an impact on the quality of a sibling relationship (Milevsky, 2005b). The current study examined externalizing behaviors rather than internalizing outcomes.

The purpose of the present study was to add to the literature addressing sibling relationships in emerging adulthood. A social learning theory (Bandura, 1977) framework was used to organize the hypotheses and to discuss findings. The study assumed that the more supportive a sibling relationship is would result in more similar externalizing behavior. Social learning theory explains that emerging adults are more likely to practice and perform behaviors

that are modeled by an individual that is nurturing and supportive. Primarily this study examined how the sibling relationship influences an emerging adult's risky behavior. The focus was on the quality of the sibling relationship and the amount of support and contact the siblings give and receive to one another. In addition, the sibling relationship quality and the type of support siblings give to one another was assessed in order to better understand the influence siblings had on the risky behavior of an emerging adult. Consistent with social learning theory it was believed that an individual who has high contact and support from a delinquent sibling would be more likely to engage in deviant behavior, be more sexually permissive, and demonstrate increased alcohol use.

CHAPTER II

LITERATURE REVIEW

The influence siblings have on one another has been documented throughout the lifecourse (Cicirelli, 1995). Different processes in sibling relationships have been identified that may explain the effect that siblings have on each other at various life stages. Therefore, extant research has examined the developmental course of sibling relationships. The majority of the research has focused on childhood, adolescence, and late adulthood sibling relationships. Each stage is unique in the evolution of the sibling relationship.

Sibling Relationships in Childhood

During childhood, siblings are a fundamental part of most children's social world. Dunn (1996) reported that childhood sibling relationships, for the most part, have reciprocal relationships, are generally age peers, and have equal status among their parent(s) as children within the family. However, the interaction of siblings in early childhood is characterized by intense negative and positive emotions (Kendrick & Dunn, 1983). It has been reported that if siblings are able to learn how to balance these intense nurturing and conflictual behaviors, they will be a more socially skilled individual (Hetherington, 1988).

Abramovitch, Corter, Pepler, and Stanhope (1986) explained the positive aspects of childhood siblings when they reported that childhood sibling relationships have a considerable amount of care taking, reciprocity, sharing, cooperation, and helping. These positive interactions are often the result of sibling's being playmates, sources of support, or caretaking (Furman & Giberson, 1995). Brody, Stoneman, Mackinnon, and MacKinnon (1985) identified the roles in

childhood as teacher, learner, manager, managee, helper, helpee, and observer. Eventually these different roles were condensed into the positive dimensions of warmth and affection (Brody, Stoneman, & Burke, 1987; Stocker & McHale, 1992). These roles are often based on chronological age or birth order with earlier born siblings in the role of teacher, manager, and helper to their younger sibling (Searcy & Eisenberg, 1992). Therefore, the oldest sibling usually has more influence and control over their younger sister or brother. The dimensions of warmth and affection have also been found in middle age and elderly sibling relationships (Seltzer, 1989) suggesting that sibling relationships continue to have the same supporting relationships throughout the life-course.

There is positive externalizing and internalizing outcomes associated with the siblings playing different roles. For example, older siblings perform better in school and develop the ability to balance others' individual needs and their own personal concerns as they care for their younger siblings (Zukow-Goldring, 1995). Likewise, children who are cared for by an older brother or sister demonstrate more sensitivity and understanding to others' feelings and beliefs (Dunn, 1988). It has also been reported that older siblings contribute to the communication development of their younger brothers and sisters (Tomasello, Conti-Ramsden, & Ewert, 1990).

Young children's sibling interactions play a key role in their social understanding (Dunn, 1999). This is particularly significant for interpersonal skill development when the sibling relationship is positive. For example, the quality of a sibling relationship has been linked to the quality of peer relationships (Parke & Buriel, 1998). Therefore, when siblings are able to achieve a balance between conflict and support they are found to have more positive peer relationships than children who do not find the balance with their sibling(s) (Heatherington, 1988). These high-quality relationships with a sibling have been found to be a buffer against

negative externalizing behavior such as aggressiveness and being disruptive (McElwain & Volling, 2005). Pike, Coldwell, and Dunn (2005) suggested that the positive aspects of a sibling relationship are unique in that it is emotionally uninhibited. Therefore, the relationship provides an excellent context for prosocial development. This is not only important for the family environment, but it also spills over into other social arenas.

Sibling research has also indicated that the gender of a sibling is an important contributor to sibling relationships. In studies on siblings in childhood, sister-sister pairs scored higher on warmth and intimacy than brother-brother pairs or sister-brother pairs (Dunn, Slomkowski, Beardsall, & Rende, 1994). McHale, Updegraff, Helms-Erickson, and Crouter (2001) looked at the influence siblings had on gender role attitudes, sex-typed personality qualities, and sex-typed leisure activities. Each of these characteristics was significantly influenced by a sibling. If a first born child was high on expressiveness, a second born child would also be more expressive. In general, siblings' gender role qualities predicted those of their sisters and brothers.

Just like there are positive outcomes when the sibling relationship is good, there are negative outcomes when the relationship is bad. Straus & Gelles' (1990) National Survey of Family Violence revealed the intense level of negativity between siblings as it was reported that the sibling relationship is the most violent family relationship. These negative interactions and behaviors are often the result of siblings being nuisances (Furman & Giberson, 1995), arguing over personal property (Ross, 1996), or competing for parental attention (Teti, 2002).

The negative outcomes are most commonly found when an older sibling is aggressive or when there is a high level of conflict. For example, a sibling is more likely to perform poorly in school if an older sibling is negative or aggressive (Bank, Patterson, & Reid, 1996). In addition, children who have frequent negative and aggressive interactions with siblings have been found to

exhibit similar behavior with peers (Lewin, Hops, Davis, & Dishion, 1993). Similarly, younger siblings who have aggressive older siblings report having few positive experiences with peers (Bank, Patterson, & Reid, 1996). Negative childhood sibling interactions have the potential to place a child on a trajectory of later life behavioral concerns.

The contribution of early sibling relationships to the development of problem behavior has received increasing attention. For instance, among 3 to 7 year old children, sibling relationships characterized by more negative interaction have been related to externalizing problems (Deater-Deckard, Dunn, & Lussier, 2002). McElwain and Volling (2005) found a similar association when examining pre-school sibling relationships. It was reported that children with a low-quality sibling relationship were more likely to engage in aggressive and disruptive behavioral problems.

These same outcomes have been demonstrated while looking at various populations and controlling for variables outside the sibling relationship. Garcia, Shaw, Winslow, and Yaggi (2000) reported links between sibling conflict and externalizing conduct problems. This was true in a sample of low income 5-year-old boys. The study predicted children's conduct problems were significant after controlling for maternal hostility. Stocker, Burwell, and Briggs (2002) demonstrated in a sample of middle-class pre adolescent children that adjustment could be predicted from the target children's reports of sibling conflict 2 years earlier. This finding was also found when taking into account parental hostility.

Another contributor to sibling relationship quality is the family system. Sibling relationships are an integral part of the family system. Furman and Gibberson (1995) suggested that conflicts with parents could increase the likelihood that children will discharge anger onto their siblings. Previous research has shown that children who have a parental relationship that is

characterized by warmth exhibited less hostility and rivalry and more affection toward siblings (Stocker & McHale, 1992). To the contrary, parental behavior that displays assertion and power is related to a higher frequency of conflict between siblings (Furman & Gibberson, 1995).

Differential treatment of children by parents is a contributor to a family atmosphere that creates negativity and fosters feelings of anger and rivalry between siblings (Brody, 1998), which will then, in turn, enhance the probability of negative outcomes. Kowal and Kramer (1997) explained that the sibling relationship is compromised when the children believe that the differential treatment is a result of the parent caring less about them then their sibling. Sibling relationships are characterized by greater negativity when there are unequal amounts of control, discipline, and responsiveness from child to child (Brody, Stoneman, & McCoy, 1994; McHale, Crouter, McGuire, & Updegraff, 1995). It is believed that the less preferred sibling will develop a personal identity that will feel less worthy of love from the parent and will eventually reject the parent's idea of normal sibling behavior (Brody, 1998). Therefore, the child who receives fewer positive affect from the parent is at an increased risk to engage in less prosocial behavior and more deviant activities.

The emotionally charged interactions between siblings can be classified as normative in family development. Nonetheless, the quality of the sibling relationship in childhood has been reported to persist into adulthood (Ross & Milgram, 1982). Prolonged negative interactions in childhood are linked to increased risk for antisocial behavior during adolescence (Conger, Conger, & Elder, 1994) and early adulthood (Bank, Patterson, & Reid, 1996).

Sibling Relationships in Adolescence

As siblings age, their relationship undergoes a developmental transformation and become more egalitarian and more symmetrical (Buhrmester & Furman, 1990). During adolescence

sibling relationships generally become less intimate as there is an increase in involvement with peers and other outside the family opportunities (Conger, Bryant, & Brennom, 2004). The increased involvement outside of the household results in a decrease in both negative and positive interactions. High school seniors reported feeling more distant from and spending less time with their siblings and less affection and caring by siblings than 3rd, 6th, and 9th graders (Buhrmester & Furman, 1990). Cole and Kerns (2001) found a similar shift in adolescent sibling relations as there is less companionship and less conflict when compared to younger siblings. In addition, when positive and negative interactions between siblings occur in adolescence there tends to be a decrease in intensity as there is less quarreling, antagonism, and competition (Buhrmester & Furman, 1990). The shift in interactions during adolescence suggests that there may be a decrease in interest in the sibling relationship during this time. However, there is evidence that the opposite is true.

Despite the decrease in intensity of the sibling relationship, adolescents' still report that emotional attachments between siblings remain moderately strong (Cole & Kerns, 2001). It has been reported that, despite the growing distance, 13- and 16-year-olds described older siblings as sources of support in social and family issues. Updegraff, McHale, and Crouter's (2002) longitudinal study demonstrated that by the time individuals enter late adolescence there is an increase in intimacy between siblings (Updegraff, McHale, & Crouter, 2002). Research has demonstrated that there is emotional separateness and growing autonomy from the family or origin during adolescence, as well as a growing distance among siblings. However, despite the increase in distance among family members, intimacy and caring may increase.

Some research has found that gender differences in sibling dyads impact behavioral outcomes during adolescence. For example, older siblings with younger sisters have been found

to have higher levels of depressed mood when compared to older siblings with younger brothers (Richmond, Stocker, & Rienks, 2005). This may be attributed to the belief that older siblings have an increased responsibility to protect younger sisters which results in higher expectations and more internalizing problems.

The quality of sibling relationships is important to track during adolescence because it is a good predictor of behavior outcomes such as deviant behavior, sexual permissiveness, and substance use. Though the sibling relationship changes throughout adolescence, the influence siblings have on externalizing behavior continues to be substantial. There has been a link between older and younger siblings' externalizing behavior during adolescence (Brody, 2004).

Bank and Kramer (2005) recently summarized the impact sibling conflict has on adolescent behavior by stating that it is a "robust predictor" of adolescent deviant behavior. Bank, Patterson, and Reid (1996) initially demonstrated the powerful influence middle childhood sibling conflict had on adjustment problems for adolescents. It was reported that not only was deviant behavior related to sibling conflict, but other behavior problems such as substance use and school performance. Fagan and Najman (2003) found a similar impact as they reported that older siblings' delinquency predicts younger siblings' delinquent activity.

There are many ways to conceptualize sibling influence during adolescence, but the most obvious would be direct influence. For example, a sibling may influence negative behavior through modeling (Bandura, 1977). Based on observation, adolescents may form outcome expectancies on the observed consequences of their significant others (D'Amico & Fromme, 1997). Therefore, if an individual participates in risky behaviors and has not experienced negative consequences, their sibling may believe that the behaviors are safe and possibly

desirable. Sexual behavioral expectations are an example of one area that is influenced by a sibling.

Kowal and Blinn-Pike (2004) reported that the sibling relationship influences the development of attitudes about sexual intercourse. Specifically, a younger sibling uses an older sibling as a reference point in developing attitudes and behaviors around sexual activity. Non-virgin younger siblings have been found to be more likely to have non-virgin older siblings when compared to younger siblings of virgin adolescents (Widmer, 1997). In addition, when a younger sibling becomes sexually active they are more likely to have sex at an earlier age than their older sibling did (Haurin & Mott, 1990).

The development of more permissive attitudes has the potential to put a person on a troublesome life trajectory. For example, an individual who is more willing to have sex in less committed relationships is more likely to have multiple partners (Willis, Gibbons, Gerrard, & Brody, 2000) and less willing to use contraception (Blanton, VandenEijnden, Buunk, Gibbons, Gerrard, & Bakker, 2001). The increased amount of sexual partners and a decrease in willingness to use contraception increases the risk of having negative health outcomes such as acquiring a sexually transmitted infection or unwanted pregnancy.

On the other hand, Widmer (1997) reported that when older siblings believe individuals should wait until age 17 to have sex, younger siblings are more likely to be virgins. It was also reported that an older sibling's behavior and beliefs influences contraceptive use. When an adolescent does become sexually active they are likely to rely on their older sibling as a source of information about contraceptives (Tucker, McHale, & Crouter, 2001). Whether conservative or permissive, older sibling's beliefs and behaviors around sexuality are predictive of younger siblings' attitudes and behaviors.

It is important to note that not all younger siblings would turn to an older brother or sister for information regarding sexuality. Sharing of information is contingent upon the quality of the sibling relationship with greater relationship quality resulting in an increase of information sharing (Tucker, McHale, & Crouter, 2001). However, regardless of relationship quality, when a younger sibling comes to an older sibling for advice the older sibling often feels nurturing and protective of their younger brother or sister (Kowal & Blinn-Pike, 2004).

A similar influence has been demonstrated with substance use (Slomkowski, Rende, Conger, Simons, & Conger, 2001). It has been documented that alcohol use of an older sibling is associated with adolescent alcohol use (Christiansen, Smith, Roehling, & Goldman, 1989; D'Amico & Fromme, 1997). Much of this association could be explained by siblings imitating behavior and/or associating with a deviant group. Because of the influential role siblings have on one another, behavior observation of a sibling's alcohol use may develop a behavioral willingness of a brother or sister (Gibbons & Gerrard, 1997) to drink alcohol.

Pomery (2005) and colleagues explained that, when it comes to substance use, cognitions can play an important role of whether a sibling is going to use or not. Specifically, they explained that an older sibling's cognitions regarding substance use has a significant impact on a younger sibling's substance use during adolescence. It was reported that older sibling's behavioral willingness at Time 1 predicted change in the targets substance use at Time 2. However, older sibling's behavior willingness at Time 1 did not predict younger sibling's substance use at Time 1. This may suggest that behavioral willingness may be a good indicator of what a younger sibling may be doing in the future (Pomery, et al., 2005). This relationship is not only important in childhood and adolescence, but it is also influential throughout all of adulthood. Siblings may not use substances together but they will provide information about

their attitudes regarding substances, such as alcohol, through expressions or verbalizations. Through observations of alcohol use a sibling may become willing to model the behavior of a brother or sister and how they use alcohol.

The process by which siblings develop behavioral willingness through observing a sibling is known as sibling identification (Bank & Kahn, 1976). One explanation for sibling influence is that individuals may acquire their expectancies about health risk behaviors by observing the consequences of behavior from significant others (Brook, Whiteman, Gordon, & Brook, 1990; D'Amico & Fromme, 1997). Therefore, if a sibling participates in risky behavior and has not experienced negative consequences, a brother or sister may believe that the behaviors are safe and possibly desirable. Some research during adolescence supports this notion by reporting that siblings may act as "partners in crime" and, as a result, a positive relationship is established that includes the participation of negative externalizing behavior together (Slomkowski et al., 2001). Direct discussion of antisocial behavior between siblings often occurs when the older sibling is in late adolescence (Shortt, Capaldi, Dishion, Bank, and Owen, 2003).

It is also important to note that throughout adolescence siblings often share similar peer and social networks. Peer network sharing is particularly common when siblings are similar in age and gender (Rowe, Linver, & Rodgers, 1996). As one sibling interacts with peers who engage in risky behavior the other sibling is likely to associate with the same deviant peers. As a result of peer network sharing, siblings are made vulnerable to antisocial behavior of their siblings deviant peer group (Rowe & Gulley, 1992; Rowe, Linver, & Rodgers, 1996).

Usually, siblings are important sources of support and companionship to each other, although the sibling relationship may at the same time be characterized by conflict and

competition (Furman & Buhrmester, 1985). Both older and younger siblings have been found to be viewed as sources of support in familial issues, and older siblings are also viewed as a source of support regarding nonfamilial issues such as social and academic activities (Tucker, McHale, & Crouter, 2001).

One study addressing changes in sibling support during adolescence found perceived sibling support was stable from age 12 to 17 (Sholte, van Lieshout, & van Aken, 2001). Branje, van Lieshout, van Aken, and Haselager (2004) found a similar finding regarding sibling support during adolescence. They reported that perceived sibling support by younger adolescents' from their older siblings increased from age 11 to 13. However, from 13 years onwards, younger adolescents' perceived support stabilized. Over the age range of 13 to 17 years, perceived support by older adolescents' from their younger siblings was stable as well (Brange, et al., 2004).

Perceived support in general has been linked to adolescent adjustment, in that adolescents' who perceive more support exhibit fewer externalizing problem behaviors (Furman & Holmbeck, 1995). However, previous studies suggest that sibling relationships can exert a positive as well as a negative influence on individual behavior. Collusive sibling processes have been described by which siblings form coalitions that promote deviance and undermine parenting (Bullock & Dishion, 2002).

