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Adolescent Female Substance Use: An Examination of Male Peer Influences and Parental Control

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To the Graduate Council:

I am submitting herewith a dissertation written by Sarah Gwynne Whiteford entitled "Adolescent Female Substance Use: An Examination of Male Peer Influences and Parental Control." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Sociology.

Suzanne Kurth, Major Professor

We have read this dissertation and recommend its acceptance:

Greer Litton Fox, Hoan Bui, Ben Feldmeyer

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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**Adolescent Female Substance Use:
An Examination of Male Peer Influences
and Parental Control**

A Dissertation Presented for the
Doctorate of Philosophy
Degree
The University of Tennessee, Knoxville

Sarah Gwynne Whiteford
December 2010

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ABSTRACT

Central to many theories of deviance and delinquency (differential association, social learning, and social bond) are peer and familial influences on deviant behavior. A conceptual framework that incorporated both peer and familial influence to address the role of cross-sex peers on female deviance was built based on a review of the literature. Using substance use as an indicator of deviance, the effects of having three forms of male associates (male friends, romantic partners, and sexual partners) on female substance use were examined. Focus was on the effects of different types of male peer relationships, how those effects differed from the effects of female peer relationships, and how parental control might be greater for girls with only female peers.

The conceptual model incorporated three measures of parental control—parentally granted autonomy, parental presence at home, and time spent in shared activities with parents—that were used to test the effects of male associates on female substance use. Analyzing data from the National Longitudinal Study of Adolescent Health (Add Health), one combined measure for male associates was regressed on female substance use while controlling for parental control measures to determine if the effects of male associates on female substance use were mediated by parental control.

Results indicated that while each type of male associate increased the likelihood of female substance use, effects were stronger for romantic and sexual partners than for male friends. Female friends also increased the likelihood of substance use. While the effects of male friends did not significantly differ from the effects of female friends, the effects of romantic and sexual partners did. The effects of male associates were significant even with the inclusion of parental control measures. Though both relationships with male associates and parents significantly affected female substance use, results did not provide support for the conceptual model. With results providing greater support for theories of peer influence than parental influence, future research should continue to examine peer relationship influences on deviance, how these influences vary by type of association, and how gender effects peer influence processes.

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CHAPTER I INTRODUCTION

One of the goals of sociological and criminological is to explain why people deviate from the social norms and rules. Both sociologists and criminologists ask why we see the patterns we do in the commission of deviant and criminal acts and work to establish the causes and correlates that affect the likelihood that individuals will engage in such acts. Definite patterns have emerged indicating that certain social characteristics, such as poverty and gender, affect the likelihood of engaging in deviance and crime. Researchers need to look at the bases for such patterns and how persons who differ with regards to these social characteristics compare regarding the likelihood of committing deviant or criminal acts.

One consistently found pattern in the deviance and criminological literature is the lower rate of deviance among females compared to males. Whether the outcome is deviance in general or crime in particular, females are consistently less likely to engage in deviant and criminal behaviors than their male counterparts. Commonly referred to as the “gender gap,” this difference between females and males is one of the most consistent findings in the criminological literature (see Steffensmeier & Schwartz, 2009). With females consistently less likely to engage in deviant behaviors, understanding what social conditions influence the likelihood a female will engage in deviance is important to both sociology and criminology.

In addition to the patterns of deviance found for gender, patterns also emerge regarding the importance of social relationships with others. Most theories of deviance and crime agree that social relationships with others are an important deterrent of deviant behavior, except in cases where relationships are with deviant others. Within this research, I focus on why social relationships with others affect how persons of the same gender can vary in the likelihood of

engaging in deviant behavior. In focusing on two types of relationships—those shared with peers and parents—I examine the likelihood of female adolescents engaging in one form of deviance—illegal substance use. Though researchers have examined peer influences on deviance, very little research has addressed the differences in effects of same sex and cross-sex peer relationships on deviant behavior. Focusing on female deviance, the effects of male associates on the likelihood of female substance use are examined using a conceptual framework that also addresses relationships with parents and levels of parental control.

WHY FOCUS ON FEMALE DEVIANCE?

Most “classical” theories of deviance and crime were developed to explain male behaviors and paid little or no attention to females (see Agnew, 2009). While some of the male based theories may be stretched or modified to explain female deviance, their explanatory power is in question. In other words, it remains unclear whether the factors that influence male deviance and crime may be used to explain such behaviors in females or if new theoretical explanations must be developed to account for female deviance and crime.

In recent decades attempts to explain the processes by which females come to engage in deviant and criminal behavior have increased. The goal of many gender based analyses within criminology is to examine gender differences¹ to offer possible explanations for female’s behaviors. This research attempts to answer some of the questions raised within these gender analyses by examining one possible contributor to female deviance—cross-sex peer influences. Using female substance use as an indicator of deviance, I examine the impact of having male peer associates on the likelihood of female substance use and whether the type of the association (i.e.,

¹ Although usage of the terms “sex” and “gender” varies throughout the literature—largely based on what was conventional at the time research was reported—the focus of this research is on *gender* differences in deviant behavior.

male friend, romantic partner, or sexual partner) makes a difference. If male associates appear to have an influence, then whether parental control mediates this relationship between male associates and female substance use will be explored.

Male Influence on Female Deviance

Some gendered perspectives on crime have highlighted the role of negative male influences (Chesney-Lind & Shelden, 1998; Miller, 1998; Richie, 1996). These arguments theoretically link relationships with males to female's deviant and criminal conduct. For some females, cross-sex associations are thought to provide an initial "gateway" or entree into the "street life" or other deviant associations (Giordano, 2009).

Two key patterns in the criminological and sociological literature lead to the expectation that male associates are not only important models for negative male behavior, but are also likely to be implicated in females' involvement in deviant and criminal behavior (Giordano, 2009). Both the gender gap in deviant and criminal behavior and the consequences of gender stratification in society (i.e., greater male power) suggest males will influence their female associates' deviant and criminal behaviors. As previously discussed, the "gender gap" refers to the tendency for males to engage in more deviance and in nearly every category of crime than similarly situated females. Therefore, based on principles of social learning and differential association theories, if males are more likely to be deviant than females and people learn deviant behaviors from peer associates, then it is logical to expect that females may more often learn about deviant modes of behavior from male rather than female companions (Giordano, 2009). Societal gender stratification and the resulting power differential also suggest the importance of examining male influence on female behavior. Various theories of gender stratification stress the

primacy of male influence across settings and contexts (Maccoby, 1990; Pugh & Wahrman, 1983; Ridgeway, 1991). The result of this gender stratification is that males not only hold more power at the societal level, but within micro-level interactive contexts also (Komter, 1989). Taking this gender power differential into account, male associates may be expected to exert influence upon their female associates' behaviors.

GENDER, PEER ASSOCIATIONS, AND DEVIANT BEHAVIOR

Central to many theories on why people engage in deviance and crime are social relations with peers. Theories such as social learning and differential association focus on peers as the primary pathway to deviant and criminal behavior. But it remains unclear how the relationship between peer associations and such behaviors varies by gender.

Most research addressing peer effects on deviance focuses on either all male groups (particularly gangs) or on the effects of same sex peers. One explanation for focusing on same sex peers is that research on childhood and adolescent friendships suggests a preference for same sex peers (Maccoby, 1988). During adolescence cross-sex² friends become possible partners for interaction and companionship (Blyth & Foster-Clark, 1987; Blyth, Hill, & Thiel., 1982; Csikszentmihalyi, Larson, & Prescott, 1977) and there is a significant increase in contact with cross-sex friends (e.g., Blyth et al., 1982; Feiring & Lewis, 1991; Furman & Buhrmester, 1992; Lempers & Clark-Lempers, 1993). Not only is there a shift towards greater gender integration within adolescent friendship networks (Dunphy, 1963), but heterosexual romantic relationships also emerge in adolescence (Dickinson, 1975; Hansen, 1977; Sorenson, 1973).

² Within this research, all associations with persons of the opposite sex are referred to as "cross-sex"; although other terms such as "opposite-sex" and "cross-gender" were also found in the literature, "cross-sex" was most common, and I believe, most applicable.

The characteristics of these cross-sex peer associations may be distinctly different from those found in same sex associations and these differences may have implications for involvement in deviant and criminal behavior. Research on cross-sex peer influences on such behaviors is extremely limited. Most existing literature on cross-sex associations is somewhat dated and focuses on how the characteristics of such associations are different from same sex associations and not on what the implications of such differences are for outcomes such as deviant and criminal behavior.

Although research focused on cross-sex associations is limited, research on gender differences in friendship characteristics indicate that same sex friendships among young females are generally agreed to be very different from those shared among males and the ways in which female friendships differ from male friendships have clear implications for deviant outcomes. Characteristics of male's friendships with other males may actively encourage deviant behaviors whereas characteristics of female's friendships with other females may discourage such behaviors. Research indicates that female friends are more supportive of attitudes and beliefs that discourage offending (McCarthy, Hagan, & Woodward, 1999) and have higher standards of conduct that are less tolerant of deviant or criminal behavior (Brown, 2003).

PARENTAL CONTROL AND PEER ASSOCIATIONS

In addition to peers, parents have played a central role in much criminological research aimed at explaining juvenile delinquency (i.e., Hirschi, 1969; Sampson & Laub, 1993). Most of this research has involved correlations between children's delinquency and some aspect of parental behavior, such as rearing styles, discipline, monitoring, etc. (Rowe, Rodgers, & Meseck-Bushey, 1992). Using the basic tenets of social control and social bond theories, I examine the

effects of levels of parental control on female substance use. Relying primarily upon the elements of attachment and involvement found in Hirschi's social bond theory, I focus on the greater parental control of female adolescents than their male counterparts that results in decreased opportunities for females to engage in deviant behaviors compared to males.

Based on the premises of social control and social bond theories, gender differences in delinquency would be explained by differences in levels of social control and the strength of social bonds. The reason for females' lesser involvement in delinquency is due to females' experiencing greater social control, particularly within the family, and females' stronger bond to society. While researchers have examined gender differences in levels of parental control as potential explanations for the gender gap in crime and delinquency, very few have paid attention simultaneously to parental control and adolescent friendships—much less the gender composition of those friendships. For the purpose of this research, a conceptual model is built to use in examining possible associations between levels of parental control and the likelihood of having male and female peer associates.

Female friendships disproportionately occur in settings where there is more social control (McCarthy, Felmler, & Hagan, 2004). Young female friends tend to meet in locations and take part in structured activities that are supervised by parents or other adults (Youniss & Smollar, 1985). Because these friendships occur in settings where parental monitoring and supervision is high, the opportunities to engage in deviant behavior are low and thus female friendships are less likely to result in deviant or criminal behavior. In sum, female friendships exist in a context of greater parental control and offer fewer opportunities to engage in deviant or criminal behavior than male friendships (McCarthy et al., 2004).

TYPES OF MALE ASSOCIATES

The expansion of friendship networks that occurs during adolescence to include cross-sex peers sets the stage for the emergence of a particular form of cross-sex peer association—the romantic relationship (Connolly & Johnson, 1996; Connolly et al., 1998; Dunphy, 1963). By the end of adolescence, most young persons will have experienced a romantic involvement of some type (Dickinson, 1975; Hansen, 1977; Sorensen, 1973) and they will distinguish these romantic relationships from cross-sex friendships by characteristics such as passion, physical attraction, and intense emotional reactions such as jealousy (Connelly, Craig, Goldberg, & Pepler., 1999).

In addition to cross-sex friendships and romantic relationships increasing during adolescence, adolescence is also a time for sexual development and thus sexual partners become an additional type of cross-sex association during adolescence. During their high school years, about one half of teenagers report having sexual intercourse (e.g., Centers for Disease Control and Prevention, 2002; Warren, Santelli, Everett, Kann, Collins, Cassell, et al., 1998). While most teenagers experience their first sexual encounters with a romantic partner (Manning, Longmore, & Giordano, 2000), more than three fifths of sexually active teens at some time have sex with partners whom they are not dating (Manning, Longmore, & Giordano, 2005). Therefore researchers cannot assume that sexual partners and romantic partners are one in the same. Within this research, I include sexual partners as a third type of male associate in examining the effects of male associates on female substance use.

With adolescent social networks including increased numbers and types of cross-sex peers, the characteristics of these cross-sex associations, the influence cross-sex associates have on behavioral outcomes, and how this influence varies by type of association all deserve attention. The direction and amount of influence male associates exert on female deviance may

vary based on the type of association. Therefore, we need to study these cross-sex peer influences, particularly in attempting to explain female delinquency (Giordano, 2009) as previous research found cross-sex peer influence to be a more common route to delinquency for females than males (Warr, 2002). Thus in this research, the focus is not only on the effects of cross-sex peers on female deviance, but also on the various types of cross-sex associations, whether the likelihood of adolescent females' substance use may differ based on the type of association, and the possibility that parental control mediates the effects of cross-sex peer associates on female substance use.

The specific research questions addressed regarding male associates include:

- 1) Are female adolescents with male associates more likely to engage in deviant behaviors (i.e. substance use) than those without male associates?
- 2) How do the effects of male associates differ from the effects of female associates?
- 3) Does the effect of male associates on female substance use vary by type of association (i.e. friend, romantic partner, or sexual partner)?
- 4) Finally, are the effects of male associates on female substance use mediated by parental control?

CHAPTER II LITERATURE REVIEW

CROSS-SEX ASSOCIATIONS IN ADOLESCENCE

Although research on the role of peer associations on adolescent development has increased in the last several decades (Sippola, 1999), much of this research fails to distinguish between same- and cross-sex peer relationships (Thorbecke & Grotevant, 1982; Youniss & Smollar, 1985). Most of the research focused on peer relationships and their role in adolescent development has focused on same-sex peers (Sippola, 1999). Research on adolescent relationships with cross-sex peers has been largely non-existent. Furthermore, of the research that has focused on cross-sex relationships, most has focused on such relationships in either children or adults (see Kovacs, Parker, & Hoffman, 1996; Davis, 1985), rather than in adolescents. As addressed in the following section, much research points to an increase in the number of cross-sex peer associations in adolescence and thus suggests they must play some role in adolescent development. Yet we currently know very little about the impact of these cross-sex peer associations in adolescence (Sippola, 1999).

Most of what is known about cross-sex relationships is based on research on adults and the friendships they maintain with members of the opposite sex. Such research suggests that cross-sex friendships serve important functions. First, they provide an inside perspective on the ways in which members of the opposite sex think, feel, and behave (Sapadin, 1988). Second, cross-sex friendships improve communication between men and women (McWilliams & Howard, 1993). Assuming cross-sex friendships in adolescence function in similar ways, researchers need to see if relationships with males lead some females to engage in behaviors, particularly deviant behaviors, generally associated with males.

Cross-sex friendships are more likely to be based on complementary rather than “in-kind” reciprocity (Rose, 1985). What this suggests is that relationships with members of the opposite sex often function as an exchange of acceptance for companionship while relationships with members of one’s own sex function as a mutual exchange of acceptance. Some research suggests that this discontinuity between same- and cross-sex relationships is due to the erotic aspect of cross-sex relationships (Mitchell, 1976; Rubin, 1970; White, 1972). For some, the presumably erotic, sexual nature of all cross-sex relationships makes them qualitatively different from the platonic relationships that exist with members of the same sex (Erikson, 1950), ignoring the possibly erotic, sexual nature of some same-sex relationships.

Cross-sex friendships differ from same-sex friendships in the ways they are initiated, formed, maintained, and function (Rose, 1985). The initiation of same-sex friendships is more often based on proximity, acceptance, common interests, and affection while cross-sex friendships are more likely to be based on sexual attraction and availability of time to invest. The maintenance of same-sex friendships is characterized as requiring acceptance, effort, time, communication, common interests, and affection. The maintenance of cross-sex friendships significantly differs from that of same-sex friendships regarding greater concerns about unwillingness, lack of interest, and difficulty in maintaining cross-sex friendships. Same-sex friendships ideally provide acceptance, loyalty, help, intimacy, and companionship. Both men and women report that their cross-sex friendships provide less help and loyalty than their same-sex friendships (Rose, 1985). Rose found that while men report that their cross-sex friendships are just as likely as their same-sex friendships to provide acceptance, intimacy, and companionship, women do not. These differences suggest that cross-sex friendships may be more beneficial to men than they are to women. The benefits that adolescent females receive from same-sex friendships and the hazards they face in their cross-sex associations are addressed later in this chapter.

Given these differences in initiation, formation, maintenance, and function, same-sex and cross-sex relationships apparently meet different needs (Weiss, 1974) and influence social development in different ways (Gottman, 1986). Thus same-sex and cross-sex relationships should be examined separately and as possibly having different influences.

Increase in Cross-Sex Associations during Adolescence

In middle childhood, children interact predominately with members of the same sex (Maccoby, 1988). During this time, close relationships with the opposite sex are not the norm (Berndt, 1982). But during adolescence, the gender composition of friendship networks changes (Richards, Crowe, Larson, & Swarr, 1998; Dunphy, 1963) and the number of contacts with cross-sex peers increases (Cairns, Perrin, & Cairns, 1985). Heightened interest and awareness of the opposite sex is a central characteristic of adolescence (Collins, 2003; Sullivan, 1953). There is a shift from intimacy with similar persons (i.e., same-sex friends) to increased intimacy with persons who are different (i.e., cross-sex friends) (Erikson, 1959).

Although same-sex friendships still dominate during adolescence and form the central core of social interaction during that time (Lempers & Clark-Lempers, 1993), opposite sex others become possible companions (Blyth & Foster-Clark, 1987; Blyth et al., 1982; Connolly et al., 1998; Csikszentmihalyi et al., 1977). Although the number of cross-sex friends increases during adolescence, they rarely come to dominate friendship networks (Feiring, 1999; Kuttler, La Greca, & Prinstein, 1999). To some degree, gender segregation is maintained (Maccoby, 1990) and same-sex friends are still preferred companions (Schofield, 1981).

While friendships with cross-sex peers become more significant for both male and female adolescents as they age (Blyth, Hill, & Thiel, 1982; Buhrmester & Furman, 1987; Sharabany, Gershoni,

& Hofman, 1981), females appear to integrate such friendships into their networks more quickly than males (Blyth & Foster-Clark, 1987; Feiring & Lewis, 1991, 1993; Richards et al., 1998). This shift in the gendered nature of friendship networks and additional intimacy with cross-sex friends occurs earlier for females than males (7th and 9th grade, respectively) and results in a more rapid development of cross-sex friendships for females than for males between grades 7 and 11 (Sharabany et al., 1981). The result is that females show more involvement in cross-sex friendships and have greater gender integration in their friendship networks than males (Feiring, 1999, Blyth et al., 1982; Connolly & Johnson, 1996; Richards et al., 1998). Research needs to address how female adolescents' relationships with male associates may affect their behavior.

Despite growth in the number of cross-sex peer associations during adolescence, most research fails to differentiate between same sex and cross-sex influences. Further, most researchers fail to distinguish among various types of cross-sex association such as friendships and romantic relationships. Of the research that does focus on cross-sex peers, most does so to determine what influences the onset of heterosexual relationships between females and males rather than focusing on other types of behavioral outcomes such as deviance. Little previous research has focused on the differences between the influence of same sex and cross-sex friends on deviant behavior and almost no research has examined the various types of cross-sex associations and the potential differences in influence each type may exert on adolescent deviant behavior. Within this research, I focus on same sex and cross-sex friend influences on behavior as well as two additional types of male associates—romantic and sexual partners—and how each type of association may affect the likelihood of female deviance.

GENDER, FRIENDSHIPS, AND DEVIANT BEHAVIOR

Previous research indicates that males and females think about and construct their relationships in different ways (Berndt, 1982; Bukowski, Newcomb, & Hoza, 1987) and that they hold different ideas about the features and characteristics that are central to their friendships (Berndt, 1982). While females tend to approach their female-female relationships in terms of nurturing and support, males tend to approach their male-male relationships with a focus on dominance and independence (Leaper, 1994; Maccoby, 1990).

Compared to males, females tend to develop relationships with other females that are characterized by intimacy, more time spent together and more frequent contact, mutual self-disclosure and more intimate, open relationships, and greater expectations for receiving kindness, commitment and empathy (Cauce, Mason, Gonzales, Hiraga, & Liu, 1994; Cotterell, 1996; Dornbusch, 1989; Houtzager & Baerveldt, 1999; Kuttler et al., 1999; Savin-Williams & Berndt, 1990; Youniss & Smollar, 1985). Females report higher levels of attachment as well as giving and sharing in their female-female relationships than males report in their relationships with other males (Sharabany et al., 1981). Research also shows that females, from preadolescence through adolescence, show greater trust and loyalty in their female-female friendships than their male counterparts do (Douvan & Adelson 1966; Sharabany et al., 1981). Adolescent females also rate their friendships with other females significantly higher on admiration, affection, companionship, intimacy, and satisfaction (Clark-Lempers, Lempers, & Ho, 1991; Lempers & Clark-Lempers, 1992).

Most research points to females offering greater support (Connelly, Furman, & Konarski, 2000) and more supportive lines of communication (Eder, Evans, & Parker, 1995) within their female-female friendships than males report in their male-male friendships. With female friendships providing

greater support, intimacy, trust, loyalty, kindness, sharing, and satisfaction, females may receive more social, psychological, and emotional benefits from their friendships with other females than males receive from their friendships with other males. The characteristics that make these female-female friendships more socially, psychologically, and emotionally beneficial may be additionally important when addressing the ways in which female friends may function to discourage involvement in deviant or criminal behavior (see McCarthy et al., 2004).

Why Female Friends are Better at Discouraging Deviant Behavior

In recent years, concern has grown that females are becoming increasingly more deviant. Much of the research that has contributed to this perception focuses on “mean” girls and girl gangs, using such examples to illustrate how female friends can have a negative influence on female behavior. However, as criticized by McCarthy and colleagues (2004), what this research neglects to address are the positive aspects of female-female friendships and the possibility that certain female friendships may actually discourage deviant behavior, especially when compared to male-male friendships.

Most theoretical frameworks and research focus on the positive influence of female friends, that is, how female friends discourage deviant and criminal behavior. As suggested by McCarthy and colleagues (2004), when compared with male-male friendships, female-female friendships provide more social control, fewer opportunities and less motivation to engage in deviant or criminal behavior, thus decreasing the likelihood of offending.

Compared to males’ friendships with other males, female-female friendships are more supportive of attitudes and beliefs that discourage offending (McCarthy et al., 1999). Females typically have higher expectations for their friends’ behaviors and are less tolerant of deviant or

illegal activity (Brown, 2003). Characteristics of female-female friendships such as closeness, greater likelihood of connecting with social institutions, less risk-taking and less physical ways of relating to one another all serve a “protective” function in terms of deviant and criminal behavior (McCarthy et al., 2004).

In addition, female-female friendships are different from male-male friendships with male friendships more often characterized by competitive modes of discourse, emphasis on toughness, and negative sanctioning of caring and other “softer” emotions (Eder et al., 1995). Friendships amongst females are less likely to be characterized by character contestations (Matza, 1964), status competition (Short & Strodtbeck, 1965), risk-taking (Hagan, Simpson, & Gillis, 1979), and displays of masculinity (Messerschmidt, 1993) that often characterize male-male friendships. Taken together, these differences in friendship characteristics may lead to female friends discouraging offending while male friends may actually encourage deviant and criminal behavior. Therefore, research should examine the processes by which female-female friendships may discourage offending while male-male friendships seem to encourage it (McCarthy et al., 2004).

Male Friend Effects on Female Deviance³

Of the research that has focused on the ways in which male friends may support deviant behavior, most has focused on the ways in which males influence other males rather than how males influence females. The goal of this research is to add to this literature by examining females’ cross-sex associations and the extent to which relationships with males may be

³ Though I use the term “deviance” in reference to the behavioral outcome of interest for my research, the literature reviewed in this section includes some research in which “delinquency” was the preferred term used by other researchers in reference to similar behavioral outcomes and I thought it best to use the same terminologies used by the authors.

associated with female deviant behavior.

Findings by Agnew and Brezina (1997) indicate that females who have male friends do in fact offend more frequently than those who have only female friends. Females with male friends are also more likely to be involved in various antisocial behaviors (Caspi, Lynam, Moffitt, & Silva, 1993). Research by Johnson (2002) indicates that when asked to nominate a best friend, delinquent females were more likely than their non-delinquent counterparts to identify a male as their best friend rather than a female.

One way of examining how male associates may increase the likelihood of deviant and criminal behavior while female associates may decrease such behaviors is to focus attention on the extent to which an adolescent's network is dominated by males or females. Focusing on the gender composition of the adolescent's network allows researchers to examine how the presence of males in a network, as well as the proportion of males compared to females, influences the likelihood that an adolescent engages in deviant behavior.

Research findings by McCarthy and colleagues (2004) suggest that network gender composition is associated with current offending for most youth. This relationship holds true even once prior criminal offending and associations with delinquent peers are accounted for. The presence of females within the network generally decreases delinquency involvement for both males and females (McCarthy et al., 2004). McCarthy and colleagues (2004) found a significant negative relationship between female-dominated networks and property crime. Those adolescents belonging to female-dominated networks committed significantly fewer property crimes than those belonging to male-dominated networks. This association was stronger for females than males and remained significant even after controlling for deviant peers. This relationship did not appear to be the result of a selection process since adolescents belonging to

female-dominated networks were no less likely to have engaged in prior criminal activity than those in male-dominated networks. Taken together, these findings suggest that the proportion of females versus males in an adolescent's network may be of more importance than the presence or number of females versus males (see also Haynie, 2002; Sutherland, 1947).

Hudleby and Mercer (1987) also found the number of cross-sex friends to be positively correlated with an adolescent's drug use. Research by Giordano (1978) indicates that mixed-gender groups were the most common context in which females reported engaging in delinquency. Females were least likely to engage in delinquency if their close friendships were limited to only one other female. Findings by both Warr (1996) and Caspi and colleagues (1993) indicate a similar pattern. Warr (1996) used the National Youth Survey data and found that compared to males, females reported that they were more likely to commit delinquent offenses when they were situated within mixed-gender groups. Caspi and colleagues (1993) focused on the larger school context of delinquency and found that females attending mixed-gender schools were more likely to engage in delinquent behaviors than females attending all-girl schools.

Research on youth gangs indicates that as the proportion of males in a gang increases, the amount of crime the gang commits also increases (Peterson, Miller, & Esbensen, 2001). Gang crime is least frequent amongst all-female gangs as compared with mixed-gender and all-male gangs. These findings support the notion that female relationships serve a "protective" function with regards to deviance while male relationships may actually encourage deviant and criminal behavior.

Taken together, all these findings suggest that the presence of male friends in a female's friendship network may increase female deviance. As suggested by Giordano (2009), further exploration of gendered networks and the conditions under which males influence females either

through a relatively egalitarian influence process or alternatively through a more coercive one based on inequalities of power is needed.

Even though the majority of research indicates that male friends increase the likelihood of female delinquency, research by Heinze, Toro, and Urberg (2004) as well as Haynie (2003) suggests that the number of male friends does not affect delinquency involvement. Heinze and colleagues (2004) found it was the number of delinquent peers that increased delinquency regardless of the number of male peers. Haynie (2002) also found that the proportion of male friends in an adolescent's friendship network was not associated with delinquency. However, Haynie's analysis of the ADD Health data indicated that delinquency was the result of romantic-partner involvement specifically (addressed in the next section), not involvement with cross-sex friends in general. These discrepancies in findings may result from methodological procedures regarding how male friends and male inclusion in friendship networks were measured as well as whether other factors were controlled for.

The limitation of all of this research is that most of it focuses solely on one type of peer association. The research reviewed here focuses only on *friendship* ties, disregarding other types of association that can exist between peers. Although it is important to discern the extent to which friends, particularly cross-sex friends, influence adolescent behaviors, other types of peer associations and the ways in which such associates might influence female deviance need to be considered. As suggested by Haynie (2002), the number of male friends that a female associates with may not promote delinquent behavior, but rather the nature of the association with males may be key. Therefore, in this research I contribute to the understanding of female deviance by examining not only male friend influence on female substance use, but also the influence of romantic and sexual partners. The next section of this chapter focuses on previous research that

examined the effects of these other types of male associates on female deviance.

ROMANTIC RELATIONSHIPS IN ADOLESCENCE

While actual participation in romantic relationships may be quite infrequent during early adolescence, many young adolescents express a keen interest in romance (Connolly et al., 1999). Rates of romantic relationship involvement in adolescence indicate that by the age of 15 or 16, nearly half of adolescents report currently being in a romantic relationship (Feiring, 1996). By late adolescence, the majority of young people will have experienced a romantic relationship (Dickinson, 1975; Hansen, 1977). More research is needed on how these adolescent romantic relationships can function to either inhibit or exacerbate females' engagement in delinquent behavior (Giordano, 2009).

The Development of Romantic Relationships in Adolescence

As discussed earlier in this chapter, adolescence is characterized by an increasing number of associations with cross-sex peers. This expansion of adolescent peer groups to include members of the opposite sex sets the stage for the emergence of romantic relationships (Connolly & Johnson, 1996; Connolly et al., 1998; Dunphy, 1963). In one of the most commonly cited works focusing on the development of romantic relationships in adolescence, Dunphy (1963) proposed that during adolescence there is a progression from same sex cliques of males and females to mixed-sex crowds whose primary function is to provide access to romantic partners. Dunphy focused on how peer groups serve as the context within which romantic relationships emerge in adolescence. While his ideas have not been extensively tested, they have gained

considerable prominence in the adolescent romantic relationship literature (e.g., Steinberg, 1995).

Although Dunphy (1963) was not precise in his explanations for *how* cross-sex cliques and crowds influenced the emergence of romantic relationships, he paid particular attention to the role of gender composition. Dunphy suggested that in some cases, mutually reciprocated friendships between males and females may emerge within the context of mixed-sex peer groups and that these friendships may or may not transform into romantic relationships. Based on Dunphy's argument, it may be simple exposure to the opposite sex that is critical for romantic relationship development so that; the greater the proportion of cross-sex peers in a network, the more likely romantic relationships are to develop. Thus, access to cross-sex peers and interactions within mixed-sex peer groups facilitates romantic development and the formation of romantic couple relationships.