Siblings also seem to exert a unique, independent influence on each other during adolescence. It has been suggested that sibling influence may be stronger than parental influence (Needle, McCubbin, Wilson, Reineck, Lazar, & Mederer, 1986; Kramer & Kowal, 2005; Pike, Caldwel, & Dunn, 2005). For example, siblings positively influenced adolescents' antisocial behavior even when parental and peer influence was controlled for (Slomkowski, Rende,

Conger, Simons, & Conger, 2001). In addition, it has been reported that younger brothers used drugs if an older brother used even when the younger brother's peers and parents did not use (Brook, Whiteman, Gordan, & Brook, 1990). In another sample of adolescents, it was reported that although sibling relationships did not predict positive adolescent behavior after the effect of parenting was taken into account, sibling relationships were a significant predictor of deviant behavior (Moser & Jacob, 2002). This was true even after statistical control for parenting effects and earlier problem behaviors.

Slomkowski (2005) and colleagues have taken the understanding of the impact siblings have on one another's behavior further by controlling for genetic similarity. They reported that smoking behavior of one sibling is significantly related to smoking behavior of a second sibling even after controlling for genetic relatedness. When studying the role siblings have on one another concerning addictive behavior, it has been difficult to demonstrate the impact because of the possibility of genetic similarity. However, Slomkowski and colleagues (2005) were able to demonstrate the robust impact siblings have regarding smoking behavior because that study controlled for genetic similarity. Controlling for genetic similarity is of particular importance because it helps to better understand specifically what role environmental influences have on behavior (Conger, 2005).

Sibling Relationships in Adulthood

The importance of family relationships throughout adulthood and old age is now widely recognized by family researchers (Miner & Uhlenberg, 1997). It is clear that the majority of adults in the United States have siblings and that many have meaningful relationships with them (Cicirelli, 1985; Connidis, 1994). However, there are complexities to adult sibling relationships that make them unique. As siblings move out of adolescence and through the remainder of

adulthood they continue to become more equal and less confrontational (Searcy & Einsburg, 1992). Understanding the role and influence an older adult sibling relationship has allows for greater insight into the transition emerging adult siblings are going through. It could be expected that evolving from a child to child relationship to an adult to adult relationship would take time.

The extant research on sibling relationships in adulthood has primarily focused on the influence on internalizing behavior. Siblings in late adulthood are more likely to provide emotional or expressive support rather than instrumental support. Sibling pairs that are willing to engage in these supportive behaviors are found to have overall better psychological functioning (Miner & Uhlenberg, 1997).

The overall level of closeness between siblings generally increases as age increases (Cicirelli, 1982). In addition, the aging process increases the meaningfulness of sibling relationships (Bedford, 1989; Gold, 1987), which, in turn, increases the amount of contact siblings have as they age (Goetting, 1986). Since parents are having fewer and fewer children, they may become more dependent on siblings for family contact and support as they age (Seltzer, 1989). Older persons in search of support may find the number of children they have is smaller than their number of siblings (Bengston, Rosenthal, & Burton, 1990). Therefore, sibling support is an issue that is important to the late adulthood population because there are fewer children to provide various types of support to an aging parent.

There are two types of support that have been addressed in adulthood: instrumental and expressive. Instrumental support can be characterized best as providing help to a person (mowing lawn, cleaning house, running errands, etc.). Expressive support can be best explained as the interpersonal relationship or emotional support (talking, sharing thoughts, affection, etc.). Siblings are more likely to provide emotional or expressive support rather than instrumental

support as they age (Miner & Uhlenberg, 1997). This can be attributed to the easy nature of engaging in expressive support. Telephone conversations and family get-togethers are often easier than providing labor for siblings in adulthood. The primary sources of expressive support have been found to be a spouse, followed by children, and then siblings (Wilson, Calsyn, & Orlofsky, 1994). However, the sibling subsystem is of primary importance for emotional support for single or childless individuals (Cicirelli, 1989).

Instrumental support has a similar outcome to emotional support in late adulthood. Due to the lack of daily personal contact and the declining abilities of the body, siblings have been found to be less likely to provide instrumental support for one another compared to a spouse or children (Wellman & Wortley, 1989). However, when a crisis arises siblings are viewed as a potential source of instrumental support (Cicirelli, 1991). As with emotional support, never married and childless individuals are more likely to receive instrumental support from a sibling (Connidis, 1994).

There are additional factors that go into the quality of sibling relationships in late adulthood. Marital status and parent status are a few of the variables that influence the quality of a sibling relationship (Campbell, Connidis, & Davies, 1999). Individuals who have no living spouse, parent, or child are far more likely to live near a sibling and are more likely to rely on siblings for expressive and instrumental support (Miner & Uhlenberg, 1997). Therefore, an individual who is not married may actively seek out a sibling to talk with and, consequently, would have more frequent support from their sibling.

Connidis (1994) pointed out that the stage of the family life cycle, individual needs, and individual circumstances are additional variables that contribute to sibling relationship strength. When a person is actively parenting children living in the home there is generally less time to

spend a large amount of energy interacting with siblings. Therefore, during midlife sibling relationships are usually simply maintained (Cicirelli, 1985). However, regardless of life stage, when a sibling is going through a challenging time, such as a death of a loved one or a loss of job, siblings are usually ready and willing to offer support (Eggebeen & Davey, 1998).

Another factor that influences sibling relationship strength is proximity (Lee, Mancini, & Maxwell, 1990). Proximity allows for a more conducive environment to maintain the sibling relationship (Suggs, 1989) because there would be more opportunity for frequent contact (Connidis & Campbell, 1995). Therefore, it would be expected that the closer a person lives to a sibling the more likely they are to be engaged in helping behaviors for one another (Wellman & Wortley, 1989).

Miner and Uhlenberg (1997) provided information regarding the role proximity in sibling relationships play by showing that siblings that live closer to one another are more likely to exchange in instrumental and expressive support. In addition, they reported that younger siblings are more likely to receive instrumental and expressive support as they age. The increase of support may be due to an older sibling playing the role of helper and the younger sibling playing the role of the one that needs help.

Similar to other life stages, gender is a variable that plays a role in adulthood sibling interaction. White and Reidman (1992) reported that having a sister increases the likelihood of sibling contact and support. Connidis (1994) added to this concept by reporting that support was greater for women. More specifically, sisters have been found to be more likely to receive instrumental support than brothers (Miner & Uhlenberg, 1997). Females, on the other hand, are more likely to provide expressive support to their siblings (Miner & Uhlenberg, 1997). It has also been reported that sibling relationship quality is based on which sexes are included in the

sibling dyad. For example, sister to sister relationships have been found to be stronger than brother to brother or brother to sister relationships (Wilson, Calsyn, & Orlofsky, 1994). When comparing various gendered types of sibling relationships (sister to sister, sister to brother, and brother to brother), the perception of a close bond to a sister by either men or women resulted in less depressive symptoms and overall better well-being (Cicirelli, 1989). The same was not true for a close bond with brothers.

Many of the gender differences could be attributed to how males and females are socialized in what their appropriate role in maintaining the relationship is. The same roles that siblings play in childhood (Brody, Stoneman, MacKinnon, & MacKinnon, 1985) seem to continue in adulthood. Consistent with other life stages, the sister relationship appears to be more influential than brother relationships.

Another area of adult sibling relationships that has received a substantial amount of examination is when adult children care for an aging parent. There is a substantial body of literature that addresses caregiving. When adult children are faced with the task of caring for an aging parent they usually come together and develop a plan for how care is going to be provided (Eggebeen & Davey, 1998). The typical course of action is for one sibling to assume much of the primary care. Having a single primary caregiver is generally the result of one of the children living in closer proximity to the parent or by the oldest child assuming the role as primary caregiver. Regardless of who becomes the primary or secondary caregiver, the decision generally involves all siblings in the system (Matthews & Rosner, 1988).

On the family level, one area that becomes increasingly difficult to manage while caring for a parent is the high level of cooperation among siblings that is required (Goetting, 1986). Because of the increasing life span, the increased level of cooperation is needed for a longer

period of time than in the past (Preston, 1994). Unfortunately, as the amount of time increases in parent care, the more difficult it is to sustain family cooperation (Goetting, 1986).

Strawbridge and Wallhagen (1991) showed that there is a considerable amount of stress on the caregiver and the individual stress usually caries over into the sibling relationship. As a result, there is a considerable amount of frustration and disappointment from the primary caregiver when a brother or sister does not help because they thought they could depend on their sibling in this time of need (Suitor & Pillemer, 1993). To complicate the relationship further, the sibling who does not provide the majority of the care often feels underappreciated by their sibling who is the primary caregiver because they do not recognize the contributions to care they were making (Brody, Hoffman, Kleban, & Schoonover, 1989). Therefore, less involved siblings also had a feeling of guilt (Brody, 1990).

The extant research has demonstrated the impact the sibling relationship has throughout the entire life span. Regardless of life stage, the sibling relationship provides a significant amount of influence on both internalizing and externalizing behaviors. The majority of the extant research looking at the influence of siblings on behavior has been limited to childhood, adolescence, and late adulthood. The present study will provide further understanding to the role siblings play during emerging adulthood on externalizing behavior.

As individuals' age and transition into adulthood, there are further transformations that occur in their relationships with family members. Sibling relationships in emerging adulthood are probably transformed to address the developmental changes taking place in this stage of life (Goetting, 1986). The period beginning in late adolescence (age 18) and ending in young adulthood (age 25) is a time period that is characterized by various developmental tasks and life changes and choices. Arnett (2000) labeled this period "emerging adulthood" and identified it as

a distinct developmental stage in the life course. Specifically, Arnett and Tanner (2005) explained that there are five defining features that characterize emerging adults. These features include identity exploration, instability, self-focus, a feeling of being in-between a child and adult, and having multiple possibilities for the future. Similarly, Levenson (1978) explained that the early twenties was a "novice" stage in development. Some of the unique qualities that exist during emerging adulthood are autonomy, exploration, and changing life roles (Milevsky, 2005a).

During emerging adulthood individuals are usually not living with their family of origin so their individual support system is growing to include individuals who are outside of the family. At the same time there is a decreased intensity of interactions with family members (White & Reidmann, 1992). Emerging adults reported lower levels of conflict with their siblings than adolescents. In particular, they reported less quarreling, less antagonism, and less competition (Stewart et al., 2001). The reduction in conflict may be the result of spending less time together but Laursen, Finkelstein, and Betts (2001) reported that the reduction in conflict may also be attributed to the increased ability to negotiate disagreements.

One of the complexities of emerging adults is that they remain dependent upon their family of origin emotionally and financially. For example, many emerging adults remain economically dependent on their family of origin in order to have a safety net that allows them to increase their training and education (Semyonov & Lewin-Epstein, 2001). Because of the continual dependence on the family of origin, an environment is created where individuals need to balance autonomy and dependence. The interplay between the desire for autonomy and dependence affects the relationship between the emerging adult and their family members.

Arnett (2005) explained that there is a feeling of being in-between childhood and adulthood for emerging adults. This feeling could usher in some interpersonal conflict. For example, emerging adults have a tremendous amount of autonomy. They can drive, vote, decide where to live, smoke cigarettes, and drink alcohol. However, they also need support from their family of origin. The task of balancing the desire for individual autonomy and the need for continual support from the family of origin is often difficult. The sibling relationship could provide a bridge for an emerging adult who is learning how to differentiate from the parental sub-system and become an adult. The extant research has demonstrated that siblings provide positive psychosocial outcomes during the transition to adulthood (Milevesky, 2005a,b,c). Cooney and Kurz (1996) suggest that family relationships influence the psychosocial development, including psychological well-being and adjustment to new roles, health risk taking-behavior, capacity for intimacy, and identity.

The sibling relationship is a family relationship that has the potential to have a significant impact on the development and outcome of an emerging adult. One possible reason for the powerful influence siblings have during emerging adulthood may be that sibling relationships evolve into egalitarian relationships (Searcy & Einsburg, 1992; Furman & Giberson, 1995). As siblings move from childhood to adulthood they have a choice about whether to remain involved in each other's lives. The nature of sibling interaction is voluntary rather than dictated by parents or other external conditions (Stewart, Kozak, Tingley, Goddard, Blake, & Cassel, 2001). Aquilino (2005) described the transition of emerging adult sibling relationships as no longer inescapable.

The gender of an individual has also been examined when addressing relationship quality during emerging adulthood. While gender has been found to be influential in relationship quality

at various stages of the sibling relationship, during emerging adulthood the results are mixed. It was reported that that college age women felt as much support from a sibling as they did from their mother (Cicerelli, 1980), which would indicate relational strength, but this same relationship was not found for males. Likewise, when comparing sister-sister and brother-brother sibling pairs it was reported that they did not affect sibling relationship quality (Scharf, Shulman, & Avigad-Spitz, 2005). One possible explanation for the mixed results is that as individuals' age their relationship becomes more egalitarian and, as a result, gender becomes less relevant. However, these findings are not consistent with other age groups; therefore, gender needs more attention during emerging adulthood.

Differentiation from parents is another task that generally occurs during emerging adulthood (Arnett, 2005). A primary component of differentiation is to find individuals outside of our parental relationship who we can look to for nurturance and support. Because of the shared history and shared life experiences, the sibling relationship is one relationship that an individual can turn to in order to receive needed support.

Scharf, Shulman, and Avigad-Spitz (2005) demonstrated that emerging adults spend less time together and were involved in fewer joint activities with their siblings than adolescents. However, they also reported being more involved in emotional exchanges, such as discussing personal matters, and feeling more warmth toward siblings. These results suggest that emerging adults display increased distance from their siblings but feel closer emotionally. Therefore, similar to other life stages (Cicerelli, 1995), it would be expected that siblings would continue to be influential on behavior outcomes such as deviant behavior, sexual permissiveness, and substance use. Each of these risky behaviors has been found to be prevalent during emerging adulthood.

At the beginning of emerging adulthood (age 18) approximately one half of all individuals report they are sexually active (Seigel, Klein, & Roghmann, 1999). By the end of emerging adulthood (age 25), nearly all have become sexually active (Michael, Gagnon, Laumann, & Kolata, 1994). One possible explanation for the increase in sexual activity is that many individuals during this time period seek or are currently in committed relationships. However, when reporting on the number of sexual partners individuals have had over the past year, 60% of 18 to 24 year olds report that they have had one sexual partner, 33% reported that they have had two or more sex partners in the past year, and 9% reported that they have had five or more partners (Critelli & Suire, 1998; Michael, et al., 1994). Compared to other groups, emerging adults are much more likely to have had two or more partners during the past year. For example, individuals age 25-29 who have had two or more partners over the past year decreases significantly as 25% (an 8% decrease from emerging adults) report having multiple partners. Overall, about 25% of individuals age 18-25 reported they had six or more lifetime sex partners (Douglas, Collins, Warren, Kann, Gold, Clayton, et al., 1997). It is currently unknown what role a sibling plays in the decision process.

Martin and White (2005) reported a similar escalation of alcohol use. According to the 2003 National Survey of Drug Use and Health, the highest rate of alcohol use occurred among 18 to 20 year olds. The high rate of alcohol consumption could be attributed the legal drinking age being 21. However, the high rate of alcohol use does not remain at the same level. It remained high until age 25 before dropping for individuals ages 26 through 29.

Social learning theory has been used when examining alcohol use of college students. Drukin, Wolfe, and Clark (2005) examined alcohol consumption of 1,500 college students across four college campuses. The results indicated that peer associations are the best predictor of

excessive alcohol use. This association was found to mediate several demographic variables such as gender, race, and fraternity or sorority membership. Similarly, Read, Wood, and Capone (2005) reported that it is important to distinguish between various types of social influences when examining the processes that lead to heavy alcohol consumption. The peer influence has been addressed but the sibling influence is another social influence that needs to be examined.

There has yet to be extensive examination of the protective factors a sibling can provide to participation in risky behavior. The majority of the research demonstrates that a quality sibling relationship in and of itself is probably the best protective factor (Kramer & Bank, 2005). East and Khoo (2005) attempted to identify some mediating protective factors for sibling alcohol use. It was reported that a warm and close relationship with an older sister resulted in a decrease in alcohol use and a low level of conflict with an older sister resulted in less alcohol use. However, these results were very limited as other sibling pairs did not see the same impact.

The Present Study

The present study examined the sibling relationship factors of support and contact and how they influenced the participation in risky behavior during emerging adulthood. Support includes emotional and instrumental influence and contact is based on how often siblings interact. Secondly, gender differences were investigated in the observed relationship. Since previous studies have found important gender differences in sibling relationships during childhood, it is reasonable to expect those differences to persist into emerging adulthood.

There were three research questions that were examined. First, is there a significant relationship between a) sibling delinquency and respondent risky behavior, b) perceived sibling support and respondent risky behavior, and c) perceived sibling contact and respondent risky behavior? Second, is the influence of sibling delinquency on respondent deviance, sexual

permissiveness, and alcohol use mediated by support and contact? Third, is the influence of sibling delinquency on respondent deviance, sexual permissiveness, and alcohol use moderated by support and contact?

During emerging adulthood there is a decrease in the intensity of interactions with family members (White & Riedmann, 1992). Individuals report lower levels of conflict with their sibling(s) compared to adolescence as evident by a decrease in quarreling and less conflict related to power (Stewart, Kozak, Tingley, Goddard, Blake, & Cassel, 2001). The decrease in conflict may be attributed to the fact that interaction between siblings is largely voluntary during this time (Stewart et al., 2001) as well as to the decrease in the amount of time siblings spend together (Stocker, Lanthier, & Furman, 1997). However, it is important to note that, despite the decrease in frequency of contact with one another, siblings still influence each other (Cicirelli, 1995). Their familiarity, emotionally uninhibited relationship, and the impact of sharing parents suggest that the relationship has a powerful potential to be influential.

Historically, the late teens and early 20's use to be seen as a time to settle down and assume the roles of marriage, parenting, work stability, and establishing a permanent residence. Today it is viewed as a time of instability and exploration when young people try out different roles before making any long term commitments. Though sibling relations during this period of time have not been studied as closely as childhood and adolescent sibling relations, it would be expected that the sibling relationship remain influential.