More recent research has shown that as the gender composition of adolescent friendship networks change, there is increased opportunity to not only form cross-sex friendships but to find romantic partners (Brown, 2003). In addition to Dunphy's proposal that cross-sex friends may turn into romantic partners, other researchers have found that cross-sex friends may provide adolescents with a potential pool of candidates for romantic relationships (Connolly & Johnson, 1996; Connolly et al., 1998). Interactions with cross-sex friends can serve to introduce adolescents to additional cross-sex peers that have the potential to become friends or lovers (Connolly et al., 1998). Findings by Connolly and colleagues (2000) suggest that adolescents find potential romantic and sexual partners through their interactions with cross-sex peers they already know.

In addition to providing a potential pool of romantic partners, there are other reasons why the increase in cross-sex peer associations during adolescence may affect the development of romantic relationships. The greater interaction with cross-sex peers leads to increased experience with the opposite sex which may result in greater comfort with members of the opposite sex (Bukowski, Gauze, Hoza, & Newcomb, 1993; Kovacs et al., 1996; Maccoby, 1990). Upon gaining increased experience with members of the opposite sex, adolescents may have greater motivation to establish romantic relationships and apply the social skills for relating to cross-sex peers that were learned from their cross-sex friendships to romantic relationships (Connelly et al., 1998). Thus, the increased cross-sex experience gained through cross-sex friendships may be important in the establishment of romantic relationships during adolescence (Leaper & Anderson, 1997).

Research has confirmed that the presence of cross-sex friends is associated with the likelihood of romantic relationships developing. Having larger cross-sex friendship networks is related to an increased likelihood of having romantic relationships (Connolly & Johnson, 1996; Connolly et al., 1998). Connelly and colleagues (2000) found this to be true for both current and subsequent romantic relationships. Having friends of the opposite sex also was shown to be associated with earlier dating for females and both earlier dating and earlier sexual initiation for males (Cooksey, Mott, Neubauer., 2002).

Budding romantic relationships are distinctly different from cross-sex relationships based solely on friendship. In one of the first studies to make a clear distinction between friendship and romantic relationships, Connelly and colleagues (1999) asked adolescents to describe 1) a cross-sex friendship and 2) a romantic relationship. Adolescents appeared to distinguish romantic relationships from cross-sex friendships by characteristics such as passion, physical

intimacy, and intense emotions such as jealousy. Because these romantic relationships are perceived differently than cross-sex friendships, they should be studied as an additional type of male associate that may affect female adolescent behaviors such as deviance. To study male associates in general without differentiating between types of cross-sex association may fail to acknowledge differing levels and types of influence.

Romantic Partner Effects on Female Deviance

The majority of research on the effects of romantic partners on deviant and criminal behavior focuses on adults rather than adolescents and how entering into serious romantic relationships leads men to desist from deviant and criminal activity. This “desistance” literature documents how high-quality marriages usually have a significant influence on criminal career paths (Sampson & Laub, 1993). When males enter into marriage, wives are thought to have a pro-social effect on their husbands, acting as a deterrent to deviant and criminal behavior. This is referred to by Sampson and Laub (1993) as “the good marriage effect.” But the effect of marriage may not be the same for wives. As stated by Richie (1996), males are actually considered to have a negative influence on female romantic partners, potentially increasing the likelihood of women’s criminal behavior. Among adults, while men’s criminality is largely driven by associations with deviant friends, both romantic partners’ and friends’ behavior are connected to women’s criminality (Simons, Stewart, Gordon, Conger, & Elder, 2002).

Most of the criminological literature suggests that males may act to initiate females into deviant or criminal behavior (for example, Gold, 1970; Miller, 1996; Pettiway, 1987; Steffensmeier, 1983; Steffensmeier & Allan, 1996; Steffensmeier & Terry, 1986; Warr 2002). Not only are males thought to initiate females into such behaviors, but also females commit their

offenses when in the presence of males. When asking adolescent females whether their romantic partners were involved in the delinquent acts they had committed, Giordano (2009) reported that in her earlier research (1979) approximately 35 percent of females indicated that their romantic partner was present during the commission of their delinquent acts.

Using the National Longitudinal Study of Adolescent Health, Haynie (2003) found that higher levels of delinquency involvement for adolescent females were the result of romantic partner involvement, not simply the presence of male friends. Among both male and female adolescents, Haynie, Giordano, Manning, and Longmore (2005) found romantic partners' delinquency to be a significant predictor of respondent's delinquency even when taking peer behavior into account. These findings were significant for both males and females but suggested a gendered effect with regards to minor delinquency. A gender-by-partner's delinquency interaction suggested a stronger effect of partner's delinquency on females relative to males but only in the case of minor delinquency. For serious delinquency, romantic partners' delinquency had similar effects for males and females with no significant gender interactions.

Contrary to the findings of Haynie and colleagues, Giordano, Longmore, and Manning (2006) found that females may actually exert more influence over their male romantic partners than males exert over their female romantic partners. Giordano and colleagues found that males tended to describe their romantic relationships as either being egalitarian or tilted in favor of the females' greater power. On average, males reported more influence attempts made by their partners and had higher "actual" partner influence scores. Additional findings by Lempers and Clark-Lempers (1993) showed that females reported having more relative power in their relationships with boyfriends than males reported having in their relationships with girlfriends. Findings such as these further complicate the argument that females' deviant and criminal

behavior is the result of females having less power and influence within their romantic relationship contexts than their male counterparts.

As stated by Giordano (2009), it might be premature to conclude that it is boyfriends or male friends who “push” females into crime. Even if this is the case, Giordano states that this “bad boyfriend” explanation for female delinquency may be more adequate in explaining females who are already located on the margins of criminality. Findings such as those reported above are often criticized for not taking into account the effects of assortive mating. Research has indicated a strong tendency toward assortive mating in which females who are already moderately delinquent may partner with males engaged in a more serious level of delinquency (Caspi & Herbener, 1990; Quinton, Pickles, Maughan, & Rutter, 1993; Capaldi, Kim, & Shortt, 2004).

Therefore, it is not solely a female’s relationship with her “bad boyfriend” that leads her to engage in more serious levels of involvement in deviant and criminal behavior. Further research is needed on romantic partner choices and the extent of influence romantic partners have on inhibiting or exacerbating deviance, particularly regarding male romantic partners influence on female deviance. The research presented here contributes by further examining whether the presence of male romantic partners affects the likelihood that females engage in substance use and how this influence is separate from the influence of other types of male associates.

SEXUAL PARTNERS

As discussed in the previous sections, adolescence is a time when cross-sex friendships increase and romantic relationships begin to emerge. In addition to these two types of cross-sex

association, another type of male associate may emerge in the lives of female adolescents—the male sexual partner. Although the role of sexual partner may overlap with that of romantic partner or even male friend, more than one half of sexually active teens claim sexual partners who they are not dating or in a romantic relationship with (Manning, Giordano, & Longmore, 2006). Thus it is important to consider that sexual partners are not synonymous with romantic partners and need to be studied as a separate type of male associate.

Sexual development is an important part of adolescent development (Furman & Shaffer, 2003; Konopka, 1973; Lefkowitz & Gillen, 2006; Russell & Sigler-Andrews, 2003).

Participation in sexual relationships provides companionship, the opportunity to explore sexual identities, and increased ability to connect with and relate to members of the opposite sex (Diamond, Savin-Williams, & Dube, 1999; Russell & Sigler-Andrews, 2003). Yet research often stresses the negative aspects of adolescent sexual behavior (i.e., unplanned pregnancy and sexually transmitted diseases) and the relationship between sexual activity and other problem behaviors such as illegal drug use (e.g., Billy, Rodgers, & Udry, 1984; Hagan & Foster, 2001; Jessor & Jessor, 1977).

The negative effects of sexual activity may be of greater consequence to adolescent females than males. Double standards exist in which involvement in sexual activity is perceived as a greater departure from sex-appropriate norms for females than for males (Billy et al., 1984). Thus females face greater concerns regarding protecting their reputations (Schlossman & Cairns, 1993). If sexual activity results in an unplanned pregnancy, females face the direct consequences of providing child care—often resulting in lower education attainment.

As suggested by Billy and colleagues (1984), because females more readily perceive the negative consequences of engaging in sexual activity, they may attribute more salience to the act

than their male counterparts. Research has shown that gender differences exist in the way sexual activity is perceived by male and female adolescents. Females are often depicted as having a stronger relational orientation resulting in their focus being on the relationship itself (Gilligan, 1982). Males experience greater cultural expectations to gain sexual experience and thus place greater emphasis on sex than on the relationship (e.g., Anderson, 1989; Eder et al., 1995).

“Sexual Partner” versus “Romantic Partner”

As discussed previously in this chapter, romantic relationship development is an important part of adolescence. Following a typical developmental trajectory, adolescents will begin dating before their first sexual intercourse (Longmore, Manning, & Giordano, 2001). While the majority of teens who will become sexually active during adolescence first experience sexual intercourse with someone they are dating or romantically involved with (Cooksey et al., 2003; Manning et al., 2000), some will share their first sexual experience with someone they are not dating.

Public views on adolescent sexuality depict a decline in traditional forms of dating and romantic relationships and an increase in “hook ups” and other more casual forms of sexual liaisons that occur outside the romantic relationship context (e.g., Denizet-Lewis, 2004). Although adolescent sexual activity is not encouraged in society, it is preferred that when it does occur it takes place within the context of dating or romantic relationships. Reasons for this preference are that dating/romantic partners are more likely to be known to the adolescent’s parents and friends and that romantic relationships are expected to be more long term, monogamous, and more likely to provide intimacy and caring than sexual relationships occurring

outside dating and romantic relationships (see Zimmer-Gembeck, Siebenbruner, & Collins, 2001).

In analyses of the 1995 National Survey of Family Growth, nearly one fourth (23%) of adolescent females claimed that their first sexual experience was not only not with someone they were dating, but also was with someone they had either just met, were just friends with, or had hung out with “once in a while” (Manning et al., 2000). Using the first wave of the National Longitudinal Study of Adolescent Health (the same data I use in this research), Manning and colleagues (2005) found that 64 percent of sexually active adolescents reported having sex with someone they were not dating. In many of these cases, adolescents were choosing sexual partners who were either friends or former romantic partners. With significant numbers of adolescents having sex with persons they are not dating or romantically involved with, it is important to consider that sexual partners are not synonymous with romantic partners and need to be studied as an additional type of male associate.

Sexual Partner Influence on Deviant Behavior

Other than examining the correlation between sexual activity and other forms of deviance, almost no research has focused on the influence of sexual partners on deviant and criminal behaviors. While earlier in this chapter I reviewed literature on the effects of romantic partners on deviant and criminal behavior, I could not find literature on the effects of sexual partners. I believe this may be due to the majority of research connecting romantic partners and deviance focusing on adults, particularly spousal relationships whereby it is assumed that romantic partners and sexual partners are one in the same. But as addressed in the previous section, this assumption cannot be made in the case of adolescent sexual partners. Therefore,

researchers need to examine sexual partners as an additional type of adolescent cross-sex associate that may influence deviant behavior.

Although theories of gender stratification stress male primacy in social interactions, the gender dynamics among sexual partners that exists in adolescence is undetermined. While research in past decades had emphasized females' understanding of sex as being directed towards "supporting and satisfying masculine values and needs" (Holland, Ramazanoglu, & Thomson., 1996:159), more recent trends in declining rates of adolescent sexual activity may suggest a shift towards greater female power within adolescent sexual relationships. As suggested by Risman and Schwartz (2002), the declining rates of sexual intercourse during adolescence may be the result of increasing female power in the negotiation of the timing and context in which sex occurs. Although this hypothesis has yet to be empirically tested, it does suggest power and influence play a role in adolescent sexual relationships.

Though a review of the literature has revealed some consistent findings regarding same-sex and cross-sex associations in adolescence and associate's effects on female deviance, there are also many contradictory findings. There are also gaps within each of these bodies of literature that fail to address aspects of the relationships between cross-sex associates and female deviant behavior that are examined in the present study. Having concluded a review of the literature, I now turn to a review of theories used in the development of the conceptual framework applied in this research.

CHAPTER III CONCEPTUAL FRAMEWORK

Relationships with parents and peers have long been central to criminological theories attempting to explain why adolescents engage in delinquent behaviors. While various theories suggest differing roles played by parents and peers, these two sets of relationships remain important in explanations of juvenile delinquency⁴. Within this chapter, I examine the roles played by both peers and parents beginning with two theories—differential association and social learning—to explain peer influences on deviant behavior. I then move to a discussion of parental control based on social control and social bond theories. Finally, elements of each theory are incorporated into a conceptual model to be used to examine possible peer and parental influences on female substance use.

Sutherland's (1947) differential association theory and Akers' (1985) social learning theory use models of normative influence or socialization effects to explain the role peers play in influencing delinquency. Within each of these theories, social groups are emphasized as the context in which the motivations, rationalizations, and attitudes for committing delinquent acts are learned. Each of these theories suggests peers play a critical role in either the deterrence of or the commission of delinquent acts. When tested empirically, results confirm that associating with delinquent peers increases the likelihood of engaging in delinquency.

Although the basic tenets of differential association and social learning theories do not specifically address gender within adolescent friendships, I apply these theories to an examination of the influence of cross-sex peers on deviant behavior. More specifically, in

⁴ Though my research focus is on “deviance” the theories reviewed in this chapter focus on “delinquency” and therefore I use the terminology employed by the original theorists when referring to behavioral outcomes of adolescents.

focusing on minor forms of deviance among females, I examine how the presence of male peer associates affects the likelihood of female substance use. Using the basic tenets of both differential association and social learning theory, I derive three hypotheses to test within this research—each predicting that the presence of male associates will increase the likelihood of female substance use.

In addition to peers, parents have played a central role in much criminological research aimed at explaining juvenile delinquency (i.e., Hirschi, 1969; Sampson & Laub, 1993). Most of this research has examined relationships between children's delinquency and some aspect of parental behavior, such as rearing styles, discipline, monitoring, etc. (Rowe et al., 1992).

Using a social control perspective, Reiss, Nye, and Hirschi all contributed to understanding the ways in which parents may function to deter delinquency. Reiss (1951) was the first to suggest that delinquency might be the result of a breakdown in "personal" (internal) or "social" (external) controls. Nye (1958) then applied Reiss's argument to the ways in which the family functions to directly and indirectly control its members. Further expanding on the concept of control in his social bond theory, Hirschi (1969) suggested that adolescents refrain from delinquent behavior because of their social bond to society. Hirschi argues that one element of this social bond is an individual's attachment to significant others, with attachment to parents being especially important in reinforcing an adolescent's bond to society and decreasing the likelihood that the adolescent will engage in delinquency. Relying primarily upon the elements of attachment and involvement found in Hirschi's social bond theory, I focus on the greater parental control of female adolescents than their male counterparts that presumably results in decreased opportunities for females to engage in deviant behaviors.

THEORIES OF PEER INFLUENCE ON DELINQUENCY

Although peer relationships are central to many theories of delinquency, various theories propose different pathways by which peers influence delinquent behavior (Giordano, Cernkovich, & Pugh, 1986; Matsueda & Anderson, 1998). Differential association and social learning theories are discussed here as just two of the criminological theories in which peers play a critical role in influencing delinquency.