It is important to note that this study was exploratory in nature as there is little known about the influence sibling relationships have on externalizing behavior during emerging adulthood. The majority of the extant literature addressing the sibling influence on externalizing behavior has been conducted during adolescence. Research conducted specifically on emerging

adults has been limited compared to other life stages so it was useful to review literature from the various life stages in order to best understand the expected relationships between variables in the model. The expected results of the model are guided by social learning theory.

Theoretical Framework

Social learning theory was developed and has since been used to examine the influence of one individual upon another. Social learning theory evolved under the umbrella of behaviorism (Watson, 1913), which is a group of psychological theories intended to explain why individuals behave the way they do. In 1941, Millar and Dollard published *Social Learning and Imitation* and officially launched social learning theory. Their book was written to explain how humans' model observed behaviors and then become learned through environmental reinforcements. In addition, according to Miller and Dollard, human behavior was motivated by drives, and one individual's responses could serve as stimuli for other individuals. This work incorporated the relationship between environment and behavior and resulted in an influx of various versions of social learning theory. While there are several versions of social learning theory that researchers use, they all share three basic assumptions (Woodward, 1982; Crosbie-Brunett & Lewis, 1993).

First, response consequences influence the likelihood that a person will perform a particular behavior again in a given situation. Second, humans can learn by observing others, in addition to learning by participating in an act personally. Learning by observing others is called vicarious learning. Third, individuals are most likely to model behavior observed by others they identify with. Identification with others is a function of the degree a person is perceived to be similar to one's self and the level of emotional attachment that is felt toward an individual. These three assumptions are presented throughout the work of prominent social learning theorists.

Akers (1977) has been influential in the development of social learning theory. He contributed by incorporating the concepts of operant conditioning (Skinner, 1953) and observational learning. Operant conditioning is seen as the primary learning mechanism where behavior is shaped by the consequences of the behavior. In addition, learning can take place through direct conditioning or through imitation or modeling others' behavior. Specifically, Akers proposed that social behavior is shaped by the processes of differential association and differential reinforcement (Akers, 1989; 1996). Akers proposed throughout his work that the same processes involved in learning pro-social behavior are involved in learning deviant behavior.

Albert Bandura (1977, 1986) provided a better understanding of the cognitions that take place as individuals learn behavior. According to social learning theory, the development of behavior occurs primarily through observing others' behavior. Human beings are social beings who learn through social interactions, such as observation, conversations, and apprenticeship. Those individuals who are closest to one another, such as siblings, have the greatest potential to influence and shape behavior because they observe one another's behavior regularly. People often learn by emulating others, particularly if the models are perceived as successful or prestigious, and if their behavior is seen to lead to reinforcing positive consequences (Bandura & Walters, 1963). Bandura (1969) was the first social learning theorist to introduce modeling as a form of social learning.

Modeling is extremely important when an individual is learning a new behavior. For example, some behaviors can be costly or dangerous when mistakes are made. Proficiency in a behavior performance can be established without needless errors by providing competent models who demonstrate behavior. The process of acquisition can be considerably shortened by

providing appropriate models (Bandura & McDonald, 1963). Due to the nature of sibling relationships, they have the potential to be powerful models.

Patterson (1982) has continued to use social learning theory over the past few decades and has applied the theory to longitudinal designed studies (Patterson, Reid, & Dishon, 1992). Primarily focusing on the influence of the parent on child behavior, Patterson's Coercion Model has been found to provide a good explanation in the development of risky behavior. Patterson (1982) described in detail how individuals learn at a very young age how to be coercive based on family interaction. The learned coercive communication patterns have a devastating impact on the future relationships the child will have with peers. Children learn early in life that conflict will end when they act with anger and defiance. These youth eventually are rejected by conventional youth and develop friendships with other rejected individuals. Deviant peer groups are formed and deviant behavior becomes the "normal" behavior. The group provides reinforcement of the risky behavior with motivations and rationalizations (Patterson, Reid, & Dishion, 1992).

Patterson (1986) applied the coercion principles to sibling relationships by introducing the "sibling trainer" hypothesis. This hypothesis states that siblings, who are much more equal than a parent-child relationship, are more likely to reciprocate each other's aggressive and coercive behavior. The frequent coercive sibling exchanges, in turn, present opportunities for reinforcement of antisocial behavior. Therefore, children may directly learn negative interaction styles and aggressive behavior from a conflict ridden sibling relationship.

Bank, Burraston, and Snyder (2005), in fact, did report this pattern among sibling relationships. They reported that sibling conflict and parent conflict at age 10 to 12 would predict antisocial behavior and peer adjustment over a four year period of time. Watt, Howells,

and Delfabbro (2004) used social learning theory to look at recidivism of juvenile delinquency. Their results demonstrate that the recidivism rate was associated with antisocial attitudes and association with deviant peers. The association with deviant peers created an environment where deviant behavior was learned through associations with deviant individuals. Therefore, a deviant sibling has the potential to provide a significant amount of influence on a brother or sister. The social learning impact siblings have on externalizing behavior during emerging adulthood has yet to be explored.

Brody, Kim, Murry, and Brown (2005) recently used cognitive social learning theory to guide a study on the influence African American siblings' have on one another. They examined this relationship by specifically addressing whether or not supportive sibling relationships would result in similar external and internalizing behavior. It was reported that sibling relationship quality moderated the association between siblings externalizing behavior in that the stronger the sibling relationship was resulted in more similar behavior. More specifically the link between siblings' externalizing symptoms was significantly stronger for siblings with higher quality relationships. This relationship was demonstrated while examining adolescence. One of the primary purposes of the current study is to test the moderating effects of sibling support and contact on risky behavior during emerging adulthood. Understanding the moderating effects will extend the literature from adolescence to emerging adulthood sibling relationships.

Model to Be Tested

The focus of the current study is to examine the influence a sibling relationship has on three distinct behavior outcomes. The outcomes are deviant behavior, sexual permissiveness, and alcohol use. Each of these outcomes has been found to be significantly influenced by the level of delinquency a sibling has. Figure 1 illustrates the model to be tested.

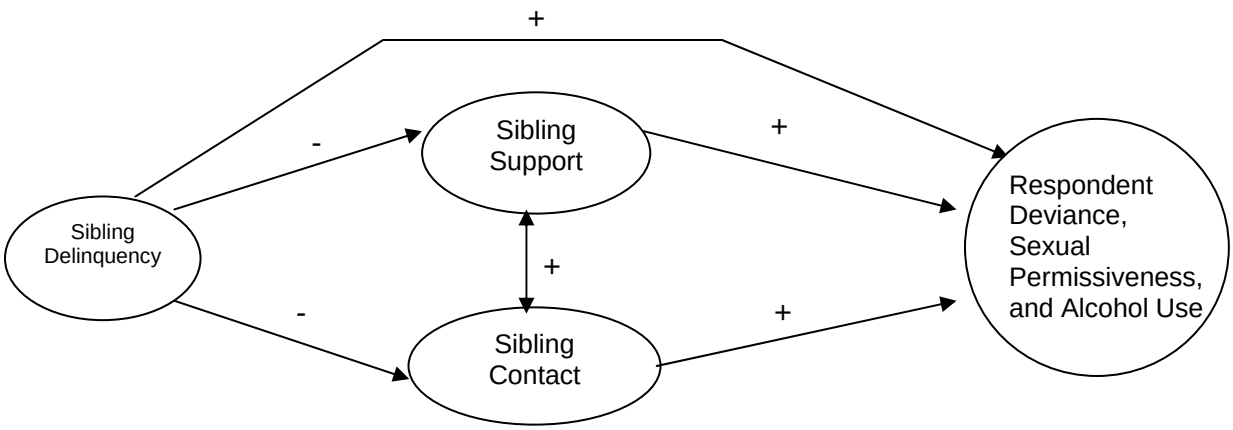

Figure 1: Hypothesized Model

Explanation of Model

First, it is expected that an individual who has a sibling that is delinquent would be more likely to be deviant themselves. This pattern has been established for adolescents (Needle, McCubbin, Wilson, Reineck, Lazar, & Mederer, 1986) and should also be true for emerging adults. According to social learning theory, the sibling relationship would be influential in providing a reference point in how to act as an adult. Therefore, a delinquent sibling would influence the respondent to engage in risky and/or deviant behavior. Through observation, siblings would teach one another what is acceptable behavior and help develop outcome expectancies (D'Amico & Fomme, 1997). There is a clear expectation that there would be an increase in respondent deviance when a sibling is delinquent.

Second, it is expected that overall closeness to a delinquent sibling would be lower (Brody, 1998). Parental negative reinforcement for deviant behavior and positive reinforcement for prosocial behavior would be expected. This expectation would be the result of the belief that by observing negative interactions between the parent(s) and the deviant sibling the respondent would be more likely to have a distant relationship with the deviant sibling. The respondent

would then be expected to receive and give less support and have a decrease in contact. The respondent would not want to act like or associate with their sister or brother because they have observed the negative consequences their deviant sibling has received.

It is also possible that siblings who are both engaging in risky behavior would have a close relationship. In other words, the level of sibling support and contact would be expected to be influenced primarily by how similar siblings are in their behavior. According to social learning theory, siblings who both engage in deviant behavior would be more likely to interact and influence one another than a sibling situation where one engages in deviant behavior and the other does not. The increase in influence of a delinquent sibling would create behavior that is seen as normal and or acceptable (Slomkowski, et al., 2001). If siblings are having a high level of influence on one another, then it would be expected that they would be in contact more often and provide a high level of support.

Currently, there is limited understanding of the type of support emerging adult siblings provide for one another. The nature of sibling relationships begin to change in emerging adulthood and the exchange of support has been shown to be an important component of sibling relationships in adulthood. It is reasonable to expect that sibling relationships in emerging adulthood begin to take on the characteristics of adult sibling relationships. Milevesky (2005b) recommended further understanding on how emerging adults interact with each other. This study assesses both emotional and instrumental support; therefore, the present study will be able to provide additional understanding of how siblings from age 18 to 25 interact.

Finally, it is expected that a delinquent sibling who gives or receives a high level of support to a respondent would be more likely to have a greater influence on them. Therefore, a greater level of support from a delinquent sibling would result in a greater level of deviance for

the respondent. They would have increased opportunity to model one another's behavior. The same would be expected of the level of contact they have with one another. A delinquent sibling who has regular and consistent contact with a brother or sister would be expected to influence the brother or sister to participate in deviant behavior. Once again, this is expected because outcome expectations would be formulated based on the behavior outcomes of both siblings (D'Amico & Fomme, 1997).

An explanation has been provided that looks at expected relationships of the variables when looking at the outcome of respondent deviance. However, the outcomes of sexual permissiveness and alcohol use will also be tested. Emerging adults have the greatest level of sexual participation (Michael, Gagnon, Laumann, & Klata, 1994) and substance use (Martin & White, 2005) when compared to other time periods across the life course. It is reasonable to expect that the sibling relationship influences an emerging adult's behavior in these two areas.

Given the high rate of participation in sex and potential negative consequences of such behavior during emerging adulthood, it is important to identify factors that contribute to participation in risky sexual behavior. The sibling relationship is one such factor. Kowal and Blinn-Pike (2004) have reported that siblings use one another as a reference point regarding attitudes and behaviors around sexual activity and Widmer (1997) illustrated the sexual activity level of a sibling influences behavior. Social learning theory would suggest that observation and imitation are the two reasons for the significant influence.

According to the model it is expected that having a delinquent sibling would influence an individual's sexual permissiveness. It has been reported that emerging adults who engage in antisocial or deviant behaviors are more likely than others to engage in risky sexual behaviors and to get a sexually transmitted infection (Capaldi, Stoolmiller, Clark, & Owen, 2002). Social

learning theory would attribute this to modeling or the development of permissive cognitions regarding sexual behavior. Therefore, deviant behavior of a sibling should positively influence respondent sexual permissiveness.

Sexual permissiveness in the present study included sexual behavior and when he/she believes it is acceptable to have intercourse with another person. Reporting when a person is willing to have sex is often an acknowledgment that, even though a person has no plans or intentions to engage in risky behavior, one might if the circumstances are right (Gerrard, Gibbons, Reis-Bergan, Trudeau, Lune, & Buunk, 2002). The willingness to participate in the behavior is predictive in the resulting behavior (Gibbons & Gerrard, 1995, 1997). Therefore, the respondent's belief of when it is acceptable to have intercourse should be a good indicator of their sexual behavior. Having a delinquent sibling would be expected to create a situation where the willingness to engage in sexual behavior with less committed partners would increase.

The amount of support and contact siblings provide is also expected to influence the respondent's sexual behavior. Having a high level of support and contact with a delinquent sibling would influence the respondent's belief about when it is acceptable to have intercourse. The result would be more permissive attitudes and behavior regarding sexual activity. In addition, as the behavior expectation became more promiscuous, the respondent would receive more support and contact from the deviant sibling which would positively reinforce the increased level of sexual permissiveness.

The influence emerging adulthood siblings have on sexual practices can be extremely powerful. The level of understanding regarding the influence siblings have on sexual attitudes and behavior is limited primarily to adolescent relationships. However, it is important to note that emerging adulthood sibling relationships are different than adolescent sibling relationships

and this study provided further understanding of the emerging adult sibling influence on sexual behavior.

It is also expected that delinquent sibling behavior would increase the likelihood that the respondent would participate in alcohol use. Having a sibling who uses substances has been found to be extremely influential in individual substance use (Avenevoli & Merikangas, 2003; Slomkowski, et al., 2005). It is reasonable to expect that a similar association would be found in an emerging adult sample. For example, a supportive and close relationship with a delinquent sibling would result in an increase in alcohol use. Consistent with social learning theory, the greater amount of support and contact would result in an increase in the opportunity to learn negative behaviors from a deviant sibling. The peer influence has been addressed regarding alcohol use. For this study siblings were the social influence that was examined.

CHAPTER III

METHODOLOGY

Sample, Procedures, and Methods

Data was collected from 691 undergraduates enrolled at a state university during the 2005-2006 academic years. Questions were formulated using a Likert scale format and focused on family of origin, current and past relationship experiences, and attitudes and behaviors regarding sex, marriage, substance use, and religion. Pencil and paper surveys were administered and, due to the personal nature of some items, completion of the survey was proctored like an exam. Participation was voluntary and there were no identifiers on the survey instrument.

The total sample was comprised of 95 males and 595 females. The majority of the participants were between the ages of 20 and 22 (68.9%), with 25.8% being either 18 or 19, and nearly 6% being age 22-25. Nearly 56% of the respondents stated that they grew up in either the suburbs or a city, and 20.1% grew up in a town smaller than 30,000 people. The sample had a high level of total family income with nearly 65% having a family income over $80,000, and slightly over 70% of the sample indicated that their parents were married to each other. When asked to identify how many siblings they had, 309 respondents (44.7%) indicated that they had one sibling, 201 (29.1%) respondents had two siblings, 78 respondents (11.3%) had three siblings, and 50 (7.2%) had four or more siblings. There were 52 (7.5%) respondents that reported having no siblings. In total, there were 557 females and 81 males who had a sibling. Analyses were conducted for those respondents who indicated they had a sibling.

Measures

Because many families have multiple offspring, respondents were asked to think about the sibling who is closest in age to him/her. The sibling closest in age was chosen in order to have the respondent answer each of the questions by focusing on only one sibling. In addition, in families that have multiple siblings, the sibling who was closest in age to the respondent does not necessarily mean that it is the closest of all the sibling relationships in the family. Focusing on a single sibling allowed for a better understanding of a specific sibling relationship rather than a general assessment of the entire sibling subsystem.

Questions used in the survey assessed the respondent's current perception of their sibling's behavior and their current perception of the quality of their relationship with their sibling. Assessing the current behavior and perceptions allowed for a more accurate depiction of the sibling relationship as it was at the time of the assessment, rather than an assessment of the past (adolescence or childhood) relationship. Therefore, data were collected that allowed for assessing the emerging adulthood sibling relationship.

The survey used for this study was constructed by a research team that included the principal investigator (faculty member) and three research assistants. Several versions of the survey were made by the research team in order to reliably assess the specific constructs of the model in a valid manner. Reliability is the notion that items within a construct are measuring the same thing, or the level of homogeneity among scale items. Therefore, Cronbach's alpha (Chronbach, 1951) is presented at the end of each construct in order to document the level of internal consistency among scale items.

Validity is the notion that the items within a scale adequately reflect the real meaning of the concept or construct being studied (Babbie, 2001, pp. 143). Throughout the process of

constructing the survey, consultation from specialists for specific topic areas of research were used. For example, a sociologist specializing in the areas of family and crime at the University of Georgia was asked about the portion of the survey dealing with risky behavior. Obtaining feedback from the research team and family researchers provided a form of face validity for the survey instrument. In addition, individual items in the survey were selected from previously validated scales and have been long-established and used many times throughout the literature. Selecting questions from previously validated scales provided a safeguard for measuring the various study constructs as accurately as possible. Therefore, not only did the scales have content validity but they also had criterion-related validity. The various items and scales will be discussed individually.

Sibling Delinquency. Sibling delinquency was measured with seven items that asked participants to "indicate how much they agree or disagree" with statements that assessed the delinquent behavior of their sibling closest in age. The questions in the scale were selected to be similar to the questions asked about the respondent's deviant behavior and have been used in extant studies that focus on sibling delinquency (Gibbons & Gerrard, 1995). Questions included topics about substance use, violating the law, and general level of fighting and getting in trouble (Appendix A). Responses ranged from 1 (strongly agree) to 5 (strongly disagree). Responses were reversed coded so that the high score indicated high deviance. The scale had a Cronbach's alpha of .867. Responses to the individual items were summed so that possible scores on this scale ranged from 7 to 35.

Sibling Contact. Respondents were asked with a single item about the level of contact they have had with their sibling who is nearest in age to them over the past 12 months. The definition of contact included interacting in the following ways: face to face, exchange of letters

or emails, or talking on the phone (Appendix B). Response choices were: once a week (1), monthly (2), only on special occasions such as holidays or birthdays (3), less than once a year (4), and never (5). This question was adapted from an item in the Health and Retirement Study (1994).

The Health and Retirement Study (HRS, 1994) is sponsored by the National Institute of Aging (grant number NIA U01AG009740) and was conducted by the University of Michigan. The sample for the HRS includes individuals over the age of 50. Therefore, sibling questions in the HRS study targeted sibling relationships in adulthood. In order to assess contact level between siblings in emerging adulthood, the HRS sibling contact question was adapted and included in the survey. Responses were recoded so that a high score indicated a high level of contact. Therefore, never (5) became a 1, and once a week (1) became a 5. The remaining response categories were coded to fit in logical order between 1 and 5 with the higher scores indicating higher level of contact.

Sibling Support. Two items were used to capture sibling support (Appendix C). One of the items asked about the level of emotional support and the second item assessed instrumental support. The questions were adapted from the HRS (1994) and were validated in that study. For emotional support, respondents were asked how often they have given or received emotional support from their sibling who is nearest in age to them over the past 12 months. Instrumental support was assessed by asking how often the respondent has given or received a favor such as a ride, help with schoolwork, or another type of favor, with the sibling. Response choices for both questions were: once a week or more(1), monthly (2), only on special occasions such as holidays or birthdays (3), less than once a year (4), and never (5). Responses were recoded so that a high score indicated a high level of support. Therefore, never (5) became a 1, and once a week (1)

became a 5. The remaining response categories were coded to fit in logical order between 1 and 5 with the higher scores indicating higher level of support. The scale had a Cronbach's alpha of .738. Responses to the individual items were summed so that possible scores for this scale ranged from 2 to 10.

Respondent Deviance. Assessed, using an eleven item scale, how much over the past 12 months respondents participated in particular deviant behaviors. The scale that was used is Delbert S. Elliot's Delinquency Checklist (Elliot, Huizinga, & Ageton, 1985; Elliot, Huizinga, & Menard, 1986). The topics that were assessed were substance use, violating the law, and general level of fighting and getting in to trouble (Appendix D). Response categories were: never (1), once (2), 2-3 times (3), 4-5 times (4), and 6 or more times (5). The scale had a Cronbach's alpha of .657. Responses to the individual items were summed so that possible scores on this scale ranged from 11 to 55.

Sexual Permissiveness. Six items were used to assess sexual behavior permissiveness (Appendix E). The items were adapted from previously validated questions regarding sexual permissiveness (Reiss & Lee, 1988) and have been used throughout the literature (Sprecher & Hatfield, 1996; Willetts, Sprecher, & Beck, 2004). The first three items assessed how many persons they have had genital, oral, and anal intercourse with. Response categories ranged from none (1) to 10 or more (5). These three items captured sexual behavior. The final three questions addressed when it would be acceptable to participate in genital, oral, and anal sex. Response categories included: when dating casually (1), when a couple is in a serious dating relationship (2), when a couple is engaged to be married (3), only after marriage (4), and never (5). Responses were then coded so that the higher number resulted in the more permissive response (1=never and 5=dating casually). The responses for the six questions were then

summed in order to get an overall score. The scale had a Cronbach's alpha of .808. Responses to the individual items were summed so that possible scores on this scale ranged from 6 to 30.

Respondent Alcohol Use. The alcohol use variable was assessed by using two items. They were how often the respondent drank alcoholic beverages in a typical month and the amount of times a respondent has more than 4 (female) or 5 (male) drinks in a single night (Appendix F). These items are based on the Centers of Disease Control (CDC) criteria for binge drinking. Response categories varied by item. The response categories that indicated never using alcohol were coded as a 1 and response categories that indicated the highest amount of alcohol use were coded a 5. Similar to previous scales, the remaining response categories were coded to fit in logical order between 1 and 5 with the higher scores indicating higher level of alcohol use. The scale had a Cronbach's alpha of .907. Responses to the individual items were summed so that possible scores on this scale ranged from 2 to 10.

Planned Analytic Strategy

Gender has been shown to have a significant impact on sibling relationships (Cicirelli, 1989; Miner & Uhlenberg, 1997). Previous research has demonstrated that sibling relationships that include a female are generally closer throughout the life course than sibling pairs that include a male. For this study, 86% percent of the total sample included a female respondent. Nonetheless, to better understand the role gender played in emerging adult sibling relationships, the data were analyzed separately by gender.

The first analysis tested the zero-order correlations of the variables in the model. This is a preliminary indicator of the strength and direction of the relationship between the individual study variables. Next, the mediating effects of the sibling relationship were tested. In general, mediators explain how external events take on internal significance (Baron & Kenny, 1986).

The external events in this model are support and contact with a deviant sibling. For example, it was expected that the influence of sibling delinquency on all the outcome variables would be mediated by sibling support and contact. Therefore, the relationship between sibling delinquency and the outcome variables would be, at least, partially explained by the mediating effect of the sibling relationship. A regression analysis was used to see if the suggested paths of influence were significant when all variables were included in the model at the same time and whether the entire model was significant. This analysis procedure tested the mediation model. The following model illustrates the predicted hypotheses that sibling support and level of contact was believed to significantly influence the relationship of sibling delinquency and the dependent variables.

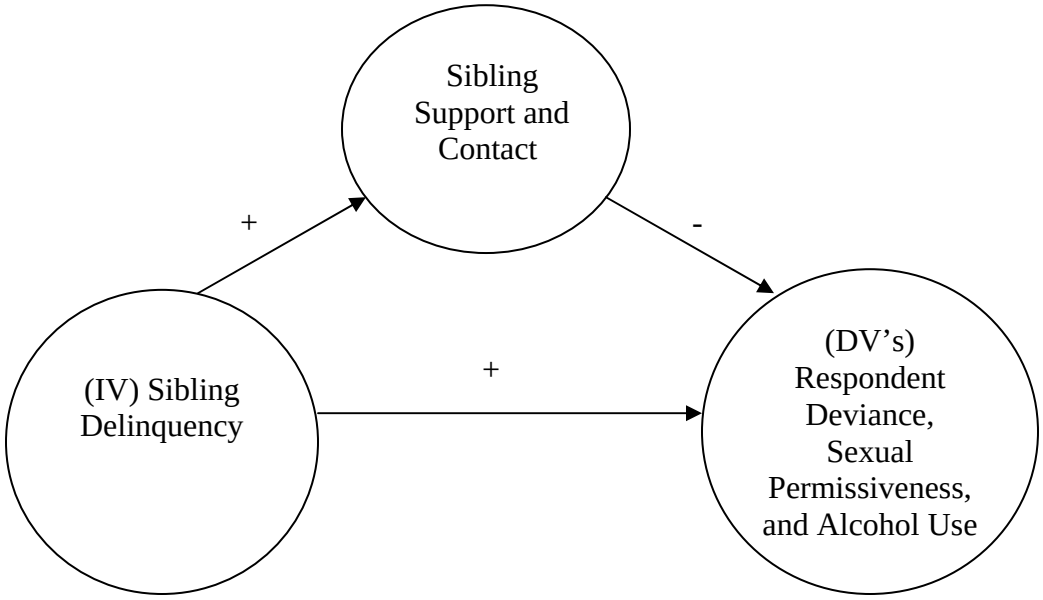

Figure 2: Mediation Model
Note: IV=Independent Variable, DV=Dependent Variable

Barron and Kenny's (1986) steps were followed when testing whether mediation occurs in the model. It is important to note that several analyses took place as a result of each

dependent variable and mediating variable being tested individually. Therefore, several models of mediation were tested. The following steps provide an explanation of how each model was analyzed.

Step 1: Regress the mediator (contact and support) on the independent variable (sibling delinquency).

Step 2: Regress the dependent variable (respondent deviance, sexual permissiveness, and alcohol use) on the independent variable.

Step 3: Regress the dependent variable on both the independent variable and the mediator variable.

Mediation was established if after the analyses several conditions were found: 1) the independent variable affected the mediator in Step 1, 2) the independent variable affected the dependent variable in Step 2, and 3) the mediator affected the dependent variable in Step 3. Each of these conditions must occur in the predicted direction and the effect of the independent variable on the dependent variable must be lower in the final step than in the second step (Baron & Kenny, 1986). Once mediation was tested for, the final analysis occurred.

The third and final analysis tested if there was a moderating effect between the variables. A moderator can be a categorical (sex or race) or continuous (frequency of contact) variable that influences the relationship between an independent and dependent variable (Baron & Kenny, 1986). Baron and Kenny (1986) stated that moderating effects occur when a third (moderating) variable affects the zero-order correlation between two other variables. Therefore, the moderator influences the direction and strength of the relationship. For this study the moderating analyses looked at the influence sibling support and sibling contact had on the relationship between

sibling deviance and the dependent variables. For example, it was expected that there would be a positive relationship between sibling deviance and respondent outcome variables. However, when there was high sibling support and/or sibling contact (moderators) between the respondent and their deviant sibling, then the relationship between sibling deviance and the outcome variables was strong. The following model demonstrates how moderation was tested and the steps for analysis will follow.

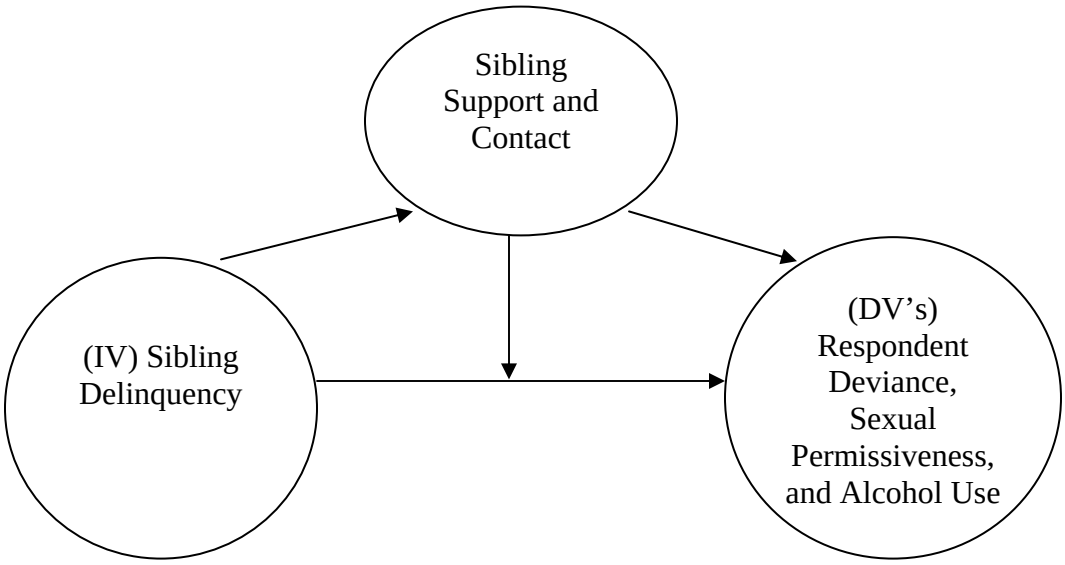

Figure 3: Moderator Model
Note: IV=Independent Variable, DV=Dependent Variable

The following steps for analyses are suggested by Baron and Kenny (1986).

Step 1: Regress the dependent variable on the independent variable and the potential moderator variable (support and contact).

Step 2: Re-run the regression adding an interaction term formed by multiplying the independent variable by the potential moderator. If the interaction terms are significant, then a moderating relationship is established.

It was generally expected that there would be significant effects when completing Step 1 of the analyses. However, moderation is supported only when the results of Step 2 are significant. Therefore, the moderator variable significantly impacts the relationship between the independent and dependent variable when Step 2 was found to be significant.

An example equation for testing moderation is Y (dependent variable) = X1 (independent variable) + X2 (moderator variable) + X1X2 (interaction term). The analyses provided further understanding of the relationship between the interaction term (X1X2) after controlling for the main effects of both X1 and X2. Therefore, Y was regressed on X1 + X2 + (X1X2). This gave the main effect for both X1 and X2 as well as the interaction between the two (X1X2). If the interaction was significant, then X2 was a moderator of X1. After a moderator is established there is a graph drawn. Therefore, the significant results were graphed by drawing the regression line that was obtained when solving for variables of X1 and X2. In order to illustrate the moderating effect the graph provided two regression lines. They included the regression line for those participants who fell one standard deviation below or above the population mean.

The following graphs demonstrate what the expected moderating effects would be for one of the models that were tested. Similar to testing the mediating effect, all the combinations of models that include the variables were tested. By way of example, the following graphs show what the expected relationship between sibling delinquency and respondent deviance are when the moderating effects of sibling contact are tested.

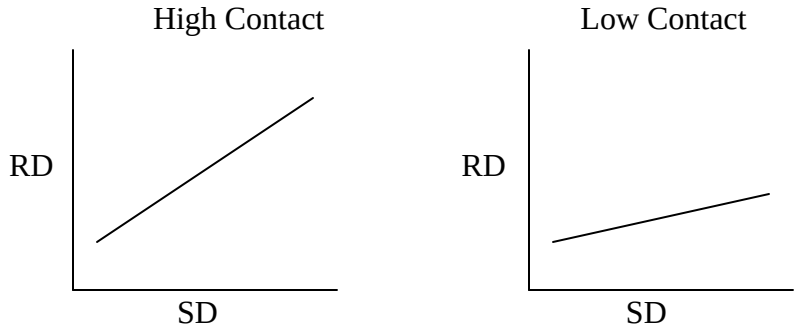

Figure 4: Expected Moderating Relationship
Note: RD = Respondent Deviance, SD = Sibling Delinquency

Each graph demonstrates that respondent deviance would increase regardless of frequency of contact. However, a respondent who had a higher level of contact with a deviant sibling would be expected to have a greater level of deviance than an individual who has less contact. These graphs are simply used as an example to show the expected relationship. A similar relationship could be provided for each of the tests that dealt with moderating effects. In general, according to social learning theory, the more support and contact the siblings have would result in greater influence on behavior.

CHAPTER IV

RESULTS

Three research questions were examined. First, was there a significant relationship between sibling delinquency and the dependent variables (deviance, sexual permissiveness, and alcohol use), sibling support and the dependent variables, and sibling contact and the dependent variables? Second, does sibling support and contact mediate the relationship between sibling delinquency and the dependent variables? Third, does sibling support and contact moderate the relationship between sibling delinquency and the dependent variables? The data were analyzed separately by gender and included participants that reported having a sibling (female: n = 557, male: n = 81). After the descriptive statistics are explained, the results are presented in three sections – an overview of the relationships between the study variables, a discussion of the mediating effects, and a discussion of the moderating effects. The findings are presented separately for each outcome variable. The hypothesized models were tested using regression analyses in SPSS.

Several scales were used throughout the analyses. In order to better understand the specific scale questions and responses, Table 1 presents the proportion of the sample who indicated that they had engaged in each of the delinquent behaviors, Table 2 and 3 present the sexual permissiveness items, and Table 4 presents the alcohol use of the sample. The responses to the individual questions are presented by way of percentage. Percentages rather than frequencies were presented to provide for a better comparison between males and females as the sample size of females was much greater than males.

Table 1

Percentage of Respondents Engaging in Various Delinquent Behaviors (males in parentheses)

Variable	In the past 12 months, have you _____?				
	Never	Once	2-3 Times	4-5 Times	> than 6 Times
Stolen Something	91.2 (81.5)	6.5 (11.1)	1.3 (6.2)	.5 (0)	.5 (1.2)
Driven Drunk	64.5 (50.6)	16.3 (12.3)	10.8 (18.5)	4.8 (8.6)	3.6 (9.9)
Fought Someone	93.4 (85.2)	4.5 (9.9)	1.6 (4.9)	0 (0)	.5 (0)
Been to Court or on Probation	91.6 (87.7)	7.9 (12.3)	.4 (0)	.2 (0)	0 (0)
Juvenile Detention	98.4 (98.8)	1.6 (1.2)	0 (0)	0 (0)	0 (0)
Been Drunk in Public	36.1 (34.6)	5.7 (7.4)	12.2 (3.7)	9.5 (4.9)	36.3 (49.4)
Damaged Property	91.9 (70.4)	5.4 (16.0)	1.1 (11.1)	.2 (1.2)	1.4 (1.2)
Broken in Building	98.0 (96.3)	.5 (2.5)	.7 (1.3)	.2 (0)	.5 (0)
Sold Illegal Drugs	96.4 (92.6)	.9 (1.2)	1.6 (1.2)	.2 (2.5)	.9 (2.5)
Been Picked up by Police	96.2 (93.8)	2.2 (4.9)	.5 (1.2)	.2 (0)	.7 (0)

Over ninety-percent of the female respondents indicated that they had never participated in eight of the ten items in the delinquency checklist. Males (29%) were more likely than females (8%) to report they had damaged property in the past 12 months. The two variables that indicated the highest level of participation for males and females were drunk driving and public drunkenness. Compared to females, males (49.4%) were more likely than females (35.5%) to admit to drunk driving in the past 12 months and were three times more likely to have done so on more than six occasions. Nearly 65% of females and 62% of males reported being drunk in public in the past 12 months. Public drunkenness seemed to occur on a regular basis for many participants as 36% of females and 49% of males reported that they had been drunk in public

more than six times in the previous year. Differences were more prevalent between males and females when answering survey questions about sexuality behavior and attitudes.

The items in the sexual permissiveness scale are presented in two separate tables. Table 2 will present the respondents reported past sexual behavior. Table 3 will present personal attitudes regarding sexual activity.