Most theories of peer similarity on likelihood of engaging in delinquent behavior attribute similarity to one of two processes: selection or socialization. The selection process discussed in greater detail later in this chapter refers to the initial tendency for individuals to purposely select friends with similar attributes and conduct. Differing from the selection process, the socialization process refers to the tendency, through mutual influence, for friends to influence one another and become similar over time. Although studies have found that both selection and socialization processes contribute to peer similarity (Cairns & Cairns, 1994; Kandel, 1978; Ennett & Bauman, 1993), I focus on the socialization process in my discussion of peer influence on delinquency.

From a socialization perspective, peer influence occurs through frequent interactions, shared experiences, and exchanged information among group or network members (Ryan, 2001). The socialization perspective views peers as a source of normative influence, with associates influencing an individual's attitudes, values, and behaviors, eventually resulting in peer similarity (Haynie & Osgood, 2005). The socialization process is the key process in many theories and studies of peer delinquency (Haynie & Osgood, 2005). As stated by Kreager (2004), for socialization theories such as differential association, social learning, subcultural, and interaction theories, delinquent peers are believed to be the primary source through which an

individual learns the techniques, attitudes, and opportunities needed to engage in criminal or delinquent behavior. Within this chapter, I briefly discuss the basic tenets of Sutherland's (1947) differential association theory and Akers' (1985) social learning theory and use these two theories to explain the role played by peers in learning and reinforcing delinquent behaviors.

Sutherland's Differential Association Theory

Sutherland's (1947) differential association theory posits that delinquency is the result of learning an excess of definitions favorable to crime. Sutherland proposed that individual criminality could be explained by the process he referred to as differential association.

Differential association includes nine propositions:

1. Criminal behavior is learned.
2. Criminal behavior is learned through symbolic interaction with others.
3. The main part of this learning occurs in intimate personal groups.
4. This learning process includes both the techniques for committing crime and the direction of motivations, rationalizations, and attitudes towards the commission of the crime.
5. The direction of motivations, rationalizations, and attitudes towards legal codes may be either favorable or unfavorable.
6. A person becomes delinquent or criminal when there is an excess of definitions favorable to law violation over definitions unfavorable.
7. Differential associations can vary in frequency, duration, priority, and intensity.
8. The process for learning criminal behavior is similar to the mechanisms involved in any other type of learning.

9. Even though criminal behavior is an expression of needs and values, it cannot be explained by those needs and values.

Sutherland's differential association theory emphasizes the importance of symbolic interaction within intimate social groups and the processes by which one learns to engage in delinquency. With peers becoming increasingly important during adolescence, adolescents may learn the motivations, rationalizations, and attitudes necessary for committing delinquent acts from their peers. Differential association theory would suggest that interactions with peers may result in learning definitions that are either favorable or unfavorable to engaging in delinquency depending upon the definitions held by the peers one associates with. When the number of favorable definitions exceeds the number of unfavorable definitions, an adolescent will likely engage in delinquency.

Akers' Social Learning Theory

Akers' (1985) social learning theory integrates the differential association processes from Sutherland's differential association theory (1947) with learning mechanisms established by Burgess and Akers (1966) in their "differential association-reinforcement" theory. Akers' social learning theory explains delinquent behavior more thoroughly than Sutherland's original theory.

Expanding on Sutherland's notion of differential association, Akers proposed that groups with whom an individual associates provide the social context in which the mechanisms of social learning operate. As suggested by Sutherland (1947), those associations that occur earliest (priority), last longest and occupy the most time (duration), that occur most often (frequency), and that involve more important significant others (intensity) will be more likely to affect the individual's behavior.

In addition to building upon Sutherland's concept of differential association, Akers theory of social learning emphasized three additional elements that are relevant to explaining peer influence on delinquency—definitions, differential reinforcement, and imitation. For Akers, definitions are the attitudes and meanings an individual attaches to a specific behavior. Such definitions label an act as right or wrong, good or bad, etc. Definitions that approve of delinquent acts increase the likelihood that such acts will be committed.

Akers' element of differential reinforcement focuses on the use of past, present, or anticipated rewards and punishments as being critical in whether an individual will refrain from or engage in a delinquent act. The final element of Akers' social learning theory is imitation, meaning that an individual may engage in an act following the observation of similar acts by others. Whether the individual will imitate others' behaviors is dependent upon the characteristics of the observed individual, what behavior has been observed, and the observed consequences of the behavior.

For Akers, the social learning process is complex and has both reciprocal and feedback effects. In other words, even once the original learning to commit delinquent acts occurs, the social learning process continues based on the consequences and outcomes of the commission of such acts. Depending upon the result from the original commission of a delinquent act, the act is likely to be repeated if the result was reinforcement or is unlikely to reoccur if punishment was received for the initial commission of the act. These reinforcements and punishments do not have to be experienced firsthand but may also occur when an individual observes reinforcement or punishment for delinquent behavior committed by someone else (i.e. observational learning/modeling).

Akers (1985) argues that delinquent peers affect delinquency through these processes of differential reinforcement and observational learning/modeling. Peers may function to reinforce or punish individuals for committing delinquent acts. They may also serve as models for behavior when one observes their peers being reinforced or punished for engaging in delinquency. Thus, like Sutherland's differential association theory, Akers' social learning theory emphasizes the social group context in which learning takes place and the role of normative influences and socialization in the processes by which peers impact delinquency.

Differential Association, Social Learning, and Peer Effects on Delinquency

Based on the premises of differential association and social learning theories, associations with conforming or non-conforming peers are thought to precede the initiation of delinquent activity. Assuming this to be the case, peer similarity is the result of a socialization effect rather than a selection effect. Yet critics of differential association and social learning theories have argued that peer influence effects found in empirical research are overestimated due to a failure to take into account selection effects (Ennett & Bauman, 1993). These critics claim that theories based upon normative influence or socialization effects ignore the possibility that an individual's delinquency precedes delinquent associations and thus the individual selects peers based on similar levels of delinquency involvement. Yet even in cases where involvement precedes association, it does not necessarily contradict the basic premises of differential association or social learning theories. Involvement would have to always, or almost always, precede association to provide strong evidence against social learning and differential association theories.

Most empirical research relying upon the principles of differential association and social learning theories finds that delinquent peers have a significant effect on delinquency whereby delinquent peers increase the likelihood that an adolescent will engage in delinquency (Matsueda & Anderson, 1998; Haynie & Osgood, 2005). Even low levels of peer influence have a large cumulative effect over several years (Berndt & Keefe, 1995). Some researchers have even claimed that other than an individual's prior delinquency, the biggest predictor of onset, continuance, and desistance of delinquent activity is differential association with either conforming or law-violating peers (Loeber & Dishion, 1987; Loeber & Stouthamer-Loeber, 1986). Yet, Haynie and Osgood (2005) concluded that although their findings provide support for a socialization or normative influence process by which peers influence delinquency, this normative influence is no more important to delinquency involvement than many other well-established predictors of delinquency.

Based on the principles of differential association and social learning theories, peer influence on delinquency is expected when one associates with delinquent peers. In attempting to explain gender differences in delinquency, these theories would argue that males have higher rates of delinquency because they are more likely to associate with delinquent peers and belong to gangs than their female counterparts (Agnew, 2009). Empirical research has confirmed that gender differences in associations with delinquent peers do explain a significant part of the gender gap (Jensen, 2003; Moffitt, Caspi, Rutter, & Silva, 2001; Warr, 2002). Although these findings show gender differences in delinquency as being the result of delinquent peer associations, they say nothing about the gender of delinquent peers or what occurs in instances of cross-sex peer associations. I combine what is known about the gender gap in crime, the gender power differential that results from gender stratification in society, and peer influence processes

to examine the effects of cross-sex peers on deviant behavior. More specifically, in examining substance use as a minor form of deviance, I examine how the presence of male peer associates affects the likelihood of female substance use.

If it is known that (a) males are more likely to use illegal substances than females, (b) that having peers who use substances increases the likelihood of an individual's substance use, and (c) gender stratification results in primacy of male influence within social relationships, then females who have male associates would be expected to be more likely to use illegal substances than females who have only female associates.

Hypothesis 1: Females with male associates—regardless of the type of association—will have used significantly more substances than females without male associates.

Additionally, if differential association and social learning theories propose that associating with delinquent peers increases the likelihood of engaging in delinquency, it would be logical to expect that as the number of delinquent peers increases, the likelihood that peer influence will result in delinquency increases. Using a similar argument based on differential association theory, research by Haynie (2002) indicates that as the proportion of delinquent friends to non-delinquent friends increased the likelihood that an adolescent would engage in delinquency also increased. Therefore, using similar arguments that led to my first hypothesis, I predict that as the number of male associates increases, the likelihood of female substance use increases.

Hypothesis 2: The greater the number of types of male associates, the more likely it is that a female will have used illegal substances.

The principles of differential association also suggest that the priority, duration, intensity, and frequency of peer relationships are likely to affect the amount of influence peers exert on

behavior. Therefore, it is possible that some peers, particularly those with whom an individual has an especially strong bond, may be more influential than others (Giordano, 2003). Findings by Weerman and Smeenk (2005) indicate that best friends' involvement in delinquency had a greater effect on the individual's delinquency involvement than the effect of other friends' delinquency. On the other hand, Haynie and Osgood (2005) found no evidence to indicate that the effect of friends' delinquency is greater when the respondent feels closer to the person.

Considering that peer influence may vary based on the priority, duration, intensity, and frequency of interaction, it is important to take into account the type of association a female shares with her male peers. Male friendships, romantic relationships, and sexual relationships may not be of equal priority, duration, intensity, or frequency. Therefore, to ascertain if each of these three types of male associates influence female substance use in similar ways, I examine each type of male associate individually. Romantic partners and sexual partners can be expected to exert greater influence on female's use of substances than mere friends.

Hypothesis 3: Romantic partners and sexual partners will explain a greater amount of the variance in female substance use than male friends.

THEORIES OF PARENTAL CONTROL

Unlike many other criminological theories, social control theories are not necessarily trying to explain why people deviate from norms but rather why does anyone conform? Why doesn't everyone violate the norms? As summarized by Hirschi (1969:10), we take deviance for granted; conformity is what must be explained.

Social control theory posits that social controls are what prevent people from committing crimes. Social controls include socialization (i.e., the acquisition of self control) and control

over behavior through external social sanctioning (i.e. rewards for conformity and punishments for deviance). It is when these “personal” and “social” controls break down or are weakened that delinquency is likely to occur (Reiss, 1951). Building upon the foundation for social control theory laid by Reiss, Nye (1958) identified three main types of social controls that function to prevent delinquency. The first is direct controls in which compliance is rewarded by parents and punishment is imposed, or at least threatened, for misconduct. These direct controls could also take the form of formal or legal sanctioning. The second form of social control is indirect control in which adolescents refrain from delinquency because they fear that engaging in such an act would cause pain and disappointment for their parents and other persons whom they share a close relationship with. The third social control proposed by Nye is internal control by which an adolescent’s own conscience or sense of guilt prevents delinquency. Nye emphasized the use of informal, indirect controls within the family for the prevention of delinquency.

Based on both Reiss and Nye’s conceptions of social control, no special motivation is needed to violate the law, simply a breakdown in the social controls that normally prevent us from deviating from social norms. It is assumed that the tendency towards crime is uniform and evenly distributed across society (Agnew, 1993). Thus, crime will occur unless it is prevented by strong social and personal controls (Gottfredson & Hirschi, 1990).

Not all control theorists assume that everyone has equal motivation to engage in deviant or criminal behavior or that everyone is confined by the same controlling influences to conform. Hirschi (1969) rejected the assumption that all persons have an inherent impulse towards delinquency. He argued that some acknowledgement must be made that in addition to inhibitors of delinquency, there are also inducements to delinquency, such as gaining the approval of peers. Hirschi’s version of social control theory is commonly referred

to as social bonding theory and is one of the most frequently discussed and tested theories within criminology (Stitt & Giacopassi, 1992). Within his theory, Hirschi combined the elements of previous control theories with new ways of accounting for delinquent behavior. He defined the underlying assumptions of social bond theory and provided clear empirical measures for each major concept.

Being based on previous theories of social control, Hirschi's theory rests on the general proposition that "delinquent acts result when an individual's bond to society is weak or broken" (1969, p. 16). According to Hirschi, there are four "elements" that make up this social bond—attachment, commitment, involvement, and beliefs. Though all four elements are central to Hirschi's theory, this research relies upon the elements of attachment and involvement as being of particular importance in deterring delinquency and more amenable to measurement.

Within his theory of social bonding, Hirschi (1969) provided measures for his four elements of the social bond. For this research, I employ measures similar to those originally put forth by Hirschi to examine not only the ways in which social bonding with parents and social control of children affects deviance, but also how these factors may mediate the effects of male peers on female substance use.

Attachment to Parents and Parental Supervision

Attachment refers to the extent to which we have close ties to others and therefore care about their expectations for us. Attachment to parents is particularly important when controlling delinquency. According to Hirschi (1969), attachment to parents can be measured by close parental supervision and discipline as well as good

communication and identification with parents. Within this research I incorporate the element of attachment through the use of parental control measures such as parentally granted autonomy, parental presence at home, and time spent in shared activities with parents.

To test for attachment, Hirschi included a measure of “virtual supervision” as an indicator of indirect parental control. The reason this “virtual supervision” is of such great importance is that adolescents are more likely to develop problem behaviors when opportunities to engage in such behaviors are made available due to a lack of parental intervention (Gottfredson & Hirshi, 1995). Poor parental supervision has been found to be one of the most important factors in explaining delinquency (Gottfredson & Hirschi, 1990; Loeber & Stouthamer-Loeber, 1986; Sampson & Laub, 1993). Research has consistently shown that parental supervision and monitoring have a positive impact on deterring problem behaviors in adolescent children. High levels of parental supervision and monitoring are associated with lower levels of delinquency and, inversely, low levels of supervision and monitoring are associated with higher levels of delinquency (see Cookston, 1999). Parental monitoring and supervision have been found to be related to delinquency in general (see Cookston, 1999) and substance use specifically (see Kim, Hetherington, & Reiss, 1999; Cookston, 1999; Chilcoat & Anthony, 1996).

During adolescence, parental supervision declines as the adolescent becomes more capable of taking care of him- or herself (Crockett & Petersen, 1993). Yet monitoring an adolescent’s behavior is increasingly important as adolescents spend less time under direct supervision by parents and other adults while spending increasing amounts of time with peers (Hetherington, 1993; Patterson & Stouthamer-Loeber, 1984; Steinberg, 1986). Adolescents

spend more time with peers outside the home than under direct parental supervision (Patterson, 1982; Patterson & Stouthamer-Loeber, 1984).

Gender differences in levels of parental control may be important in attempting to explain how females become involved in deviant and criminal behavior and the role of male associates in this process. The effect of parental monitoring and supervision is often discussed in explanations of gender differences in delinquency (Bartuch & Matsueda, 1996; Canter, 1982; Hagan et al., 1979; Kruttschnitt, 1996). Not only does research indicate that females are more strongly monitored by their parents than males (Svensson, 2003; Kim et al., & Reiss, 1999; LaGrange & Silverman, 1999), but also that this higher level of parental monitoring plays an important role in the lower rates of delinquency exhibited by females (e.g., Giordano & Cernkovich, 1997).