Table 2

Percentage of Respondent Sexual Permissiveness Behavior (males in parentheses)

Variable	Number of sex partners by type of activity.				
	0	1	2-4	5-9	>10
Vaginal Intercourse	35.9 (29.6)	19.4 (23.5)	28.2 (23.5)	11.1 (13.6)	5.2 (9.9)
Oral/Genital Contact	24.2 (22.2)	20.5 (21.0)	34.8 (27.2)	15.8 (14.8)	4.5 (14.8)
Anal Intercourse	83.7 (81.5)	11.3 (13.6)	3.8 (3.7)	.7 (0)	.2 (1.2)

In general, males had engaged in more sexually permissive behaviors with more partners than females. Female respondents were slightly more likely to indicate that they had never participated in vaginal intercourse (female=36%, male=30%) and male respondents were more likely to indicate that they have had more than 10 vaginal sex partners (female=5.2%, male=9.9%). Male respondents (14.8%) were also much more likely than females (4.5%) to state that they had 10 or more oral sex partners over the past year. These were the major differences between males and females regarding sexual behavior, though there was a general trend toward male respondents having more partners for each type of sexual behavior than females. Gender differences in attitude were more pronounced

Table 3

Percentage of Respondent Sexual Permissiveness Attitudes (males in parentheses)

Variable	When is it acceptable to have sex for the first time with a new partner?				
	Never	After Marriage	Engaged	Serious Dating	Casual Dating
Vaginal	.5 (0)	32.7 (28.4)	3.2 (3.7)	52.4 (35.8)	11.1 (32.1)
Oral	4.7 (1.2)	21.7 (19.8)	1.3 (4.9)	48.3 (22.2)	24.1 (51.9)
Anal	53.3 (32.1)	14.8 (18.5)	.9 (1.2)	25.0 (32.1)	5.8 (16.0)

There were several differences between male and female respondents regarding their attitudes of when it is acceptable to engage in sexual behavior for the first time with a new partner. For example, 52.4% of females and 35.8% of males reported that it was acceptable to have vaginal sex for the first time with a new partner while in a serious dating relationship. However, males (32.1%) were much more likely than females (11.1%) to indicate that it was acceptable to have sex for the first time with a new partner in a casual dating relationship. The same response trend was reported regarding oral sex as 51.9% of males and 24.1% of females indicated that it was acceptable to have oral sex in a casually dating relationship. Females were also more likely to state that anal sex was never acceptable (females=53.3%, males=32.1%). Alcohol use is another area where there were profound differences between males and females and Table 4 presents those results.

Table 4

Percentage of Respondent Alcohol Use (males in parentheses)

Variable	Alcohol Consumption				
How Often	Never	1 or 2	Weekly	2-3 a week	> 4 a week
	25.1 (27.2)	28.4 (16.0)	21.0 (19.8)	22.6 (23.5)	2.9 (11.1)
4-5 or More Drinks	Never	2 x per year	1 per month	1 per week	>1 per week
	32.3 (27.2)	17.2 (14.8)	21.2 (14.8)	18.0 (30.9)	11.3 (12.3)

Female respondents (2.9%) were less likely than male respondents (11.1%) to drink alcohol more than 4 times per week. In addition, 18% of females reported that they drank more than 4 alcoholic beverages in one night on a weekly basis and 30.9% of males reported drinking more than 5 drinks at one time weekly. Male respondents reported a much higher rate of alcohol consumption.

It appeared that males and females had similar responses to the questions in the dependent or outcome variables. However, there were also some documented differences that occurred. When there was a difference between male and female responses, males generally reported more risky behavior (alcohol use, beliefs about sexual behavior, and alcohol use). The next item to be presented is the independent variable.

The independent variable used for the analyses was sibling deviance. The sibling deviance scale had a maximum score of 35 with higher scores indicating an increased level of deviance. Female participants reported a mean sibling deviance score of 12.05 with a standard deviation of 6.13. Male participants reported a mean sibling deviance score of 11.24 and a standard deviation of 5.79.

Sibling support and contact were the mediating/moderating variables analyzed. The sibling support scale had a maximum score of 10 with higher scores indicating a higher level of perceived support. The mean sibling support score for females was 7.46 and a standard deviation of 2.01. Males reported a mean sibling support score of 6.73 with a standard deviation of 2.18.

The sibling contact scale had a maximum score of 5 with higher scores indicating a higher level of contact. The mean sibling contact score for females was 4.53 with a standard deviation of .817. Male participants reported a mean sibling contact score of 4.46 and a standard deviation of .797.

Overall sibling relationships were positive with more than 71% of the respondents indicating that they had received emotional support from their sibling and over 65% indicating that they had contact with their sibling once a week or more. It was reported that 38% of females and 42% of males had received financial support from a sibling over the past 12 months. However, only about 7% of the total sample received financial support once a month or more. The majority of emerging adults in this sample reported that they had frequent contact with their sibling with 65% of females and 62% of males having contact once a week or more. Only 8% of females and 16% of males reported having contact with a sibling only on special occasions or less. Females did report that they received more emotional support than males with 76% of female respondents indicating that they received emotional support more than once a month from a sibling compared to 57% of males. The level of emotional support reported was similar to other studies looking at support in general adult sibling relationships (Cicerelli, 1980). However, contrary to the report by Scharf, Shulman, and Avigad-Spitz (2005) gender did not affect sibling relationship quality in emerging adulthood. Further examination of gender during emerging

adulthood is needed to better understand how and to what extent gender impacts the sibling relationship during emerging adulthood.

Variable Relationships

The first study question was to investigate the bivariate relationships of the variables in the study model. Table 5 presents the correlation matrix for the study variables.

Table 5

Correlations Among Study Variables

Variable	1	2	3	4	5	6
1. Sibling Delinquency	-	-.176**	-.247**	.148**	.164**	.115**
2. Sibling Contact	.098	-	.465**	.004	.044	.087*
3. Sibling Support	-.012	.466**	-	.026	.068	-.061
4. Respondent Deviance	.053	.186*	-.069	-	.717**	.564**
5. Respondent Alcohol Use	.023	.158	-.121	.695**	-	.558**
6. Respondent Sexual Permissiveness	.161	.002	-.190*	.439**	.512**	-

Note. Correlations for female respondents are presented above the diagonal; male respondents are presented below the diagonal. ** = correlation is significant at $p < .01$; *correlation is significant at $p < .05$.

It was expected that sibling delinquency would be positively correlated with the dependent variables (respondent deviance, respondent sexual permissiveness, and respondent alcohol use). This expectation was found among as females but not for males. Sibling delinquency significantly correlated with all the variables in the model for females. One possibility for the different outcomes between the males and females was the result of the small sample size (n=81) of males. The low sample size may not have allowed for enough power to detect differences between the variables.

It was also expected that there would be a lower level of closeness with a delinquent sibling (Brody, 1998). Once again, there was a negative correlation between the level of contact and/or support and the level of deviance among female but not male respondents. This expectation was rooted in the belief that the majority of parents would provide negative reinforcement to a deviant child. Through observing the negative reinforcement, it would be expected that the respondent would distance him or herself from the deviant sibling in order to receive positive feedback.

The final expectation regarding the bivariate correlations was that sibling support would be positively correlated with the dependent variables. This expectation was not supported for respondent deviance or respondent alcohol use, as the relationship between sibling support and sibling contact was not significantly associated with these dependent variables for males or females. However, there were some mixed findings with the association of support with respondent sexual permissiveness.

Sibling contact was positively correlated with female sexual permissiveness, and sibling support was negatively correlated with male sexual permissiveness. Therefore, the correlations indicate that females who had a high level of contact with a sibling engaged in more risky sexual behavior. For males sibling support was found to be negatively correlated with sexual permissiveness in that more sibling support resulted in a lower level of sexual permissiveness.

Respondent Deviance

Respondent deviance was the first outcome variable to be analyzed. The respondent deviance scale had a maximum score of 40 with higher scores indicating an increased level of deviance. Female participants reported a mean respondent deviance score of 4.15 and a standard deviation of 4.23. Male participants reported a mean respondent deviance score of 6.04 and a

standard deviation of 5.70. The sample appeared, as a whole, to have a low level of deviant behavior.

Test of Mediation

It was expected that the relationship between sibling delinquency and respondent deviance would be mediated by sibling contact and support. Testing mediation was a three step process. When a significant relationship was achieved in an initial step of the analysis the subsequent step in the analysis occurred. However, if at any point the analysis was not significant then mediation did not occur and the further tests were not needed. Because sibling delinquency and respondent deviance were not correlated at the bivariate level for males, there was no relationship to be mediated and males were left out of this stage of analysis. The mediating relationship of support was analyzed first. Step 1 was to regress the mediating variable (support) on the independent variable (sibling deviance).

The results of Step 1 indicated that the analysis was significant at the $p < .01$ level ($b = -.247$). Step 2 regressed the dependent variable (respondent deviance) on the independent variable (sibling delinquency) and was found to be significant with a beta of .148 ($p < .01$). Step 3 regressed the dependent variable (respondent deviance) on both the independent (sibling deviance) and the mediator variable (sibling support). Table 6 illustrates the results.

Table 6

OLS Regression of Respondent Deviance on Sibling Support and Delinquency

		Unstandardized Coefficients	Standardized Coefficients		
Gender		B	Beta	t	Sig
Female	(Constant)	2.602		2.794	.005**
	Sib. Delinquency	.105	.152	3.351	.001**
	Sib. Support	.038	.018	.388	.698

Note. ** = correlation is significant at $p < .01$

As is indicated by the results, the zero order correlation between sibling delinquency and respondent deviance was .148 ($p < .01$) before sibling support was included in the model and .105 ($p < .01$) after sibling support was included in the model. The beta remained significant at the $p < .01$ level when support was placed in the mediation analysis but the relationship slightly decreased. Therefore, sibling support provided a slight mediating effect for females but sibling support does not provide full mediation between sibling deviance and respondent deviance for female respondents.

The mediating relationship of sibling contact was also tested for sibling delinquency and respondent deviance. Step 1 was to regress the mediating variable (sibling contact) on the independent variable (sibling delinquency). The results of Step 1 indicated that the analysis for females (-.176) was significant at the $p < .01$. As previously illustrated, Step 2 for females was found to be significant at the $p < .01$(.148). Step 3 regressed the dependent variable (respondent deviance) on both the independent (sibling delinquency) and the mediator variable (sibling contact). Table 7 illustrates the results.

Table 7

OLS Regression of Sibling Delinquency on Sibling Contact and Respondent Deviance

		Unstandardized Coefficients	Standardized Coefficients		
Gender		B	Beta	t	Sig
Female	(Constant)	1.751		1.547	.122
	Sib. Delinquency	.108	.157	3.517	.000**
	Sib. Contact	.244	.050	1.115	.266

Note. ** = correlation is significant at $p < .01$

The zero order correlation between sibling delinquency and respondent deviance was .148 ($p < .01$) but after contact was entered into the model the relationship decreased as is indicated by the beta of .108 ($p < .01$). The results for Step 3 remained significant between sibling delinquency and respondent deviance, but the beta slightly decreased. Similar to sibling support, the results indicated that sibling contact did not significantly mediate the relationship between sibling and respondent deviance. Therefore, neither sibling support nor sibling contact was found to be a significant mediator between sibling delinquency and respondent deviance but there was some evidence of small mediating effects.

Test of Moderation

For each test of moderation there were four models analyzed. Analyzing four models allowed for a more comprehensive understanding of the influence the variables had on one another. The standardized coefficients, as well as the significance levels, are presented in the moderation tables. By way of explanation, there was a moderating effect when the interaction term (Sibling Delinquency x Sibling Support or Sibling Delinquency x Sibling Contact) was significant while the independent and moderating variables were included in the model. When the interaction term in Model 2 was significant, then sibling support was a moderator. When the interaction term in Model 3 is significant, then sibling contact was a moderator. Moderators that were found to be significant are graphed. Model 4 was a test of how all the variables in the analysis (including both interaction terms) interacted with each other. Similar to the test of mediation, the procedure was followed with each dependent variable. The moderating effect of sibling support and sibling contact on the relationship between sibling delinquency and respondent deviance was tested first. The results for females are indicated in Table 8.

Table 8

Regression of the Moderating Effects on Respondent Deviance and Sibling Delinquency

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Sib. Delinquency	.108**	-.268**	-.500**	-.497**
Sib. Support	-.007	-.764**	-.058	-.563**
Sib. Contact	-.007	.216	-1.488**	-.796
Sib. Dev. x support	-	.057**	-	.040*
Sib. Dev. x contact	-	-	.142**	.080

Note. ** = correlation is significant at $p < .01$, * = correlation is significant at $p < .05$

As was expected, when each interaction term was stepped into the model separately (as in models 2 and 3) each had a significant affect. Therefore, sibling support and sibling contact were moderators between sibling delinquency and respondent deviance for females. However, when both sibling support and sibling contact were included in the model only sibling support was significant. This is may be due to multicolinearity. Multicolinearity occurs when independent variables are highly correlated and, as a result, when both independent variables are included in an analysis they cancel each other out resulting in non-significance (Pedhazur, 1982, p. 233). The results indicated that more support and/or contact an individual received from a delinquent sibling increased the influence of that delinquent sibling on the respondent's level of deviance. Figure 6 illustrates the moderating influence sibling support has on the relationship between sibling delinquent behavior and respondent deviance. The dashed regression line represents sibling support scores that were one standard deviation above the mean and the solid regression line represents scores that were one standard deviation below the mean. The solid and dashed lines will be used for all figures representing the results of the moderation analyses.

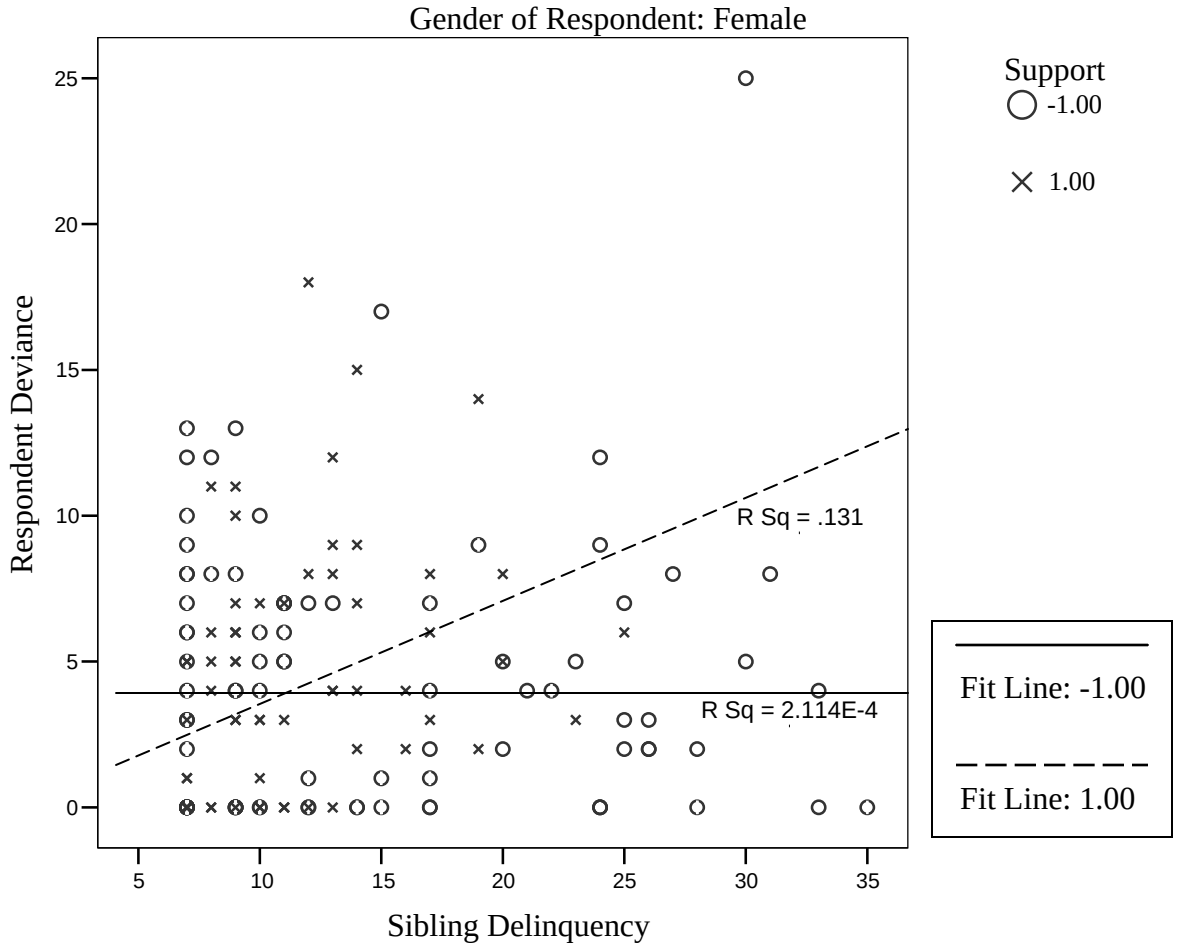

Figure 5: Moderating Effect of Support on Sibling Delinquency and Respondent Deviance

For female respondents who had limited support with a delinquent sibling (one standard deviation below the mean) their own level of deviance was not associated with the increased level of sibling delinquency. However, when respondents had a high level of support from a delinquent sibling (one standard deviation above the mean) their own level of deviance increased substantially as the level of delinquency of their sibling increased. Figure 7 illustrates the moderating influence sibling contact has on the relationship between sibling delinquency and respondent deviance.

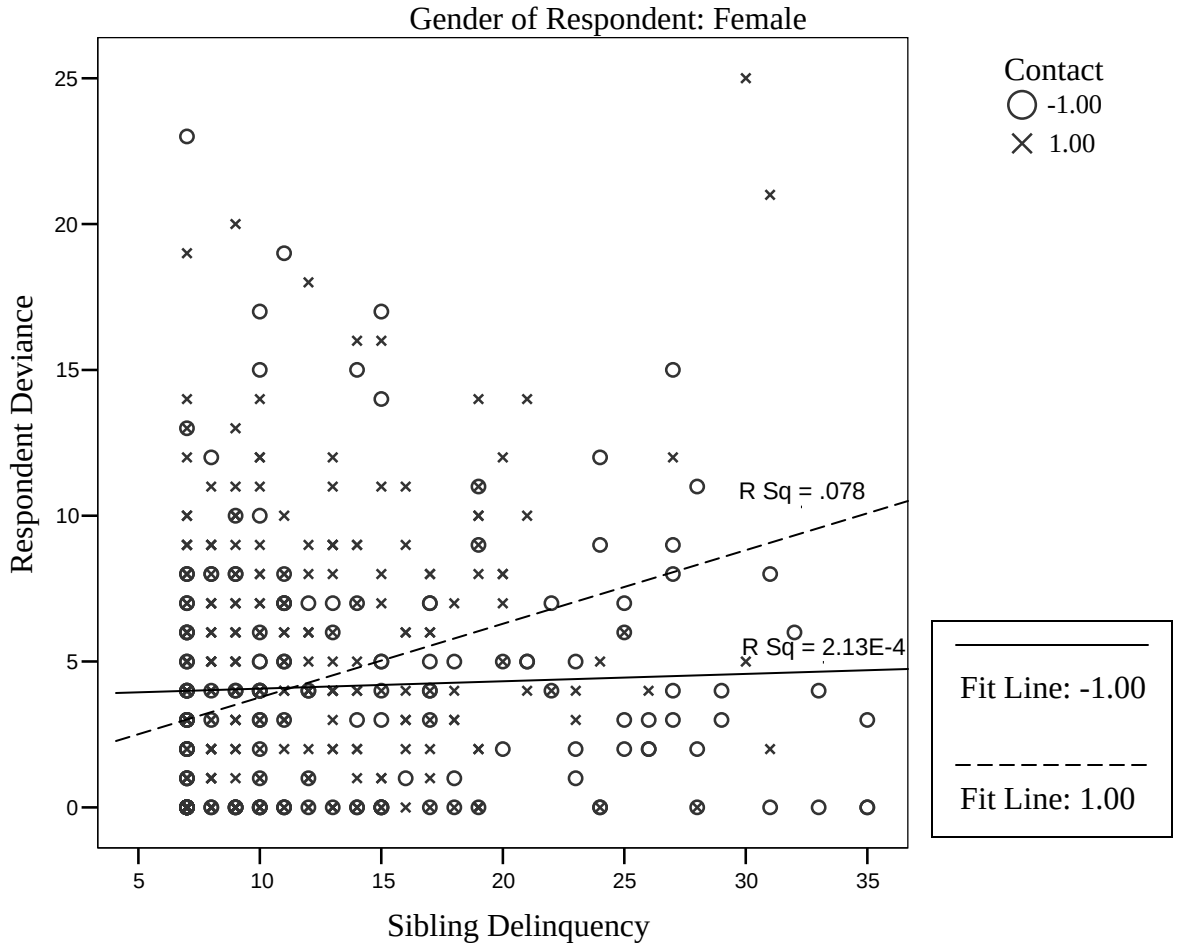

Figure 6. Moderating Effect of Sibling Contact on Sibling Delinquency and Respondent Deviance

Sibling contact had a similar impact on respondent deviance. Female respondents who had a low level of contact with a delinquent sibling (one standard deviation below the mean) did not see their own level of deviance influenced by the increased level of sibling delinquency. However, when respondents had a high level of contact with a sibling (one standard deviation above the mean) their own level of deviance increased as the level of delinquency from their

sibling increased. The same moderating tests were applied to male respondents and the results are presented in Table 9.

Table 9

Regression of the Moderating Effects on Respondent Deviance and Sibling Delinquency

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Sib. Delinquency	.019	-.013	-.288	-.443
Sib. Support	-.523	-.588	-.564	-.277
Sib. Contact	1.800*	1.796*	1.094	.392
Sib. Dev. x support		.005		-.025
Sib. Dev. x contact			.069	.141

Note. * = correlation is significant at $p < .05$

Sibling support and sibling contact were not found to be moderators between sibling delinquency and respondent deviance for males as the interaction terms were not significant in the model testing. Given previous theory and empirical studies, it was expected that there would be a significant moderating effect but that did not occur.

Respondent Sexual Permissiveness

Respondent sexual permissiveness was the second outcome variable to be analyzed. The sexual permissiveness scale had a maximum score of 24 with higher scores indicating an increased level of promiscuity. Female participants reported a mean sexual permissiveness score of 9.31 and a standard deviation of 4.86. Male participants were slightly more promiscuous than females as they reported a mean sexual permissiveness score of 11.12 and a standard deviation of 2.73. Though males, on average, reported more promiscuity than females, there was more variability in female sexual permissiveness scores than there was for males as is illustrated by the standard deviations. Therefore, males appear to be more predictable in their sexual behavior and sexual beliefs than females.

Test of Mediation

The mediating relationship of support and contact between sibling delinquency and respondent sexual permissiveness were analyzed. Each mediating variable was analyzed separately with sibling support being analyzed first. Step 1 was previously conducted in the analysis of respondent deviance and only the female results were significant. Therefore, it is necessary to only report on the Step 2 analysis of female respondents. Step 2 regressed the dependent variable (respondent sexual permissiveness) on the independent variable (sibling delinquency). Step 2 was significant at the $p = .01$ level for females with a beta of .115. The final step was to regress the dependent variable on both the independent (sibling delinquency) and the mediator variable (sibling support). Table 10 illustrates the analysis results.

Table 10

OLS regression of Respondent Sexual Permissiveness on Sibling Support and Delinquency (females)

		Unstandardized Coefficients	Standardized Coefficients		
Gender		B	Beta	t	Sig.
Female	(Constant)	8.918		8.452	.000
	Sib. Delinquency	.082	.036	2.290	.022*
	Sib. Support	-.086	-.035	-.765	.444

Note. * = correlation is significant at $p < .05$

The relationship between sibling deviance and respondent sexual permissiveness was significant at the $p < .01$ level with a beta of .115 but when sibling support is entered into the model the relationship decreased to .082, which is significant at the $p < .05$ level. These results indicate that the relationship between sibling delinquency and respondent sexual permissiveness was mediated by sibling support.

The mediating relationship of sibling contact was also tested for sibling delinquency and respondent sexual permissiveness. Step 1 was previously found to be significant for females with a beta of .115 ($p < .01$) and Step 2 for females, which looked at the relationship between sibling contact and respondent sexual permissiveness, was also found to be significant with a beta of .087 ($p < .05$). Step 3 regressed the dependent variable (respondent sexual permissiveness) on both the independent (sibling delinquency) and the mediator variable (sibling contact). Table 11 illustrates the results.

Table 11

OLS Regression of Respondent Sexual Permissiveness on Sibling Contact and Delinquency (females)

		Unstandardized Coefficients	Standardized Coefficients		
Gender		B	Beta	t	Sig
Female	(Constant)	9.975		7.971	.000
	Sib. Delinquency	.081	.102	2.297	.022*
	Sib.Contact	-.373	-.069	-1.543	.124

Note. * = correlation is significant at $p < .05$

The relationship between sibling delinquency and respondent deviance was .115 ($p < .05$) before sibling contact was included in the model and it was .081 ($p < .05$) after sibling contact was included in the model. The relationship between sibling delinquency and respondent sexual permissiveness decreased when sibling contact was included in the mediating model. Therefore, as was expected, sibling contact had a significant mediating effect between sibling delinquency and respondent sexual permissiveness for females.

Test of Moderation

There were four models that were tested in the moderation analyses. The interaction term for sibling support and sibling contact was stepped into the model separately in Model 2 and Model 3 and then Model 4 included both interaction terms in the analysis. Table 12 reports on the results for the test of moderation of sibling support and sibling contact on the relationship between sibling delinquency and respondent sexual permissiveness.

Table 12

Regression of the Moderating Effects on Respondent Sexual Permissiveness and Sibling Delinquency (females)

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Sib. Delinquency	.078	-.176	-.309*	-.309
Sib. Support	-.018	-.531*	-.052	-.413
Sib. Contact	-.355	-.377	-1.467*	-.947
Sib. Dev. x support		.039*		.028
Sib. Dev. x contact			.091*	.047

Note. * = correlation is significant at $p < .05$

The interaction term for both sibling support and sibling contact were significant at the $p = .05$ level for females when they were stepped into the model separately. As was expected, both sibling support and sibling contact moderated the relationship between sibling delinquency and respondent sexual permissiveness. However, when all interaction terms were included (Model 4) the results were no longer significant, which may be due to multicolinearity. Nevertheless, results for the significant interactions were graphed in order to establish that the

relationship between variables was in the expected direction. Figure 8 illustrates the moderating effect of sibling support for females.

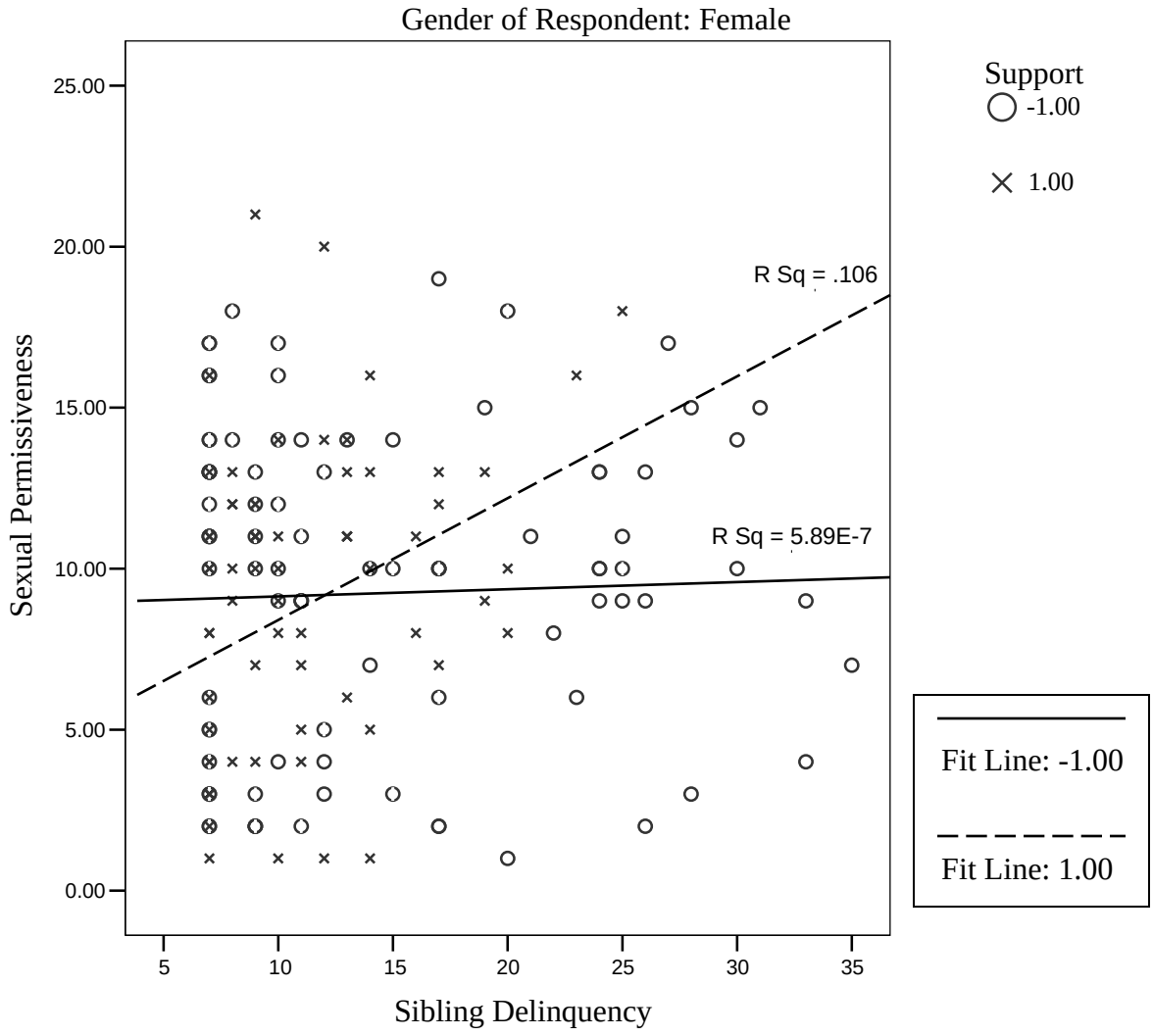

Figure 7. Moderating Effect of Sibling Support on Sibling Delinquency and Sexual Permissiveness

Figure 8 illustrates that for females who receive a low level of support from a delinquent sibling, the level of sibling delinquency does not influence the level of respondent sexual

permissiveness. However, there was an increased likelihood of respondents being more sexually promiscuous when the level of sibling delinquency increased and the level of support of the deviant sibling increased. Figure 9 illustrates the moderating effect of sibling contact on the relationship between sibling delinquency and respondent sexual permissiveness.

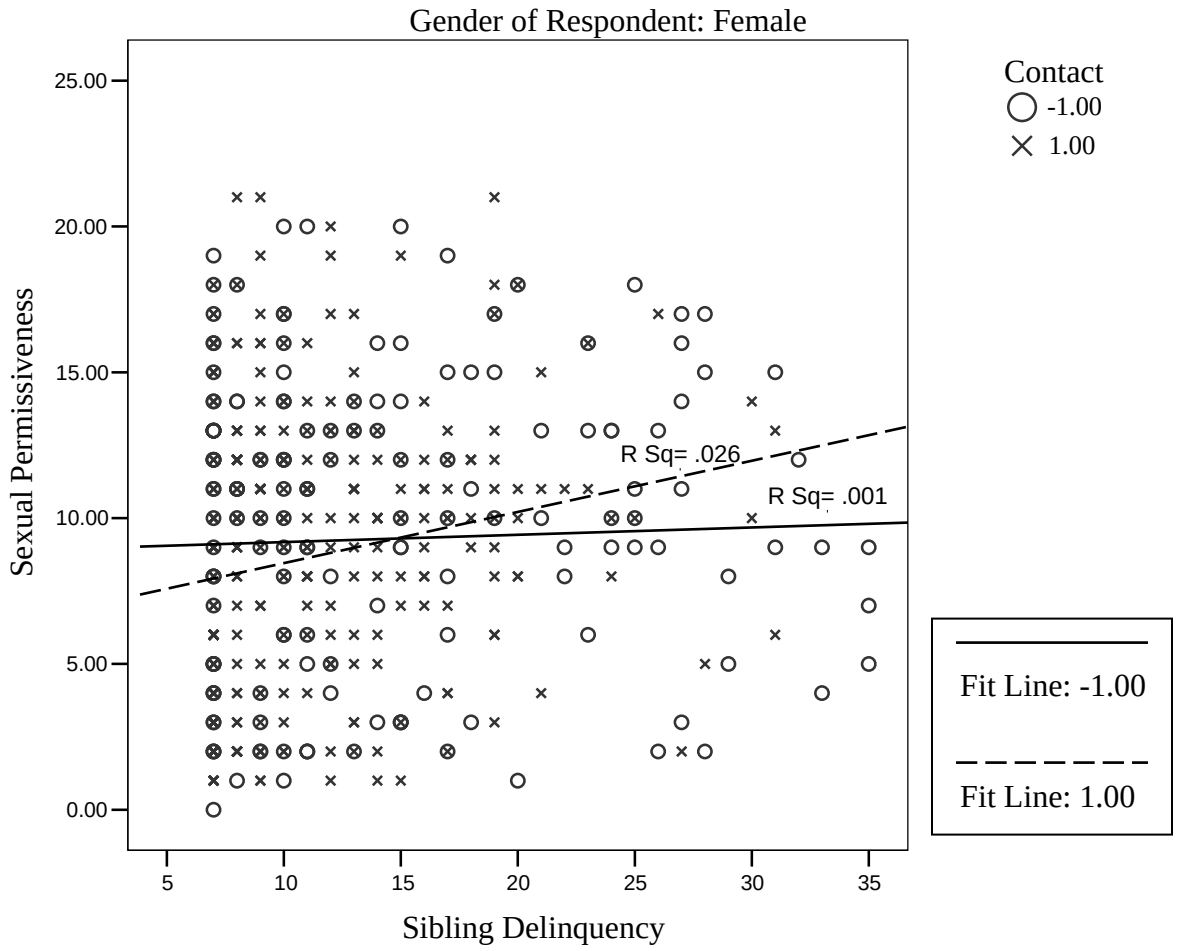

Figure 8. Moderating Effect of Sibling Contact on Sibling Delinquency and Sexual Permissiveness

Figure 9 illustrated that sibling deviance did not result in respondent sexual permissiveness for females that have a low level of contact with a delinquent sibling, but there

was an increased likelihood of respondents being more sexually promiscuous when the level of sibling delinquency increased and the level of contact with the delinquent sibling increased. The same tests were applied to males in the sample and their results are in Table 13.

Table 13

Regression of the Moderating Effects on Respondent Sexual Permissiveness and Sibling Delinquency

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Sib. Delinquency	.128	-.218	-.571	-.263
Sib. Support	-.580	-1.291*	-.670*	-1.258
Sib. Contact	.644	.599	.978	.449
Sib. Dev. x support		.055		.052
Sib. Dev. x contact			.159	.015

Note. * = correlation is significant at $p < .05$

Sibling support and sibling contact were not found to be moderators between sibling delinquency and respondent sexual permissiveness for males as the interaction term was not significant in the model analysis. Based on theory and past research, it was expected that there would be a significant moderating effect on males as well as females. However, this relationship was not found. Alcohol use was the final dependent variable that was tested.

Respondent Alcohol Use

The final outcome variable analyzed was respondent alcohol use. The alcohol use scale had a maximum score of 8 with higher scores indicating an increased level of alcohol use. Female participants reported a mean alcohol use score of 3.08 and a standard deviation of 2.46. Male participants reported a mean alcohol use score of 3.59 and a standard deviation of 2.73.