Female adolescents are more likely to experience greater levels of social control within both the family and other social institutions (i.e., schools) (McCarthy et al., 2004). Within the family, informal parental controls and conventional norms for behavior work to constrain the behaviors of daughters more than sons (Hagan, Simpson, & Gillis, 1988). Female adolescents are more directly and indirectly controlled by their parents (LaGrange & Silverman, 1999) and are more strongly monitored than their male counterparts particularly by their mothers (Kim et al., 1999; Svensson, 2003). But when parental monitoring is poor, adolescent females are more likely to become involved with deviant peers and engage in the use of illegal substances (Svensson, 2003).

Based on the tenets of social control and social bond theory and the results of research reviewed on parental monitoring, I use two measures of parental presence at home to examine the effects of parental monitoring on female substance use. Though I also use parental control measures for parentally granted autonomy and time spent in

shared activities with parents, those measures will be addressed at the end of the next section. During data analyses, when I regress each of the parental presence measures on substance use I expect to find that when parental presence is high, substance use will be lower than when parental presence is low.

Hypothesis 4: Parental presence at home will be negatively related to substance use whereby an increase in parental presence is associated with a decreased likelihood of female substance use.

Involvement and Opportunity

Involvement, the third element of Hirschi's social bond, refers to time spent in conventional activities, such as extracurricular activities or time spent with the family. The argument for involvement decreasing the likelihood of delinquency rests on the element of time—one is simply too busy, too preoccupied, or too consumed by their involvement in conventional activities to find the time to become involved in delinquent activities.

Along with the element of attachment, involvement is central to this research and the ways in which parental controls are expected to mediate the effects of male peers on deviant behavior. As proposed by Hirschi (1969), involvement can be measured in terms of time spent with family and friends as well as participating in activities such as sports, recreation, hobbies, dating, and work. Although Hirschi's research did not find strong support for the element of involvement, I believe that when measured as time spent in activities with parents, involvement functions as an

important measure of parental control that functions to decrease opportunities for deviant behavior.

Based on Hirschi's conceptualization of involvement as well as the one included in this research, opportunity functions as the critical component for engaging in delinquency. When adolescents are involved in conventional activities, they do not have time to spend in situations that provide opportunities for delinquency (i.e., unstructured socializing with peers). Research indicates that adolescents engage in more delinquency when they spend a great deal of time in unstructured socializing with friends (Haynie & Osgood, 2005; Rowe & Rodgers, 1991) largely because unstructured socializing provides opportunities out of the view of parents or other adults (Giordano, 2009). Research by Mahoney and Statin (2000) indicated that time spent in unstructured socializing with peers was particularly conducive to a boys' antisocial behavior when combined with a lack of involvement in highly structured activities.

Unlike unstructured socializing with peers that is likely to occur outside the view of parents or other adults, structured/conventional activities are usually monitored by some type of adult authority figure (i.e., coaches, teachers, leaders, parents, etc.). Although the previous section focused on parental supervision and monitoring, parents are not the only adults who can supervise and monitor adolescent behavior. Other adults, particularly those who play a significant role in the adolescent's life, can provide supervision and monitoring when spending time with the adolescent in conventional activities. Assuming that involvement in such activities occurs in the presence of an adult authority figure, then time spent in conventional activities is time spent under adult supervision.

Combining gender differences in involvement in conventional activities, time spent in unstructured socializing, and levels of parental monitoring/supervision may help to explain the lower levels of delinquency and crime among females when compared to males. The activities that females are likely to be involved in are often associated with and take place within the family, home, and school (Carter & Wojtkiewicz, 2000; Gager, Cooney, & Call, 1991). Since female's activities are more likely to take place under adult supervision, female adolescents are provided with fewer opportunities to engage in deviance and crime than their male counterparts (Cohen & Felson, 1979). With males being less constrained by parental controls and spending more time in activities outside the home without parental supervision, males have greater opportunities to engage in deviant and delinquent behaviors (McCarthy et al., 2004). Patterns such as these lead to the conclusion that females are more strongly bonded to their families than males and these stronger bonds could potentially explain their lower levels of delinquency involvement (e.g., Giordano & Cernkovich, 1997; Hagan et al., 1979; Heimer & De Coster, 1999).

To account for Hirschi's (1969) element of involvement, I use two measures of parental control that measure time spent in shared activities with parents. While Hirschi's conceptualization of involvement would include time spent in all sorts of extracurricular activities, I use these two measures as indicators of parental control. By including the two measures, I not only address the element of opportunity (i.e., having the time to engage in deviant behavior), but also the element of parental supervision. When spending time in shared activities with parents, adolescents are both monitored by their parents and the amount of time to engage in deviance (i.e., opportunity) is reduced. Therefore, I predict that as time spent in shared activities with parents increases, the likelihood of substance use decreases.

Hypothesis 5: Time spent in shared activities with parents will be negatively associated with female substance use.

In addition to the measures for time spent in shared activities with parents, I also include measures of parentally granted autonomy. An adolescent's autonomy is directly related to the element of opportunity discussed in this section. When parents are not controlling decisions regarding things like who their children hang out with, what time they must return home on weekends, and what time they must go to bed then adolescents may make decisions that increase their opportunities for deviant behavior. Therefore, I predict that when parents grant their children high levels of autonomy, the adolescents will be more likely to engage in deviant behavior such as illegal substance use.

Hypothesis 6: Parentally granted autonomy will be positively related to female substance use whereby an increase in autonomy is associated with an increased likelihood of substance use.

Parental Control, Opportunity, and Delinquent Peers

Contrary to the ways in which differential association and social learning theories posit a socialization effect of peers on delinquency, control theories state that the correlation between peers and delinquency is not due to a causal relationship but rather a reflection of the effects of delinquent behaviors on peer choice (Matsueda & Anderson, 1998). Thus, while differential association and social learning theories use a socialization/normative influence perspective to explain peer similarity, control theories use a selection perspective that views the association between peers and delinquency as the result of individuals selecting similar individuals as friends (Glueck & Glueck, 1950; Hirschi, 1969). From a selection perspective, adolescents are believed

to choose friends who will maximize the similarity between themselves and their friends (Ennett & Bauman, 1993; Kandel, 1978). While finding support for both selection and socialization effects, research by Matsueda and Anderson (1998) found the effect of prior delinquency on peer associations to be larger than the effect of peer associations on delinquency providing greater support for selection effects than socialization effects.

Using a selection perspective, theories that focus on issues of social control contend that weak bonds to society lead to association with delinquent peers (Hirschi, 1969). Instead of delinquent peer associations causing delinquency, social control theory posits that association with delinquent peers is the result of already weakened bonds to society. From this perspective, parents play an important role in exerting social control over adolescents and strengthening the bonds between the adolescent and society thereby decreasing the likelihood of association with delinquent peers (Hirschi, 1969; Nye, 1958).

Parental monitoring and supervision have also been found to be important in decreasing susceptibility to peer influence (Stacy, Sussman, Dent, & Burton, 1992) and association with deviant peers (see Kim et al., 1999). Among males, greater likelihood of associating with delinquent peers is thought to be the result of less parental supervision and being less confined to staying at home (Steffensmeier, 1983). Focusing on female adolescents, Svensson (2003) found that when parental monitoring was poor, females were more likely to become involved with deviant peers and to engage in the use of illegal substances. Yet most research addressing parental monitoring/supervision and peer delinquency has failed to pay attention to gender differences regarding parental control and friendship choice.

In a review of the literature, I addressed differences in the characteristics of male and female friendships that may result in peer influences on deviant behavior varying by friend's

gender. Those differences suggest that females' friendships with other females are more likely to discourage deviance than males' friendships with other males. In addition to the characteristic differences between male and female friendships, differential levels of parental monitoring and supervision of these friendships may amplify the effects of friends' gender on deviant behavior.

Of the research that has focused on parental control and adolescent friendships, differences have been found between females' friendships with their female friends and males' friendships with their male friends. Female friendships have been found to disproportionately occur in settings with greater social control than male friendships (McCarthy et al., 2004). Females tend to meet with their friends in locations that are supervised by either parents or other adults (Youniss & Smollar, 1985). Parents, mothers in particular, also interact with their daughters' friends more frequently than with their sons' friends (Updegraff, McHale, Crouter, & Kupanoff, 2001). With an increased likelihood of parents' knowing their daughters' friends and their daughters' friendships occurring in locations where parents can monitor their activities, parental control may further ensure that females' friendships with other females are less likely to result in opportunities for deviant behavior than males' friendships with other males. Yet these research findings fail to address the ways in which levels of parental control provide opportunities to engage in deviance when friendships are among cross-sex peers rather than same sex peers.

Building a New Conceptual Model

The focus of this research is on the effects of male associates on female substance use, so interest is in determining if that association exists above and beyond the effects of parental control. Assuming level of parental control is associated with the likelihood of having male

associates, the effects of male associates on substance use may be in part due to the lower levels of parental control that led to associations with males in the first place. Therefore, the conceptual model used here focuses on three measures of parental control (i.e., parentally granted autonomy, parental presence in the home, and time spent with parents) and how the relationship between male associates and female substance use may be mediated by parental control.

By creating a conceptual model that includes measures of parental control and the presence of male associates, both selection and socialization effects of peers on deviant behavior can be accounted for. In examining the effects of male associates on female substance use, I used differential association and social learning theories—both of which suggest a socialization effect—to hypothesize that the presence of male associates will increase the likelihood that a female has used illegal substances. To incorporate selection effects into the same model, the association between parental control and the likelihood of female's having male associates is examined. I predict that when parental control is high, adolescent females will have fewer opportunities to associate with male peers.

Hypothesis 7: Correlations between parental control and male associate measures will be negative suggesting that high levels of parental control are correlated with a lesser likelihood of females having male associates.

If parental control is found to be associated with the presence of male associates, I will examine how the effects of male associates on female substance use change once parental control variables are added into the regression models. If male associates continue to have significant effects on female substance use once parental controls are included, then the effects of male associates on female substance use are not due to lower levels of parental control. If however

male associates no longer have significant effects on female substance use, then any significant effects found in the bivariate regression of male associate variables on substance use may be due to lower levels of parental control rather than the presence of male associates.

Due to the complex nature of the association between parental control and the presence of male associates, this research explores the possibility of an association between these two variables but no definitive statements about the directionality of influence can be made. While I assume that levels of parental control affect the presence of male associates, it is possible that the direction of this association is reversed—that having male associates affects the amount of parental control exerted over female adolescents. Future research should consider further examining the directionality of this association.

Yet I expect that parental control mediates the effects of male associates on female substance use. Based on the literature discussed earlier in this chapter, adolescents are less likely to be influenced by their peers if parental monitoring and supervision is high. Thus, although male peer associates may affect the likelihood of substance use, these effects may be lessened or negated once levels of parental control are taken into account.

Figure 1 is a visual representation of the conceptual model I use within this research. In this diagram, the presence of peer associates is depicted on the left side of the diagram. Overlapping circles are used to distinguish female adolescents who have only female friends, only male associates, or some combination of female friends and male associates. The larger area used to designate this latter category represents the greater number of females who are expected to have some combination of female friends and male associates as compared to females with only female friends or only male associates.

Parental control is located in the center of the diagram and is shown to have direct associations with female deviance and the peer associations of female adolescents. While the association with female deviance is unidirectional, the association with peer associates is undetermined and is represented by a two-way arrow in the diagram. While both parental control and peer associates are expected to affect female deviance, the effects of parental control are expected to be direct while the effects of peer associates are indirect with parental control mediating the effects of peer associates.

CHAPTER IV METHODS

DATA

To conduct this research, I chose to use secondary data that was collected by the Carolina Population Center at the University of North Carolina. Using a secondary data source allowed me the opportunity to study a large, nationally representative sample in a more cost and time efficient manner. Without external funding, I would not have been able to obtain extensive data on such a large number of adolescents. Using such a large sample increases the reliability of my findings.

Specifically, the data for this dissertation research comes from the National Longitudinal Study of Adolescent Health (Add Health). Add Health is a nationally representative sample of 7th through 12th grade adolescents attending 80 high schools and 52 middle schools from 1994 to 1996 (see Harris et al., 2009). Schools were randomly selected and stratified by region, urbanicity, school type, ethnic mix, and size. For additional information on the Add Health data, visit <http://www.cpc.unc.edu/projects/addheath>.

The Add Health data consists of multiple data sets, including the original in-school data, data obtained from school administrators and parents, a contextual data set, and four waves of in-home interviews with the most recent wave conducted in 2007-2008. The Wave I and Wave II data is available for public use and consists of 6,500 respondents chosen at random from the original sample. For the purpose of this research, I used the public-use data for Wave I and results of this research were consistent with those found by other researchers using both the restricted- and public-use versions of the Add Health data.

From the original in-school data, every adolescent attending 1 of the selected 16 schools (14 small and 2 large schools, chosen based on size) constituted the sample for participation in an in-home and parent survey. These respondents were then re-interviewed 1 year later in 1996 generating a second wave of data (Wave 2), again in 2001-2002 (Wave 3) when respondents were young adults, and finally in 2007-2008 (Wave IV) with respondents ranging in age from 24 to 32. These data are also helpful because surveys from not only respondents, but also from parents, friends, and the school are included.

For the purpose of my dissertation research, I use the public-use dataset for Wave I since this is the data collected during adolescence and is therefore most applicable to studying adolescent behavior. With the focus of this research being on female adolescent substance use, I have limited my sample to only the female cases and all analyses are run on female respondents only. In accordance with university policy, all research involving human participants must either be reviewed by the IRB or be certified as exempt from IRB review by a Departmental Review Committee. By using secondary data, I applied for and was granted a certification for exemption from IRB review for research involving human subjects⁵.

Researchers continue to mine the Add Health data because of the wealth of information it provides. According to the official Add Health website (<http://www.cpc.unc.edu/projects/addhealth>), Add Health data were used in at least 35 professional publications and 5 dissertations in 2008. One of the main reasons for the continued use of this data set is that Add Health provides some very comprehensive data on the friendship networks of adolescent respondents, allowing researchers the ability to recreate the network of each respondent. For the purpose of this research I do not need to recreate each respondent's social network. The social network data are simply used to create measures for the presence of

⁵ A copy of the notice for IRB exemption can be found in Appendix B.

female friends, male friends, romantic partners, and sexual partners, but all analyses conducted do not require the recreation of the friendship network.

MEASURES

Due to the exploratory nature of this research, I chose to include a variety of measures for many of my theoretical constructs. Beginning with the dependent variable, I created two separate indices—*minor substance use* and *combined substance use*—using factor analysis in SPSS version 16.0. To measure the presence of peer associates, I created both dichotomous and count measures for the presence of each type of associate—female friend, male friend, romantic partner, and sexual partner⁶—wherever possible. In addition, I used the dichotomous measures for male friend, romantic partner, and sexual partner to create three combined measures for the presence of male associates—one dichotomous *has male associate* measure, one count *number of types of male associates* measure, and one *male associate combinations* measure with categorical responses for possible combinations of the three types of male associate while controlling for the presence of female friends.