Test of Mediation

The mediating relationship of sibling support between sibling delinquency and respondent alcohol use was analyzed first. Previous results indicated that the Step 1 analysis was significant at the $p < .01$ level for females with a beta of .148 but it was not significant for males with a beta of -.012 ($p < .05$). Therefore, it was necessary to only proceed with the analyses for female respondents. Step 2 regressed the dependent variable (respondent alcohol use) on the independent variable (sibling delinquency). The results of Step 2 indicated the relationship between sibling deviance and respondent alcohol use was significant with a beta of .164 ($p < .01$). The results for the final step in the mediating analyses are illustrated in Table 14.

Table 14

OLS Regression of Respondent Alcohol Use on Sibling Support and Delinquency (females)

		Unstandardized Coefficients	Standardized Coefficients		
Gender		B	Beta	t	Sig
Female	(Constant)	2.667		5.029	.000**
	Sib. Delinquency	.062	.154	3.424	.001**
	Sib. Support	-.045	-.036	-.800	.424

Note. ** = correlation is significant at $p < .01$

The zero order correlation between sibling delinquency and respondent alcohol use was .164 ($p < .01$) but when sibling support was entered into the model the relationship between sibling delinquency and respondent alcohol use decreased, as is indicated by the beta of .062 ($p < .01$). The relationship between sibling delinquency and respondent alcohol use remained significant, so sibling support provides a limited significant mediating effect.

The final mediating relationship that was tested was sibling contact on sibling delinquency and respondent alcohol use. Step 1 and Step 2 have previously been reported as being significant. Therefore, Step 3 results are illustrated in Table 15.

Table 15

OLS Regression of Respondent Alcohol Use on Sibling Contact and Delinquency (females)

		Unstandardized Coefficients	Standardized Coefficients		
Gender		B	Beta	t	Sig
Female	(Constant)	1.095		1.716	.087
	Sib. Delinquency	.071	.178	4.019	.000**
	Sib. Contact	.249	.089	2.017	.044*

Note. ** = correlation is significant at $p < .01$, * = correlation is significant at $p < .05$

The relationship between sibling delinquency and respondent alcohol use was .164 ($p < .01$) before sibling contact was entered into the model. After sibling contact was entered into the model, the relationship between sibling delinquency and respondent alcohol use decreased to .071 ($p < .01$). Therefore, sibling contact did provide some mediating effect but the results remained highly significant between sibling delinquency and respondent alcohol use. Therefore, sibling support and sibling contact did provide a limited significant mediating effect between sibling delinquency and respondent alcohol use for females.

Test of Moderation

The test of moderation of sibling support and sibling contact on the relationship between sibling delinquency and respondent alcohol use was the final analysis to take place in this study. It was expected that both support and contact would have a moderating effect on the relationship between sibling delinquency and respondent alcohol use. Table 16 presents the results for the

female test of moderation of sibling support and sibling contact between sibling delinquency and respondent alcohol use.

Table 16

Regression of the Moderating Effects on Respondent Alcohol Use and Sibling Delinquency

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Sib. Delinquency	.065**	-.076	-.224*	-.224*
Sib. Support	-.114	-.400**	-.138*	-.268*
Sib. Contact	.355**	.343*	-.482	-.292
Sib. Dev. x support		.022**		.010
Sib. Dev. x contact			.068**	.052*

Note. ** = correlation is significant at $p < .01$, * = correlation is significant at $p < .05$

When the interaction term for sibling support is stepped into the model (Model 2) separately it is significant at the $p < .01$ level ($b = .022$). The same is true for the interaction term for sibling contact which is significant at the $p < .01$ ($b = .068$). However, as has occurred in the previous moderation analyses, when both interaction terms are included in the model only one of the interaction terms was significant. With the Model 4 analysis of alcohol use the sibling contact interaction term was significant with a beta of .052 ($p < .05$) but the sibling support interaction was no longer significant with a beta of .010 ($p < .05$). Once again, this may be due to multicolinearity. Results for the significant interactions were graphed in order to illustrate that the relationship between variables was in the expected direction. Figure 10 illustrates the effect of sibling support on the relationship between sibling delinquency and respondent alcohol use.

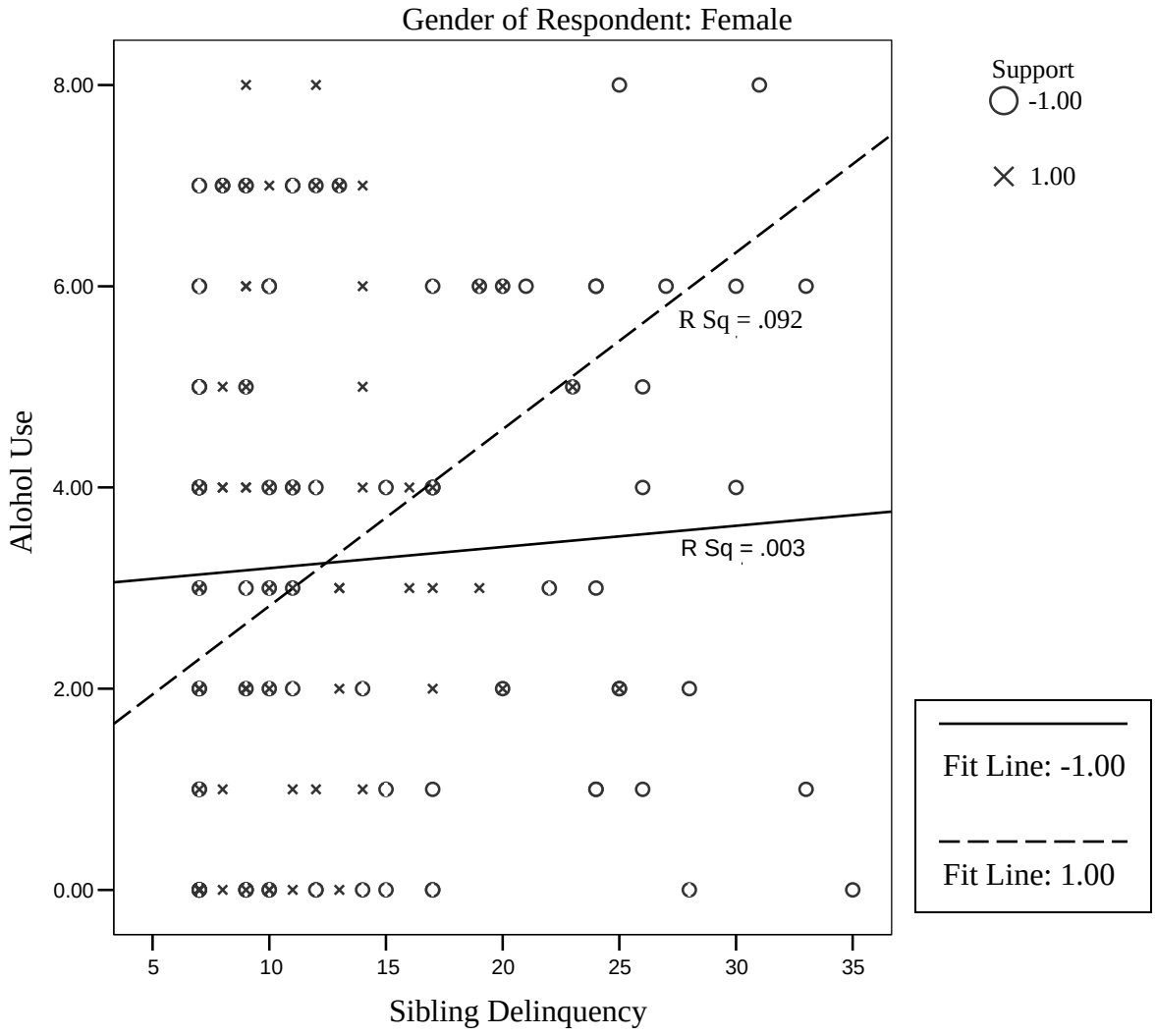

Figure 9. Moderating Effect of Sibling Support on Sibling Delinquency and Alcohol Use

Figure 10 illustrates that the level of sibling delinquency increased the risk of alcohol use by females regardless of the level of sibling support (see regression line for low sibling support). However, the relationship between sibling delinquency and respondent alcohol use was stronger when support from the sibling was high. A high level of support from a deviant sibling had a significantly greater influence on respondent alcohol use than a low level of support from a delinquent sibling. Figure 11 illustrates a similar effect for sibling contact for females.

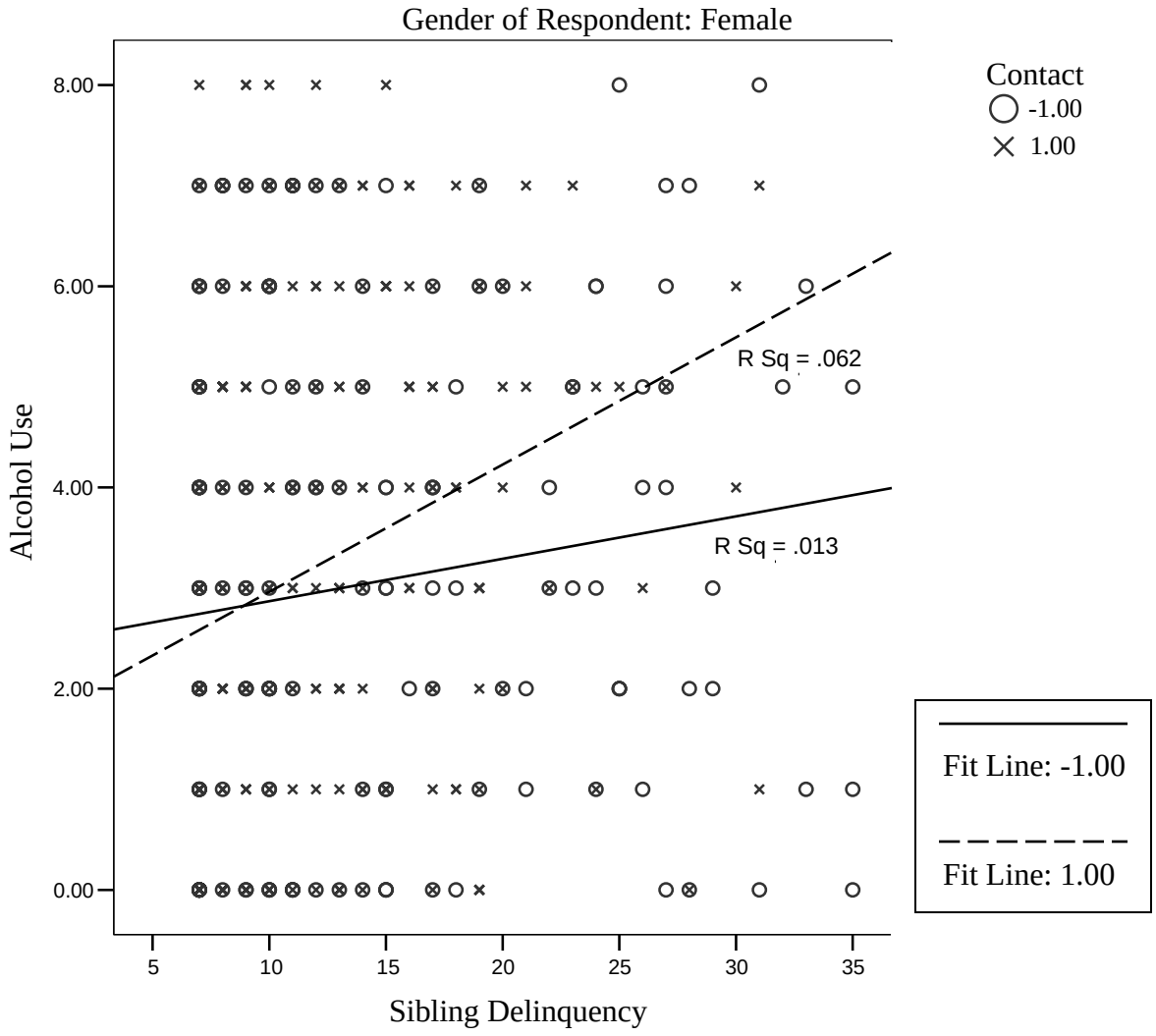

Figure 10. Moderating Effect of Sibling Contact on Sibling Delinquency and Alcohol Use

Figure 11 illustrates that alcohol use for females increased regardless of level of contact with a delinquent sibling. Similar to the findings for support, there was an increased likelihood of respondents engaging in higher levels of alcohol use when there was an increased level of contact with a delinquent sibling. The moderating relationship of sibling support and contact was also tested with male respondents. Table 17 illustrates the analyses results for males.

Table 17

Regression of the Moderating Effects on Respondent Alcohol Use and Sibling Delinquency

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Sib. Delinquency	-.005	.011	.107	.153
Sib. Support	-.317*	-.285	-.303	-.390
Sib. Contact	.877*	.879*	1.139	1.351
Sib. Dev. x support		-.002		.008
Sib. Dev. x contact			-.025	-.047

Note. * = correlation is significant at $p < .05$

It was expected that sibling support and contact would also moderate the relationship between sibling delinquency and responded alcohol use for males. However, once again, the results indicated that neither support nor contact were moderators for males as the interaction terms were not significant in the models tested. Similar to the previous moderating analyses for males, it was expected that there would be a significant moderating impact on males as females, but a moderating influence was not found for males.

The results of the mediating and moderating effects were mixed. It was expected that the analyses for males would result in significant mediating or moderating effects but that was not found. However, the results were much different for the female respondents. As was indicated in the results, sibling support and sibling contact did provide a mediating influence, though small, on the relationship between sibling delinquency and the dependent variables. In addition, a strong moderating effect of sibling support and sibling contact on the relationship between sibling delinquency and all the dependent variables was found. Based on theory and extant research, the results from the female analyses were expected. These results will be further discussed in the discussion section.

CHAPTER V

DISCUSSION

The goal of the current study was to examine the influence sibling support and sibling contact has on an emerging adult's deviant behavior, sexual permissiveness, and alcohol use. Using a social learning theory perspective, the influence siblings have on externalizing behavior during emerging adulthood was examined by testing the mediating and moderating effects sibling support and sibling contact have on an individuals externalizing behavior. The results indicated that there were small mediating effects of sibling support and sibling contact between sibling delinquency and the dependent variables for females but not for males. The results also indicated that sibling support and sibling contact moderated the association between sibling delinquency and respondent externalizing symptoms for females but not for males. This association was stronger among siblings with a greater amount of contact and support from a delinquent sibling.

The mediating effect has been documented for internalizing symptoms during emerging adulthood for both males and females. Milvesky (2005a) demonstrated the mediating influence siblings have on internalizing symptoms, in that individuals who had a supportive relationship with a sibling had lower levels of depression, anxiety, and adjustment difficulties. The current study hypothesized, based on social learning theory, that the influence of a delinquent sibling on the behaviors of the respondent be significantly mediated by the level of support and contact. The relationship between sibling delinquency and the dependent variables was slightly explained by the level of sibling contact and sibling support for female but not male respondents.

One possible explanation for the limited mediating support is that sibling relationship quality was not fully captured in the study by the questions used. The two mediating variables examined in this study were sibling support and sibling contact. Sibling support was assessed with two items and sibling contact was captured by one item. The questions included in the study scales appeared to accurately capture the variables sibling support and sibling contact as they have been found to be effective measures of these constructs. However, that may not have been the case. Additional precautions, such as a test-retest method, could have been used to further establish reliability and validity for these items, but because the questions in the survey had been validated in previous studies it was not deemed necessary. Future research may need to take these precautionary measures. Therefore, it may be that the items used in the survey did not provide an accurate representation of sibling support and sibling contact. Although these three items may provide a global assessment of sibling relationship quality, they may not be comprehensive enough to fully capture the complexity and intensity of the sibling relationship. A more comprehensive, multi-item measure of each of these constructs is needed.

A second possibility is that an emerging adult may act independently regarding externalizing behavior during emerging adulthood. The sibling may not have a significant influence on a brother or sister who is in the process of learning how to make independent decisions and, as a result, the emerging adult may make behavioral choices based on their own volition. However, this is contrary to what the extant literature presents regarding sibling influence during this developmental phase. For example, an emerging adult who has a positive sibling relationship evidences fewer internalizing symptoms such as depression and anxiety (Cicerelli, 1989; Milvesky, 2005). It may be that emerging adulthood is an anomalous stage in development in that an individual who is in the process of differentiating may begin acting

independently with externalizing behavior and then move to independence in internalizing behavior.

Another explanation for the lack of a substantial mediating impact is that the sibling relationship is only one of many external influences on an individual. Parents, peers, and the environment provide influence as well. Therefore, if sibling support and sibling contact were placed in a model that included a variety of influencing variables, it may be easier to specifically identify what contributions the sibling relationship has as a mediator or a more prominent mediating effect may be detected.

It is also important to note that the test of mediation, although not significant, supported the tendency for a decrease in negative externalizing behavior. In other words, if a respondent had a supportive sibling relationship then the respondent generally reported less deviant behavior, less sexual permissiveness, and less alcohol use. A similar relationship between variables has been found with internalizing behavior. Studies have indicated that strong sibling relationships increase the possibility of positive outcomes ranging from academic achievement (Zukow-Golding, 1995), social understanding (Dunn, 1999), fewer externalizing problems (Furman & Holmbeck, 1995), and less alcohol use (East & Khoo, 2006) for children and adolescents. Reporting the influential nature of a sibling on externalizing behavior has not received adequate attention during emerging adulthood to date. However, there have been numerous studies investigating the positive impact sibling support and contact has on internalizing behavior during emerging adulthood (Milevsky, 2005a; Milevsky & Levittt, 2005). Further understanding of the mediating role siblings play in externalizing behavior is needed.

How siblings interact with one another during emerging adulthood is another area that deserves greater attention. It has been documented (Milevesky, 2005b) that siblings remain

influential with one another during emerging adulthood, but there is a lack of understanding in how they remain in contact and/or support one another during this time. Milevesky (2005) provided a limited amount of information regarding how much and what type of contact emerging adults engage in. The emerging adult sibling literature was extended in the present study by providing further understanding of the frequency in which siblings contact one another and the extent to which they engage in instrumental and emotional support. However, there is a need for a more comprehensive understanding in how siblings interact (email, phone, face to face, through parents, etc.) during this stage of the life cycle. Knowing the specifics of how emerging adults maintain their sibling relationships may allow for a more complete explanation of how siblings influence each another.