In addition to the measures for peer associates, I created a series of measures for parental control. These measures can be placed into three categories—parentally granted autonomy, parental presence at home, and time spent in shared activities with parents. There are three measures included in the parentally granted autonomy category—an *autonomy index* and two individual measures for *autonomy curfew* and *autonomy friends*. Two measures are used to indicate parental presence at home—one that measures mother presence and one that measures father presence (i.e., *mother home* and *father home*). Finally, two separate measures are used to

⁶ Sexual partner was the only type of peer associate that did not include a count measure. Only a dichotomous measure for sexual partners is used in these analyses.

designate time spent in shared activities with parents—one for *time with mother* and one for *time with father*. Table 1 (see Appendix C) lists each of the variables used in this research. The next sections are devoted to further explanation of how each of these variables was created.

Substance Use Measures

Section 28 of the Add Health Data provides information on cigarette, alcohol, and illegal drug use. A series of questions were asked about each of the following substances—cigarettes and/or tobacco, alcohol, marijuana, cocaine, inhalants, and other drugs such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills without a doctor’s prescription. The series of questions asked for each substance includes information on having ever tried said substance, age at which substance was first tried, and frequency of usage for the past 30 days.

With the data available through Add Health, substance use could be measured in a variety of ways. For the purpose of this research, I originally considered four forms of substance use variables: dichotomous measures for having ever tried each substance, dichotomous measures for having used each substance in the past 30 days, ordinal measures for frequency of use for each substance during the past 30 days, and continuous measures for frequency of use for each substance during the past 30 days. In addition to the individual measures for each of the 6 substances, additional “hard substance use” measures were created to address the low numbers of respondents having used cocaine, inhalants, and other drugs. By combining these three into one overall “hard substance use” measure, the number of respondents who had used these harder substances was much higher.

Using factor analysis and theoretical reasoning, the substance use index used in data analyses included only the ordinal measures for substance use. Although the other substance use

measures were not included in this final index, I report the frequencies and descriptive statistics for these other measures to provide information on the extent of substance use among female adolescents in this sample.

Dichotomous “Ever” Substance Use Measures. The first set of substance use measures created were dichotomous measures for each of the six substances based on whether the respondent had ever tried the substance. The percentage of female respondents who ever tried illegal substances varied based upon the strength of substance. The results shown in Table 2 indicate that minor substances such as cigarettes and alcohol had been tried by approximately half of the female respondents (55.4 and 53.9 percent, respectively). About one-fourth (23.3 percent) had tried marijuana. The rates of trying harder substances were very small with only 2.9 percent having tried cocaine, 5.1 percent having tried inhalants, and 7.4 percent having tried some other drug such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills without a doctor’s prescription. Combining these three “harder” substances into one “hard substance use” measure resulted in 10.8 percent of female respondents claiming they had tried at least one of these harder substances.

Dichotomous “Recent” Substance Use Measures. The second set of substance use measures were dichotomous measures of whether a substance had been used recently. For all substances

Table 2. Dichotomous Measures for Females Who Ever Tried Illegal Substances

Substance	% Used Substance	N	Total N
Cigarettes	55.4	1,852	3,343
Alcohol	53.9	1,798	3,335
Marijuana	23.3	762	3,274
Cocaine	2.9	97	3,323
Inhalants	5.1	168	3,318
Other (i.e., LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills)	7.4	245	3,313
Combined Hard Substance Use	10.8	357	3,300

except alcohol this was defined as usage during the past 30 days. For alcohol use, Add Health responses indicated use during the past 12 months rather than 30 days. Table 3 shows the percentages of female respondents who claimed to have used each substance recently.

The two substances with the highest percentages of reported use in the past 30 days were cigarettes (over 24 percent) and marijuana (nearly 12 percent). Usage of harder drugs in the past 30 days was minimal with only 0.9 percent having used cocaine, 1.1 percent having used inhalants, and 2.8 percent using other hard drugs. With these three harder substances combined into a single “hard substance use” measure, four percent of female respondents had used at least one form of a hard substance in the past 30 days. The rate for recent alcohol usage was much higher with 45.2 percent of respondents claiming to have used alcohol in the past 12 months. But this much higher rate is less surprising than it may initially seem to be considering that the length of time is 12 times that of the other substances.

Continuous “Recent” Substance Use Measures. To study the *amount* of usage for each substance, a set of continuous use measures was created. These continuous measures indicated the number of times (or days in the case of cigarette use) in which each substance was used during the past 30 days. In creating the combined “hard substance use” measure, the sum of the summation resulted in a measure with a range from 0-90. To keep this variable’s range

Table 3. Dichotomous Measure of Female Substance Use in Past 30 Days

Substance	% Used Substance	N	Total N
Smoked Cigarettes	24.8	830	3,351
Drank Alcohol*	45.2	1,515	3,353
Marijuana	11.8	391	3,309
Cocaine	0.9	29	3,327
Inhalants	1.1	36	3,325
Other Drugs (i.e., LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills)	2.8	94	3,321
Combined Hard Substance Use	4.0	133	3,316

* The measure for alcohol was based on the past 12 months

consistent with that of the other continuous measures for recent use of substance, I truncated the distribution recoding the values 30 through 90 to be 30.

Table 4 reports the means and standard deviations for the number of days/times that each substance was used but only for those respondents who had used each substance in the past 30 days. When the entire sample was included, means were very high considering that an overwhelming majority of respondents had not even used each substance within the past 30 days (refer to Table 3). Thus I chose to report means of usage for only those who had recently used the substance. Frequency of alcohol use is not reported in Table 4 because there was no continuous measure for alcohol use available. For an estimate of the frequency of alcohol use, refer to the following section for a discussion of the ordinal measure for alcohol use.

Among those who had smoked cigarettes in the past 30 days, the mean number of days smoked was 16.68. For those who had used marijuana, the mean number of times marijuana was used was 7.12. Cocaine was used an average of approximately 3 times while inhalants were used an average of 2 times. Among those who had used “other” drugs, the average times used was 6.01. When cocaine, inhalant, and other drug use was combined into one “hard substance use” measure, those who had used these hard substances had a mean usage of 5.45 times.

Table 4. Continuous Measures of Female Substance Use in the past 30 Days Among Users

Substance	N of Users	Mean for Users	Standard Deviation
Number of Days Smoked Cigarettes	820	16.68	12.24
Number of Times Used Marijuana	391	7.12	8.74
Number of Times Used Cocaine	29	3.10	5.39
Number of Times Used Inhalants	36	2.00	1.90
Number of Times Used Other Drugs (i.e., LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills)	94	6.01	8.14
Number of Times Used Cocaine, Inhalants, & Other Drugs Combined	133	5.45	7.89

Ordinal “Recent” Substance Use Measures. Finally, ordinal measures were created for usage over the past 30 days (or 12 months in the case of alcohol). The ordinal coding for each substance used ranged from 0 to 5 whereby “0” indicated no use in the past month, “1” indicated using once in the past month, “2” indicated using the substance 2 or 3 days in the past month, “3” indicated using the substance 1 or 2 days a week in the past month, “4” indicated using the substance 3 to 5 days a week in the past month, and “5” indicated using everyday or almost every day.

Similar to the reporting of means for the continuous use measures of substance use, the means reported for the ordinal measures for each substance are calculated based on only those who had used the substance in the past 30 days. The mean for cigarette use was 3.67 indicating the average cigarette user smoked cigarettes with a frequency somewhere between 1 or 2 days a week and 3 to 5 days a week. Among marijuana users, the mean was 2.55 an average use about halfway between 1 to 2 days a week and 2 to 3 days a month. Means for cocaine and inhalant use (1.83 and 1.56 respectively) both fell between the used once and used 2 or 3 times in the past month categories. Other drug use and combined hard substance use both had means exceeding 2 (2.35 and 2.26 respectively) indicating an average use of slightly more than 2 or 3 times in the past month.

Although all other substances were based on usage in the past 30 days, alcohol use was based on the past 12 months. The responses for the ordinal measure of alcohol use ranged from 0 to 6 and represented the following:

- 0- Never used alcohol in the past 12 months
- 1- Used alcohol 1 or 2 days in past 12 months
- 2- Used alcohol once a month or less in the past 12 months (3-12 times)
- 3- Used alcohol 2 or 3 days a month
- 4- Used alcohol 1 or 2 days a week
- 5- Used alcohol 3 to 5 days a week

6- Used alcohol everyday or almost everyday

The mean for alcohol use was 2.15 indicating that amongst those who had used alcohol in the past 12 months, the average user drank alcohol approximately once a month. The means and standard deviations for all ordinal measures of substance use are presented in Table 5.

Creating Substance Use Indices. Factor analysis was used to determine which substance use variables loaded onto similar components and the results were then used to create substance use indices that would later be used as dependent variables in regression analyses. Within these factor analyses, “principle components” was used as the extraction method and rotations were designated as “varimax”. New indices were created for components with Eignenvalues exceeding 1.0. Variables with factor loadings exceeding .50 were included in the creation of each new index and cases with missing values were set to the mean.

I began this series of factor analyses by running one analysis that included all 27 substance use measures. Results of this analysis were not particularly insightful. Of the components created from this analysis, the majority used three or four of the various measures for a particular substance to load onto one component. For example, the four marijuana variables loaded together and 3 of the 4 measures for each variable loaded together onto a single component for

Table 5. Ordinal Measures of Female Substance Use in past 30 Days Among Users

Substance	N of Users	Mean for Users	Standard Deviation
Smoked Cigarettes	820	3.67	1.46
Used Marijuana	1514	2.15	1.24
Used Cocaine	391	2.56	1.32
Used Inhalants	29	1.83	1.07
Used Other Drugs (i.e., LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills)	36	1.56	0.77
Used Cocaine, Inhalants, & Other Drugs Combined	133	2.26	1.20

cocaine, inhalant, and cigarette use⁷. The remaining components resulting from this analysis suggest that the “harder” substances (cocaine, inhalant, and other drug use) load separately from the more “minor” substances (cigarettes, alcohol, and marijuana).

I then ran additional factor analyses in which I combined various sets of variables to see what patterns emerged. This series of analyses included-

- a) One analysis of the six individual dichotomous “ever” substance use variables
- b) One analysis of the six individual dichotomous “recent” substance use variables
- c) One analysis of the six individual continuous “recent” substance use variables
- d) One analysis of the six individual ordinal “recent” substance use variables

Results indicated that in each analysis, 2 separate components were created—one combining the three minor substances and one combining the three harder substances. While these results suggested separating minor and hard substances into two separate indices, the low rates of hard substance use would result in an index that had very little variance.

Finally, I ran the same set of four analyses as above with the “hard substance use” variable substituted for the individual measures of cocaine, inhalant, and other drug use. In each of the four analyses, this resulted in all four variables loading onto the same component. These results suggested that a substance use index could be created in which the individual measures for cigarette, alcohol, and marijuana use could be combined with the “hard substance use” measure to create an index that measured overall substance use.

I relied on theory to guide my decision to determine which of the four forms of measurement of these variables to use in creating substance use indices. Because the data gathered on peer associate variables were based on either current or recent relationships with these associates, I determined that one of the recent forms of measurement would be more

⁷ Having components that result from combining these three measures for each substance may be due to using the same question for all three measures but simply coding the responses to said question as dichotomous, continuous, or ordinal. Thus it is not surprising to find that these variables load onto the same component.

appropriate than the “ever tried” measures. To then decide among the three remaining forms of recent use, I chose the ordinal measure for two reasons. First, it provides greater variation of responses than the dichotomous measure. Second, although the continuous measure would provide even greater variance, there is the problem of alcohol not being a true continuous measure.

Thus, using theory and the results of these factor analyses, I created two substance use indices to use as dependent variables in my regression analyses. Since factor analyses suggested that minor and hard substances load separately, I chose to create a *minor substance use index* that would allow me to focus on the effects of peer associates on females’ use of minor substances separate from the inclusion of hard substances. The resulting *minor substance use index* had a range from -1.16 to 15.99 with a mean of 0 and standard deviation of 1.0.

While hesitant to use an index which included only hard substances due to the low rates of hard substance use, a second index was created that took into account the use of hard substances by combining the individual ordinal measures for the three minor substances—cigarettes, alcohol, and marijuana—with the ordinal measure for hard substance use. This variable was named *combined substance use index*. The resulting *combined substance use index* had a range from -3.62 to 5.22 with a mean of 0 and standard deviation of 1.0.

Peer Associate Measures

Male & Female Friends. Although the Add Health data provide information on respondents’ friendship networks, the data are limited in that not all respondents were asked to nominate the same number of friends. Respondents were assigned to one of two groups, the first of which (Version A; FR_FLAG = 1) was asked to nominate up to 1 male friend and 1 female friend. The

other category of respondents (Version B; FR_FLAG = 0) was asked to nominate up to 5 male and 5 female friends. Of the approximately 3,300 females included in these analyses, a little over 900 were assigned to the latter group. All other females were allowed to nominate only 1 female and 1 male friend. This limits the ways in which measures for male and female friends can be created and used in these data analyses.

Although respondents were asked to nominate their best female and male friends, the information provided by each respondent is not recorded in the data as a straightforward measure of whether the respondent nominated someone for each possible friendship position. Instead, following the nomination of each friend, a series of 9 questions was asked about various characteristics of the friend and activities shared with the friend over the past 7 days. To create a measure for whether the respondent nominated a friend for each possible position, I used the first question asked in this series, “Does {NAME} go to school?” Responses for this question include “no” and “yes”, both indicative of a friend being nominated, or “legitimate skip” indicating that no friend was nominated for that particular position.

Because all respondents were allowed to nominate at least 1 male friend and 1 female friend, creating a dichotomous measure for the presence of each was simple. Responses to the question “Does {NAME} go to school?” were recoded so that “0” indicates the absence of a friendship nomination for that particular position and “1” indicates that a friendship nomination was made. This process resulted in the creation of a dichotomous measure for the presence a female friend (i.e., *has female friend*) and a dichotomous measure for the presence of a male friend (i.e., *has male friend*).

To create measures for the number of male and female friends, the same process was repeated for all possible friendship positions, resulting in dichotomous measures for the presence

of a second male friend, third male friend, fourth male friend, and fifth male friend. The same was done for the creation of a dichotomous measure for each female friend nominated. Using these dichotomous measures, count measures were created by summing the number of male friends nominated and also the number of female friends nominated. This resulted in the creation of two variables—*number of male friends* and *number of female friends*. Using these two variables in the data analyses results in a dramatic decline in the number of cases as less than a third of respondents were allowed to nominate more than just 1 male and 1 female friend. But in order to explore the effects of both male and female friends on substance use, I argue it is important to go beyond dichotomous measures for the presence of each and include measures that would provide insight into how the number of male and female friends influenced substance use. Thus these two measures of number of friends will be included in bivariate analyses but they will not be included in multivariate analyses due to the small sample size and problems associated with too few cases.

Table 6 reports the percentages of female respondents who nominated a male friend for each of the male friend nomination positions the respondent was allowed. The fact that the majority of respondents were only allowed to nominate one male friend while the remaining respondents were allowed to nominate up to 5 male friends was taken into account. For male friend positions 2-5, I included only those who were granted the opportunity to nominate up to 5

Table 6. Frequencies and Percentages of Female Respondents with Male Associates

Type of Male Associate	% of Female Respondents Claiming Male Associate	# of Female Respondents Claiming Male Associate	Total N
Male Friend 1	87.8	2,944	3,354
Male Friend 2	72.4	664	917
Male Friend 3	55.3	508	918
Male Friend 4	36.6	336	917
Male Friend 5	22.9	210	918

male friends in the frequency distributions. Therefore the percentages reported in Table 6 are based upon those respondents who were allowed to nominate a male friend for each position but may or may not have chosen to do so.

Table 6 illustrates that with each additional male friend, the percentage of female respondents who claimed such a friend decreased. When provided with the opportunity to nominate one male friend, nearly 88 percent of female respondents did so. Of those respondents who were then allowed to nominate a second male friend, just over 72 percent chose to do so. By the third male friend nomination, only slightly more than half (55.3 percent) claimed a third male friend. For fourth and fifth male friend nominations, only 36.6 and 22.9 percent, respectively, of female respondents claimed male friends for these positions.

This same pattern of decreasing percentages of friendship nominations occurred for female friends. Table 7 shows the percentages of female respondents who claimed to have a female friend for each of the 1-5 friendship nomination positions. Similar to the results shown in Table 6, I included only those respondents who were granted the opportunity to nominate up to 5 female friends in the frequency distributions for the female friend positions 2-5. Nearly 97 percent of female respondents claimed a first female friend. Almost 84 percent claimed a

Table 7. Comparison of Percentages of Female and Male Friendship Nominations

	% of Females Who Nominated a Female Friend			% of Females Who Nominated a Male Friend		
	N	Total N	N	Total N		
Individual Friendship Nominations						
Friend 1*	96.7	3,242	3,354	87.8	2,944	3,354
Friend 2	83.7	767	916	72.4	664	917
Friend 3	69.2	635	918	55.3	508	918
Friend 4	49.5	454	918	36.6	336	918
Friend 5	35.0	321	918	22.9	210	918

second, nearly 70 percent a third, and just short of half claimed a fourth female friend. Only 35 percent nominated a fifth female friend.

To make comparisons between female and male friendship nominations easier, Table 7 also contains the percent of females who claimed a male friend for each of the 5 positions. For each friendship nomination position, a greater percentage of female respondents claimed a female friend for that position than a male friend for the corresponding male position. Of those respondents who were allowed to nominate up to 5 female and 5 male friends, the mean for *number of female friends* was 3.35 while the mean for *number of male friends* was 2.76.

Computation of a paired-samples T-test indicated that the difference in number of female friends and number of male friends nominated was significant. These results coincide with findings from previous research that suggests that although cross-sex friendships may increase during adolescence, same sex friendships are still the norm (Schofield, 1981).

Romantic Partners. Add Health data also provide researchers with romantic relationship information. Data from the Wave I in-home survey includes information on the duration of romantic relationships, characteristics of the relationship, and activities within the relationship. Respondents who indicated having had at least one romantic relationship in the past 18 months (H1RR1 = 1) were then asked to list up to 3 romantic partners from relationships occurring during this time. Respondents then provided detailed relationship information on these nominated partners.

Again the data do not provide a straightforward measure indicating the presence or absence of each nominated romantic partner. I had to first determine whether a romantic partner was noted for each of the three possible romantic partner nominations. The first question (H1R13) asked about each nominated romantic partner asks “How old was {INITIALS} when

your romantic relationship began?” From this question, I recoded responses that indicated the romantic partner’s age, and thus the presence of a romantic partner, as “1” to indicate that a romantic partner was nominated and responses of “legitimate skip [Respondent does not have a special friend]” were recoded as “0,” indicating the absence of a romantic partner. This process was repeated for the second and third romantic partner nominations.

A dichotomous measure (i.e., *has romantic partner*) was created for the presence of at least 1 romantic partner within the past 18 months by using the dichotomous measure for the first romantic partner nominated. If a first romantic partner was nominated, then *has romantic partner* was coded as “1” to indicate the presence of at least one romantic partner. In addition to this dichotomous measure, a count measure (i.e., *number of romantic partners*) was created for how many romantic partners the respondent claimed to have had over the past 18 months. Summing the responses for the 3 dichotomous measures for first romantic partner, second romantic partner, and third romantic partner provides a count measure of how many romantic partners a respondent had in the 18 months prior to the interview. Responses ranged from 0 (indicating a lack of any male romantic partners) to 3 (the maximum number of romantic partners a respondent was allowed to nominate).

Descriptive statistics for the *number of romantic partners* indicated that the mean number of romantic partners for all female respondents was 0.89 with a standard deviation of 0.82. The individual frequencies and percentages of females who nominated a romantic partner for each of these three possible positions are shown in Table 8 (see Appendix D). Approximately 65 percent of female respondents nominated at least one romantic partner (*has romantic partner* = 1). In addition to the 65.3 percent of female respondents who nominated a first romantic partner,

nineteen percent nominated a second romantic partner and an additional 5 percent nominated a third.

Previous research had indicated that most young persons will have experienced a romantic involvement of some type by the end of adolescence (Dickinson, 1975; Hansen, 1977; Sorensen, 1973). To determine if that was true of the sample used in this research, I ran a cross-tabulation of *age* with *has romantic partner*. Results revealed that the percentage of respondents who claimed at least 1 romantic partner in the past 18 months increased as age of respondent increased and that by the age of 18, 82.5 percent of female respondents claimed at least 1 romantic partner.

Sexual Partners. Much of the romantic relationship history data focuses on the occurrence of sexual activities. Recognizing that not all sexual activity occurs within the context of a romantic relationship, section 26 of the Add Health data focuses on non-relationship histories and includes questions about sexual activity both within and outside the context of romantic relationships.

To create a dichotomous measure for having had at least 1 sexual partner, responses to the question “With how many people, in total, including romantic relationship partners, have you ever had a sexual relationship?” were recoded whereby “0” indicates the absence of sexual partners and “1” indicates having had at least 1 sexual partner⁸. Although this question could be used to create a count measure for sexual partners, I had concerns about using a count measure with responses ranging from 1 to 500 and because responses might not be accurate since respondents were directed to estimate the number of sexual partners if they did not remember an exact number. Therefore, only a dichotomous measure (i.e., *has sexual partner*) was used in

⁸ Respondents who indicated that they didn’t know how many sexual partners they had been with or didn’t provide an estimate were coded as “1” because a response of “don’t know” indicates that the respondent has had sexual partners but did not provide a number or an estimate. Had they not had any sexual partners, they would have been coded as “legitimate skip [never had a sexual relationship].”

these analyses to account for male influences whose relationship to the respondent is of a sexual nature and thus might not have been accounted for in the male friend and romantic partner measures.

Frequencies for *has sexual partner* indicate that only 21.7 percent of female respondents claim to have had any sexual partners, leaving 78.3 percent who either have not had sex or did not report any sexual partners. Though findings of previous research indicate that about one half of teenagers will have had sexual intercourse during their high school years (e.g. Centers for Disease Control and Prevention, 2002; Warren et al., 1998), the lower levels of respondents claiming sexual partners in this research are likely due to my sample containing only females (who are less likely to report sexual activity than their male counterparts) and the inclusion of middle school as well as high school respondents. Results of a cross-tabulation between respondent's grade and *has sexual partner* indicated that the percentage of female respondents claiming sexual partners increased as grade level increased, with only 5.9 percent of 7th graders having claimed a sexual partner while 35.7 percent of 12th graders claimed at least one previous sexual partner.

Combined Measures of Male Associates. In addition to analyzing the individual effects of male friends, romantic partners, and sexual partners, three different combined measures for male associates were created. The first two measures required the summation of the responses for *has male friend*, *has romantic partner*, and *has sexual partner* while the third measure relied upon various combinations of presence/absence for each of these three types of male associates. The first combined measure (i.e., *number of types of male associates*) created from the summation of these three variables was kept as an ordinal measure with a range of 0-3 where "0" indicated the absence of any male associates and values "1-3" indicating the number of types of male

associates a female nominated. Thus a coding of “1” indicated that the female respondent has at least 1 form of male associate, a coding of “2” represented the presence of 2 forms of male associates (i.e., friend and romantic partner, friend and sexual partner, or romantic partner and sexual partner), and a coding of “3” indicated the presence of all 3 forms of male associate.

In addition to the *number of types of male associates* measure, a dichotomous measure (i.e., *has male associate*) for the presence of any form of male associate was created. To create *has male associate*, responses for *number of types of male associates* was used and values were recoded such that codes “1-3” were recoded into “1” to indicate the presence of at least 1 form of male associate. The absence of any form of male associate was coded as “0”.

Table 9 reports the number of types of male associations made by female respondents. Although this table illustrates the number of types of male associates nominated, it does not provide any information regarding what form those associations took. In other words, it cannot be assumed that when only 1 type of male associate was nominated that it was a male friend rather than a romantic partner or sexual partner. All that can be derived from this table is the frequencies and percentages by which female respondents nominated various types of male associates.

Overall, 9 percent of females did not nominate any type of male associate (i.e., *has male associate* = 0). Thus, they claimed to not have any male friends, romantic partners or sexual

Table 9. Number of Types of Male Associates Nominated by Female Respondents

	# Female Respondents	% Female Respondents
No Male Associates Nominated	298	9.0
1 Type of Male Associate Nominated	1,088	32.7
2 Types of Male Associates Nominated	1,366	41.0
All 3 Types of Male Associated Nominated	<u>576</u>	<u>17.3</u>
Total:	3,328	100.0

partners. Nearly 33 percent nominated at least 1 type of male associate and another 41 percent nominated at least 2 types of male associates. In total, 17.3 percent of females claimed to have all three types of male associates. This table and the way these variables were created do not provide detailed information as to whether the same male was nominated for all three association positions.

In order to examine the various configurations of male associate presence, I created a third combined measure for male associates. While the *has male associate* and *number of types of male associate* variables do not provide detailed information on which types of male associates are present, the variable *male associate combinations* provides information on the possible combinations for the presence/absence of each type of male associate.

In creating the variable *male associate combinations*, the sample was limited to only those female respondents who claimed to have female friends compared to females who did not even have female friends. Doing so allowed me to use this variable in regression analyses to test the effects of male associates while holding the presence of female friends constant. Combining the possible presence for male friends, romantic partners, and sexual partners results in eight possible combinations. These combinations are shown in Table 10 (see Appendix E). However, running frequencies indicated that several of the categories had very few female respondents claiming that particular combination of male associates. The original frequencies and percentages for each possible combination of male associates are shown in Table 11 (see Appendix F).

The most common combination of male associates is having a male friend and male romantic partner but no sexual partner. Over forty-two percent of female respondents claim this combination of male associates. An additional 24.7 percent claim to have only male friends but

no romantic or sexual partner. Approximately 19 percent claim to have all three types of male associate while only 8.6 percent claim to have no male associates.

The remaining four categories of *male associate combinations* had very low frequencies and were collapsed into one “other” response category. These four categories included 1) has romantic partner but no male friends or sexual partner (84 cases), 2) has sexual partner but no male friends or romantic partners (7 cases), 3) has a male friend and sexual partner but not a romantic partner (47 cases), and 4) has romantic partner and sexual partner but no male friends (19 cases).

In creating the measure *male associate combinations*, I can separate types of male associates and establish the individual effects of each on female substance use. This measure also provides the opportunity to ascertain the likelihood that the same male was nominated by a female respondent for more than one type of associate. This then allows me to separate the effects of platonic male friends from those of male friends who may have also been nominated as romantic or sexual partners.

Frequencies of *male associate combinations* indicated that the majority of respondents who claimed having a *male friend 1* also claimed a romantic partner. For those 1,382 females for whom this was the case, the first male friend nomination was likely their current boyfriend as the directions asked them to indicate their current romantic partner as their first male friend nomination. Additionally, 621 respondents claimed having all three types of male associate in which case the same male could have been nominated by some of them to all three positions. On the other hand, 802 females nominated someone for the *male friend 1* position but did not nominate a romantic partner or sexual partner. Therefore, these cases must indicate platonic male friendships in which the male friend was not a current romantic partner or sexual partner.

To establish the frequency of sexual partnerships, both within and outside the context of romantic relationships and friendships, I combined female respondents who had all three types of male associates with those who claimed romantic and sexual partners but no male friends to find that 640 females claimed both sexual and romantic partners. In these cases, it is possible that the same male was referred to for both positions. Perhaps more interesting are the rates of sexual partners when there were no romantic partners present. Forty-seven respondents claimed to have male friends and sexual partners but no romantic partners in the past 18 months. While it is possible their sexual partners had been romantic partners before the 18 month cut off period for romantic partner nominations, it is also possible that females were having sex with their male friends. This would be in line with findings by Manning and colleagues (2005) that adolescents who were having sex with someone other than a current romantic partner were choosing sexual partners who were either friends or former romantic partners. An additional seven female respondents reported having sexual partners but no current male friends or romantic partners in the past 18 months.

The final measure for *male associate combinations* consisted of 5 response categories. Respondents coded as “0” had female friends but no male associates of any type. This group was used as the comparison group for this variable in all multivariate regression models. Respondents who had male friends but no romantic or sexual partners were coded as “1”. Females with male friends and romantic partners but no sexual partners were coded as “2” and those with all three types of male associate were coded as “3”. The four categories discussed in the previous paragraph were combined and coded as “4” to indicate some “other” combination of male associates. The frequencies and percentages for *male associate combinations* are reported in Table 12 (see Appendix G).

Parental Control Measures

The Add Health data provide information on many aspects of the parent-child relationship. For the purpose of this research, I use parental control measures that can be placed into one of three categories—parentally granted autonomy, parental presence at home, and time spent in shared activities with parents. While there are additional dimensions of the parent-child bond, the measures used here all address one particular aspect of that bond—the extent to which parental monitoring/supervision or lack thereof provides for opportunities for the respondent to engage in deviant behaviors.

Following the creation of 34 individual parental control variables, a series of factor analyses were performed to determine which variables loaded together. The first analysis run included all 34 parental control variables and the results indicated a breakdown into multiple components that were in keeping with the three categories of autonomy, time spent in shared activities with each parent, and parental presence in the home. Following this first analysis, I combined various sets of variables into separate factor analyses to see what patterns emerged.

This series of analyses included-

- e) One analysis with all 7 autonomy variables
- f) An individual analysis for all mother shared activities
- g) An individual analysis for all father shared activities
- h) A combined analysis for mother and father shared activities
- i) An individual analysis for mother home during the day
- j) An individual analysis for father home during the day
- k) A combined analysis for mother and father home during the day
- l) A combined analysis of mother home during the day and mother shared activities, and
- m) A combined analysis of father home during the day and father shared activities

From the results of all these analyses as well as an analysis that combined all 34 parental control variables, several key components were consistently produced. The results of these analyses and the measures created based on those results are discussed in detail below.