An important finding in this study was that the relationship between sibling deviance and respondent externalizing behavior was moderated by both sibling support and sibling contact for females. This link was stronger when the relationship quality was higher. That is, a delinquent sibling significantly impacted the respondent's deviant behavior, sexual permissiveness, and alcohol use with more frequent support and contact resulting in more risky behavior. This finding was consistent with previous studies which have addressed the influence siblings have on externalizing behavior (Brody, Kim, Murray, & Brown, 2005) during adolescence. A close sibling relationship resulted in similar externalizing behavior among siblings. Previous extant research has found this connection when examining childhood and adolescent sibling influence. The current study extends the previous research to include emerging adults. To my knowledge this study is the first study in which the moderating effects of siblings on externalizing behavior were examined during emerging adulthood.

In order to further understand the impact sibling contact and sibling support have on externalizing behavior it would be important to know the specific mechanisms by which the greater the sibling relationship quality results in similar externalizing behavior. This study does not address these specific mechanisms but there are several possible explanations. For example, emerging adults who believe they have support from a sibling probably would spend an increased amount of time with them. It could be assumed that the increased level of contact and support from a delinquent sibling would result in a greater opportunity to influence behavior. Siblings, therefore, could become "partners in crime" (Rowe & Gulley, 1992). The higher level of contact and support would increase the likelihood that risky behavior training would occur. This explanation would be consistent with previous studies that have used a social learning perspective to study sibling influence during childhood and adolescence (Bandura, 1969; Watt, Howells, & Delfabbro, 2004). However, further examination needs to be conducted on a sample of emerging adults to see if these mechanisms are present in sibling relationships for 18 to 25 year olds.

It is also important to note that having a greater amount of contact with a delinquent sibling could result in being more vulnerable to the influence of the delinquent siblings' friends and associates. Peer influence was not assessed in this study, but this relationship has been found in similar studies (Rowe, Linver, & Rodgers, 1996) and could be expected for emerging adults. The delinquent sibling, as well as his/her peers, provide a greater opportunity for risky behavior to be normalized. The peer group in emerging adulthood could provide reinforcement for the risky behavior in a similar way as has been documented during adolescents (Patterson, Reid, & Dishion, 1992).

Gender was a primary component in the analyses of the data as male and female respondents were examined separately in this study. Gender in sibling relationships has been documented to have important ramifications throughout the life course (Cicirelli, 1989). The results from this study demonstrated that the moderating effects of sibling support and sibling contact were only found among female participant. Based on theory and previous research, it was expected that both females and males would be significantly influenced by the moderating variables. Although the moderating effects were only found to be significant for females, it is important to note that the males had similar trends in their outcomes. For example, male respondents who reported a high level of support and/or contact from a delinquent sibling were more likely to engage in risky externalizing behavior. It is believed that the small sample size for male respondents (n=81) contributed to the non-significant results. Based on the statistical trends observed in the results, it is believed that sibling contact and sibling support would have had the same moderating effects for males as were observed with females with a larger sample size.

Gender did not affect the amount of contact and support siblings received in the sample. The results indicated that sibling contact and sibling support were similar for both male and female respondents. This finding is similar to Scharf et al. (2005) finding that sibling relationship quality was not impacted based on gender. This is in contrast to some of the previous studies that reported that gender was related to the quality of the sibling relationship during childhood and adolescence (Buhrmester & Furman, 1990). It is possible that, with age, sibling relationships become more egalitarian and gender differences are not as prevalent as earlier life stages. However, gender has been found to be a significant contributor to sibling support and contact in later life years (White & Reidman, 1992). Further examination is needed

to better understand why gender may not be as important a factor during emerging adulthood when compared to other life stages.

Several dependent variables were examined in this study, but alcohol use had some unique characteristics that warrant further discussion. When examining the respondent deviance scale responses, both males and females reported a high level of participation in drunk driving and public drunkenness. It has been reported that there is significant escalation of alcohol use during emerging adulthood (Martin & White, 2005), with the highest rate of alcohol use occurring among 18 to 20 year olds. In the current sample, alcohol use was prevalent regardless of age and use increased regardless of how much support and contact they reported from a delinquent sibling. However, when there was support and contact from a delinquent sibling the level of alcohol use increased at a much faster rate. The continual rise in alcohol use during emerging adulthood warrants further examination. Alcohol use during emerging adulthood may be one externalizing behavior that may be more independent than deviant behavior and sexual permissiveness because alcohol use increased even when support and/or contact with a delinquent sibling was low. This finding was different for respondent deviant behavior and respondent sexual permissiveness as these outcomes only saw an increase in risky behavior when they had high support and/or high contact with a delinquent sibling.

Based on the high rates of risky alcohol consumption during emerging adulthood, particularly for college students, further understanding of alcohol use is needed. Peers have been found to be the primary influence for alcohol use during this time period (Read et al., 2005), but these researchers also recommended that it is important to distinguish between various types of social influences when examining emerging adult alcohol use. The present study was an attempt to better understand the role siblings play in influencing alcohol use during emerging adulthood.

For females, sibling support and sibling contact were found to be influential, but not for males (even though a supportive sibling relationship for males resulted in a lower level of alcohol consumption). This provides evidence that the impact of siblings on risky alcohol consumption needs to be analyzed further.

Implications for Theory

The current study used a social learning theory perspective. The hypotheses for the study were derived from the assumptions that humans can learn by observing others and individuals are more likely to model behavior of those they most closely identify with. Therefore, it was expected an emerging adult who has a sibling who is delinquent would be more likely to be deviant themselves. This relationship has been demonstrated during adolescence (Needle, et al., 1986; Brody, et al., 2005) and the findings for the current study supported a similar relationship during emerging adulthood. Therefore, social learning theory was found to be a theoretical approach that can be used when studying sibling influence during emerging adulthood.

This study also used a sibling research design. Therefore, the analyses provided the opportunity to better understand the specific role siblings play in influencing externalizing behavior during emerging adulthood. Parental influences on behavior are often examined, but a sibling design can provide a greater understanding of the broader family influence.

The present study was not designed to determine how individuals develop proneness to participation in risky behavior. However, the results have heuristic value on this issue. Siblings had more similar risky behavior when one sibling had a higher level of delinquency and the other sibling had increased support and a higher level of contact. The development of participation in negative externalizing behavior generally results from an accumulation of multiple experiences rather than from a single environmental influence. The present study demonstrated that the

sibling relationship provided an influence toward similar negative externalizing behavior as a delinquent sibling. Future research is needed to identify the amount of influence siblings provide during emerging adulthood when controlling for additional environmental influences such as parents, peers, and neighborhood.

For emerging adults who reported a high level of risky behavior by a sibling, more support from that sibling related to an increased level of self reported externalizing behavior problems, suggesting a modeling effect. According to social learning theory, the sibling relationship would be an influential reference for appropriate behavior. Therefore, a delinquent sibling would be expected to influence a brother or sister to engage in risky behavior. Sibling support and sibling contact appear to encourage the modeling of risky behavior for these individuals. This process may resemble collusive sibling processes by which siblings form coalitions that promote risky behavior (Bullock & Dishion, 2002). In addition, collusive sibling processes may also promote positive externalizing behavior among siblings that engage in pro-social behavior. Understanding the potential for the protective influence pro-social siblings provide against risky behavior is also needed.

Implications for Practice

This study identified the moderating impact siblings have on negative externalizing behavior during emerging adulthood. The development of risky or delinquent behavior usually begins in the early years by an individual associating with those that are delinquent (Shortt, Capaldi, Dishion, Bank, & Owen, 2003). Without intervention, the negative behavior is likely to continue from one developmental period to another. Although the earlier the intervention the better the outcome, it is important to remember that emerging adults actively shape their environment and interventions can moderate the link between earlier negative externalizing

behavior and future externalizing behavior. The consequences of not intervening may be far reaching. For example, as the emerging adult begins their own family, partners and children may also be affected.

It is well documented that emerging adulthood is the period of time where individuals are the most likely to engage in risky behavior particularly with respect to sexual activity (Douglas et al., 1997) and alcohol use (Martin & White, 2005). Intervention programs may need to target sibling relationships during this period of time. Emerging adults have been found to spend less time together and be less involved in joint activities with their siblings than at younger ages. However, they are also more likely to be involved in emotional exchanges and have a feeling of warmth toward their sibling (Scharf, Shulman, & Avigad-Spitz, 2005). Relationships can provide a compelling source of influence, and this study emphasized the importance of considering the sibling relationships even when prevention and intervention efforts are focused on individual behavior. Sexual education and alcohol prevention programs are prevalent during the age of 18-25, particularly on college campuses. These intervention programs may be enhanced as they incorporate the important source of information and influence siblings have on one another. This could be achieved by simply providing information regarding the impact siblings have on behavior, assessing the current impact siblings have, or actually including siblings in the intervention process.

Existing programs that emphasize parent-child communication are associated with more positive outcomes for responsible sexual behaviors (Hutchinson & Cooney, 1998) may become more comprehensive and effective through the participation of siblings. For example, siblings could be included in programs to learn along with their sibling about the important influence they have on one another's attitudes about sexual practices. Subsequently, siblings who care

about one another may provide information about safe sex practices and how to protect one another from potential risk. The same could also be said for intervention programs that target alcohol use among emerging adults.

College campuses are struggling to implement policies to ensure the safety of their students. Peer education and family involvement are often used to deter excessive or illegal alcohol use. The sibling relationship could be an avenue to reduce potential risk. By way of caution, it is important not to aggregate individuals in intervention programs because there is evidence of short- and long- term iatrogenic effects on problem behavior resulting from peer group type interventions (Dishion, McCord, & Paulin, 1999). Nonetheless, the sibling relationship in intervention programs warrants further consideration.

Limitations

There are some limitations to this study that should be noted. First, the data were collected from a convenience sample as participants were recruited from undergraduate college classes. Therefore, the results only represent the population from which it was drawn and is not generalizable to the population at large. The data is also cross-sectional so we were unable to predict changes over time. It provides a snapshot of the participant's current relationship quality and behavior.

Further, one of the primary components to the current study was assessing the power and influence of the sibling relationship. Sibling relationship quality was assessed through the level of contact and the level of support. Contact was measured with a single item and support was measured by two items. Because of the limited amount of questions asked to assess sibling contact and sibling support, it is not fully known how accurately sibling contact and sibling support were represented in the study. Therefore, it is difficult to draw clear conclusions from

the results of the analyses. It is believed the questions used to asses sibling contact and sibling support provided a global assessment of the sibling relationship, which lends to some understanding of sibling influence. However, future research should add to these constructs by using a more comprehensive assessment of sibling relationship quality or create a more comprehensive scale that goes through a rigorous validating process.

The data are also generated from self-reports and involve retrospective recollections of past events. Therefore, the data was unable to be triangulated, which would have allowed for a more accurate representation of sibling relationship quality and behavior. Relying on the responses of only one member of the dyad does not provide information about the interdependence of the sibling relationship.

Finally, gender of the respondent was collected but the gender of the sibling was not reported. Sibling gender has been found to be important in sibling relationships throughout the life course (Cicirelli, 1989; Miner & Uhlenberg, 1997), so the data did not allow for a comparison of the influence sibling gender has on externalizing behavior during emerging adulthood. However, analyses were conducted on respondents of both genders which allowed for further understanding of the role gender plays in sibling relationships during emerging adulthood.

Future Research

The purpose of this study was to explore sibling relationships during emerging adulthood. More specifically, the influence siblings have on externalizing behavior was examined. This study demonstrated that the sibling relationship is influential, particularly for females, during the ages of 18 to 25. In order to more fully understand the sibling relationship, there are several recommendations for future research.

First, future research should include a prospective design that uses multiple reporters. Using multiple reporters would allow for a more reliable depiction of the sibling relationship quality and the behavior of the individuals being assessed in the study. It would be extremely useful to get a report from family members (parents, additional siblings) on the quality of the sibling relationship as they are likely to know the participants intimately.

Second, future research should control and assess for family influence. Controlling for parent and peer influence has occurred in studies addressing adolescent sibling relationships and externalizing behavior, but it has not been investigated during the period of emerging adulthood. Providing data collected from a variety of family members will enable future researchers to isolate the sibling relationship in order to more fully understand its influence.

Third, it would be important to include more comprehensive measures of sibling relationship quality. Single item variables provide a difficult challenge in fully examining a complex relationship. In addition, the level of contact and support are only two components of a comprehensive examination of relationship quality. More comprehensive scales should be used in order to more fully understand the sibling relationship.

Finally, relationships change over time. The transition period to adulthood is a complex transition where someone moves to a more independent way of life. More specifically, emerging adulthood is generally the transition time for differentiation from the family of origin. Therefore, a longitudinal design could provide understanding of the transition during this time. It would be important to look at the various constructs presented in this study and how siblings influence each other over time.

Conclusion

To conclude, perhaps one of the most important lessons to be learned from this study is that sibling relationships are influential during emerging adulthood. Siblings can be an important source of support for each other, and thereby influence each other's externalizing behavior. In the process of gaining autonomy and differentiating from the parental sub-system, emerging adults may seek help and understanding from their siblings, and thereby become important role models for each other.

The results of this study augment the limited research that exists on sibling relationships during emerging adulthood. Emerging adults' relationships with their siblings become more autonomous during this time period. This study provided further explanation and insight into how the sibling relationship influences behavioral choices for emerging adults but there is much more to learn. Future research could further highlight how relationships with siblings are embedded within the behavioral choices individuals make with regard to self and close others.

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APPENDICES

Appendix A

Sibling Deviance Scale

Participants were asked to indicate how much they agree or disagree that the following statements describe their brother or sister who is closest in age to you.

A. Strongly agree
B. Agree
C. Neutral or Mixed
D. Disagree
E. Strongly disagree

- He/she smokes or chews tobacco a lot.
- He/she drinks alcohol such as beer, wine, etc. a lot.
- He/she uses illegal drugs such as pot, meth, LSD, cocaine, or other drugs.
- He/she always gets into trouble.
- He/she gets into a lot of fights.
- He/she sometimes gets picked up by police for breaking laws.
- He/she has been to court for violating the law.

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Appendix B

Sibling Contact

Participants were asked to think about the sibling who is closest to in age to them and answer the following question.

A. Once a week or more
B. Monthly
C. Only on special occasions such as holidays or birthdays.
D. Less than once a year
E. Never

- How often do you have contact with your sibling (this would include face-to-face interaction, exchange of letters or emails, or chatting by phone)?

Health and Retirement Study (1994), (Wave 2) public use dataset. Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009740). Ann Arbor, MI.

Appendix C

Sibling Support

Participants were asked to think about the sibling who is closest to in age to them and answer the following question.

F. Once a week or more
G. Monthly
H. Only on special occasions such as holidays or birthdays.
I. Less than once a year
J. Never

- In the past 12 months, how often have you given or received emotional support?
- In the past 12 months, how often have you given or received a favor (a ride, help with schoolwork, or another type of favor)?

Health and Retirement Study (1994), (Wave 2) public use dataset. Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009740). Ann Arbor, MI.

Appendix D

Respondent Deviance

The following items are included in the respondent deviancy scale. Respondents were asked in the past 12 months have you engaged in the following behaviors.

A. Never
B. Once
C. 2-3 times
D. 4-5 times
E. 6 or more times

• Taken something worth $25 or more that didn't belong to you?	A	B	C	D	E
• Driven a car when drunk?	A	B	C	D	E
• Beat up or fought someone physically because they made you angry?	A	B	C	D	E
• Gone to court or been placed on probation for something you did?	A	B	C	D	E
• Been placed in juvenile detention or jail?	A	B	C	D	E
• Been drunk in a public place?	A	B	C	D	E
• Purposely damaged or destroyed property that did not belong to you?	A	B	C	D	E
• Broken into or tried to break into a building to damage or steal something?	A	B	C	D	E
• Sold illegal drugs such as pot, hash, LSD, cocaine, meth, or other drugs?	A	B	C	D	E
• Been picked up by the police for something you did?	A	B	C	D	E
• Used illegal drugs such as pot, meth, LSD, cocaine, or other drugs?	A	B	C	D	E

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Appedix E

Sexual Permissiveness

The following items were used in creating the sexual permissiveness scale. Respondents were assessed using six items.

The first three items used the following response categories.

A. None
B. One
C. Two to four
D. Five to nine
E. Ten or more

- With how many persons have you had sexual intercourse (that is, penile/vaginal penetration)

- With how many persons have you had oral sex (that is, oral/genital contact)?

- With how many persons have you had anal intercourse (that is, penile/anal penetration)?

The remainder of the items used the following response categories.

A. When dating casually.
B. When a couple is in a serious dating relationship.
C. When a couple is engaged to be married.
D. Only after marriage.
E. Never

- When do you believe it is acceptable to have intercourse?

- When do you believe it is acceptable to have oral sex?

- When do you believe it is acceptable to have anal sex?

Reiss, I. L., & Gary R. L.. (1988). *Family systems in America*. New York: Holt, Rinehart, and Winston.

Appendix F

Alcohol Use

The following items were used in creating the respondent substance use scale. Respondents were asked about their substance use on two items.

The first item used the following response categories.

A. Not at all
B. Once or twice
C. About once a week
D. Two or three times a week
E. 4 or more times a week

- How often do you drink alcoholic beverages during a typical month?

The second item used the following response categories.

A. Never
B. A couple of times a year
C. About once per month
D. About once per week
E. More than once per week

- How often do you drink more than 4 drinks (if you are female) or 5 drinks (if you are male) in a single night?

Centers of Disease Control and Prevention. (2007). Alcohol: Frequently Asked Questions Atlanta, GA. http://www.cdc.gov/alcohol/faqs.htm