Although factor analysis will create a continuous index based on the factor loadings and Eigenvalues, I chose to manually create indices by summing—and sometimes averaging—the values for each of the individual variables included in the index. This allowed me to keep these indices in ordinal form so that they would be more easily interpretable when using estimated means and differences in estimated means to make comparisons in the regression models.

Parentally granted autonomy. The autonomy measures focus on the extent to which parents allow their children to make their own decisions regarding certain matters. Arguably, granting too much autonomy to adolescents may provide greater opportunity to engage in deviant behaviors. The Add Health data include seven questions gauging the extent to which parents allow their children to make their own decisions. The topics of these questions include time to be home on weekend nights, people one hangs around with, what to wear, how much television one watches, the content of television programs watched, what time to go to bed on week nights, and what to eat.

Table 13 (see Appendix H) presents the percentages of female respondents who claim their parents allow them to make their own decisions on each of the seven autonomy measures. While the majority of respondents claim their parents grant them autonomy on most decisions, only 28.5 percent of respondents were allowed to make their own decisions regarding the time they had to be home on weekend nights (i.e., curfew). Based on the conceptual framework used in this research, being allowed to stay out as late as one wishes without an imposed curfew would provide increased opportunity to engage in deviant behaviors.

When factor analysis was conducted on all parental control measures, results for both the overall 34 variable factor analysis and the analysis of the 7 autonomy variables combined suggested that 5 of these autonomy variables consistently load onto one component. Rather than

using factor analysis to create an index for autonomy, I chose to create the index manually so that responses would remain ordinal and easily interpretable in the regression analyses⁹. I created the *autonomy index* by summing the dichotomous responses for the 5 autonomy measures that consistently loaded onto one component in factor analysis, resulting in an index with a range of 0 to 5. Frequencies for the autonomy index are reported in Table 14. The mean score on the autonomy index was 4.02 with a standard deviation of 1.22.

In addition to the five autonomy measures that loaded onto one component, there were two autonomy variables that did not load onto the same component in the factor analysis results. These two variables measured time to be home on weekend nights and people one hangs around with. As theoretically these two measures are particularly important to the examination of peer influence on substance use and parental control, I chose to use these two individual measures in the data analyses in addition to the *autonomy index* measure. These variables were renamed *autonomy curfew* and *autonomy friends*. The frequencies for these two measures are reported in Table 13. As previously stated, 28.5 percent of female respondents claimed to be allowed to make their own decisions regarding curfew. Nearly 86 percent claimed they were allowed to make their own decisions regarding who they hang around with (i.e., *autonomy friends*).

Table 14. Frequencies and Percentages for *Autonomy Index*

Autonomy Index Score	% Female Respondents	# Female Respondents
0	1.3	44
1	3.2	104
2	8.6	282
3	14.4	471
4	23.5	768
5	<u>49.0</u>	<u>1,602</u>
	Total: 100.0	3,271

⁹ Although the coefficients would be easily interpretable for a continuous measure of autonomy, the main measure used for male associates in multivariate regression analyses is categorical requiring the use of estimated means and significant differences in means across categories to interpret effects on substance use. To be consistent, I created each parental control measure to be ordinal so that discussions of results could be consistent.

Of the measures for parental control included in these analyses, the autonomy measures were the only category of parental control variables in which the number of missing cases may be problematic. There were over 80 cases missing data on each of the three final autonomy measures included in regression analyses. Tests to determine if subjects with missing data on these three autonomy measures indicated that those with missing data may significantly differ with regards to substance use from those who provided data on parentally granted autonomy. But rather than using imputation since imputation can only be used on scale variables and these measures are either dichotomous or categorical, I chose to exclude these missing cases from the regression analyses.

Time Spent in Shared Activities with Parents. The second category of parental control measures—time spent in shared activities with mother and father—taps into parental supervision and the fact that time spent with parents is time under parental supervision. Theoretically, this should translate into decreased opportunity to engage in deviant behavior. The time spent in shared activities with parents asks a separate series of questions for both the residential mother and residential father¹⁰. This series of questions includes ten activities the respondent may have done with each parent over the previous 4 weeks—including having gone shopping, played a sport, attended a religious service or church event, attended a movie/play/museum/concert/sporting event/etc., talked about dating or a party attended, talked about a personal problem, talked about school work or grades, talked about other things done in school, worked on a school project together, and had a serious fight about behavior. The same series was asked of each residential parent.

¹⁰ Residential parent in each of these cases is not restricted to biological relations but could include an adoptive mother, stepmother, foster mother, or other form of maternal figure who the respondent resides with. The same was true for father figures whom the respondent resides with.

The percentages of female respondents who claim to have spent time in each of these activities over the previous 4 weeks with either their mother or father are shown in Table 15 (see Appendix I). For every activity except playing sports, more respondents reported engaging in it with their mothers than with their fathers. Time spent in shared activities was higher for mothers than fathers for shopping, attending a religious service or church event, or attending a movie, play, museum, concert, sporting event or other cultural event. For the four variables that focus on talking—talked about dating or party attended, talked about a personal problem, talked about school work or grades, and talked about other things done in school—more respondents claimed to have talked about things with their mothers than with their fathers.

Results of factor analyses indicated that there were specific combinations that tended to keep mother and father variables separate and there were several that consistently combined certain activities shared with mother with the corresponding activity shared with father. Individually, time spent shopping with mother, playing a sport with mother, and attending an event with mother consistently loaded together. Similarly, playing a sport with father, attending a religious service with father, and attending an event with father consistently loaded onto one factor. When both mother and father variables were included in the same factor analysis, the playing a sport with and attending an event together for each parent loaded onto one component.

Based on the results of factor analysis, I created two index measures—*time with mother* and *time with father*—to be used in data analyses. Similar to the index measure for autonomy, I chose to create these indices manually rather than using factor analysis to generate an index measure that would result in a continuous measure. *Time with mother* summed the individual dichotomous responses for time spent shopping with mother, playing a sport with mother, and attending an event with mother, resulting in an index with a range from 0 to 3. *Time with father*

was created in the same manner by summing the responses for playing a sport with father, attending a religious service with father, and attending an event with father, also resulting in an index with a range from 0 to 3.

Table 16 reports the frequencies and percentages for *time with mother* and *time with father*. Very few female respondents claimed to have spent time in all 3 shared activities for either mother or father (4.6 and 3.7 percent, respectively). Frequencies for spending time in either one or two activities were higher for mother with 49.4 percent sharing time in one activity and 24.1 percent spending time in two activities compared to 22.8 percent having spent time in one activity with father and 10 percent spending time in two activities with father. While 63.5 percent of female respondents had not shared in any of the activities included in the *time with father* measure, 22 percent had not shared in any of the activities included in the *time with mother* measure. The mean for *time with mother* was 1.11 while the mean for *time with father* was .54.

While a third index that combined the playing a sport with and attending an event measures for both parents could have been used, I chose not to do so for two reasons. First, both playing a sport with and attending an event with parent are already included in the individual

Table 16. Frequencies and Percentages for *Time with Mother* and *Time with Father*

	% Female Respondents	# Female Respondents
No Time Spent in Shared Activities with Mother	22.0	736
Shared 1 Activity w/ Mother	49.4	1,654
Shared 2 Activities w/ Mother	24.1	806
Shared 3 Activities w/ Mother	<u>4.6</u>	<u>155</u>
Total:	100.0	Total: 3,351
No Time Spent in Shared Activities with Father	63.5	2,129
Shared 1 Activity w/ Father	22.8	763
Shared 2 Activities w/ Father	10.0	335
Shared 3 Activities w/ Father	<u>3.7</u>	<u>124</u>
Total:	100.0	Total: 3,351

indices for time spent with mother and father. Thus using this third index would have been redundant. Second, since I am interested in comparing mother and father variables individually whenever possible, I decided that using the two separate indices was more appropriate than the one combined index.

Although factor analysis results also indicated that several of the other shared activities variables loaded together, I chose not to include those variables in these analyses. While talking about things with parents and having a serious fight with parents are important to understanding the parent-child relationship, I did not believe that they were particularly applicable in measuring parental control and relative opportunity. Measures of time spent in specific events and activities with parents are more consistent with Hirschi's (1969) element of "involvement" and I believe more indicative of decreased opportunity to engage in deviant behavior.

Parental Presence at Home. The final series of parental measures included in these analyses focuses on parental presence in the home throughout the day. Similar to the time spent in shared activities with parental variables, the parental presence variables measure whether the respondent spends any time away from the supervision of at least one parent, thus providing greater opportunity to engage in delinquent behaviors.

The series of questions included in this measure indicate whether each parent was home when the respondent left for school in the morning, when they returned home from school, and when they went to bed at night. The same series of questions was asked for both the residential mother and residential father separately. Possible responses for each of these questions were never, almost never, some of the time, most of the time, or always. The questions about being home prior to and upon return from school also included a response of "parent takes me to/picks

me up from school.” These responses were recoded to be combined with the “always” response for each of these questions.

Table 17 (see Appendix J) reports female respondents’ mother and father presence in the home throughout the day. From these results it appears that the majority of female respondents have a mother at home when leaving for school either all the time or most of the time (73.8 percent) and again at bedtime (88.3 percent). Nearly half (49.1 percent) have a mother home at least most of the time if not all of the time when returning from school. The rates of father presence at such times are much lower¹¹. Only 34.1 percent of females have a father home at least most of the time when leaving for school, only 18 percent upon returning home from school, and only 54.9 percent at respondent’s bedtime.

Results of factor analysis indicated that mother presence and father presence consistently load onto 2 separate components. I therefore created two separate index measures—*mother home* and *father home*—for each of mother and father presence that will allow me to make comparisons between mother and father effects on substance use. Each of these indices was created by combining the “present when returning from school” and “present at respondent’s bedtime” measures for each parent. My decision to exclude the “present when leaving for school” measures was made because deviant behavior is unlikely to occur in the early morning hours prior to school but more likely to occur in the time after school and in the evening.

To create each parental presence index, I averaged the responses for the “present when returning from school” and “present at respondent’s bedtime” measures. I then collapsed categories to maintain the Likert scale with a range from 0 to 4. I rounded values down in order

¹¹ Some of the disparities in rates of father and mother presence at home throughout the day may be due to the lack of a father figure living in the same house as the respondent. In cases where the biological father did not reside with the respondent, they were asked to answer these questions based on the man who functions as a father in the respondent’s household.

to err on the side of caution. Thus, “0.5” was recoded as “0”, “1.5” was recoded as “1”, “2.5” was recoded as “2”, and “3.5” was recoded as “3”. Rounding down means the parent was present “at least” as often as a category indicates if not more so. Rounding up would mean that some cases might be coded as “always” present when in fact on some occasions the parent was not present and thus there were a few opportunities to engage in illegal substance use. Frequencies and percentages for *mother home* and *father home* are reported in Table 18 (see Appendix K). The means for *mother home* and *father home* (2.68 and 1.53, respectively) indicate that mothers are more likely to be home in the afternoons and at bedtime than fathers.

Control Measures

Additional variables are included in data analyses because prior research suggested that these variables might impact the likelihood that an adolescent engages in deviant behavior. The control variables included in these analyses are race, ethnicity, age, and religiosity. Very few cases were missing for each of these variables and I therefore decided to simply exclude those cases from the regression analyses.

Hispanic. A dichotomous measure of ethnicity based upon the question “Are you of Hispanic or Latino origin?” Responses for this question were coded as “1” to indicate the respondent claimed to be Hispanic/Latino and “0” for non-Hispanic/Latino respondents. Over eighty-eight percent of respondents were classified as non-Hispanic/Latino. The percentages of respondents in each racial and ethnic group are shown in Table 19 (see Appendix L).

Race. As an indicator of race, respondents were categorized by the survey administrator as being “White/Caucasian” (race=1), “Black/African American” (race=2), “American Indian/Native

American” (race=3), “Asian/Pacific Islander” (race=4), or “Other” (race=5). The majority of the respondents included in these analyses are White/Caucasian (65.4 percent). An additional 25.1 percent of female respondents are Black/African American. All other racial categories make up less than 5 percent of the total sample of female respondents. The percent of respondents in each racial group are reported in Table 19.

In order to make the “race” variable more easily interpretable for some analyses, I created a series of dichotomous variables for each racial category. The first in this series of dichotomous variables coded all “White/Caucasian” respondents as “1” and all others as “0”. The second coded all “Black/African American” respondents as “1” and all others as “0”. This same process was used to complete dichotomous measures for “American Indian/Native American,” “Asian/Pacific Islander,” and “Other.”

Age. Age was based on responses to the question “How old are you?” The ages of respondents ranged from 11 to 20 with a mean age of 14.97.

Religiosity. The final control variable included in these analyses was a measure of religiosity that was based on responses to the question “How important is religion to you?” In the original question from the Add Health data, respondents could indicate that religion was either “very important,” “fairly important,” “fairly unimportant,” “not important at all,” or they could claim “no religion” (originally coded as a “legitimate skip”). In creating a new measure of religiosity, I retained all the original coding categories¹² with the exception of combining the “no religion” and “religion not important at all” responses into one category. The respondents’ self-reported religiosity is reported in Table 20 (see Appendix M). Over three-quarters of females claimed

¹² Although religiosity is coded categorically and could be transformed into a series of dichotomous variables, I chose not to do so because the coding categories for religiosity represent a progression from religion being very important to not important and this progression is meaningful and easily interpretable in the regression models.

that religion was either very important (47.5 percent) or fairly important (32.2 percent) in their lives.

DATA ANALYSIS

All data analyses were conducted using the statistical program SPSS version 16.0. This software was accessed through the University of Tennessee's Office of Information Technology website (<http://www.analysis.utk.edu>).

Complex Sampling Design

Analyses were conducted using complex sampling design procedures. Because the Add Health sample high schools were selected systematically with the probability of selection being based on the school's enrollment, the final selection of students was practically self-weighting (Tourangeau & Shin, 1999). But from the original selection of 80 sample high schools, some schools chose not to take part and were replaced with similarly representative schools based on the criteria of school size, school type, urbanicity, percent White, grade span, percent Black, census region, and census division.

With all originally selected schools not participating and not all students in the final sample of schools participating, core sample weights were created for each sample that adjust for both school-level and student-level non-response (Tourangeau & Shin, 1999). The main reasons for the creation of these sample weights include:

- 1) The ability of sample totals to serve as estimates of population totals
- 2) To compensate for selection probability differences across sample members
- 3) To compensate for response rates of different sample subgroups, and
- 4) To adjust for chance fluctuations of the sample composition from the population composition.

In addition to using weights to adjust for non-response, researchers must also take into account the clustered sample design used in the collection of Add Health data. Due to this clustered sampling design, final observations were not independent or identically distributed (Chantala & Tabor, 1999). Failure to account for this sampling design can result in underestimated standard errors and increased likelihood of false-positive results (Chantala, 2006).

Prior to running any analyses, I used the “complex sampling design- prepare for analysis” function to create a plan in SPSS that would employ weights to adjust for the unequal probability of selection and to correct for the clustered nature of the Add Health sample. In creating this plan, I designated the “gswgt1” (i.e., Wave I grand sample weight) and “cluster2” (i.e., sample cluster for stratum 2) as the appropriate sample weights to include in my analyses.

Pearson’s Correlations

As a preliminary step a series of correlations were run to examine the associations among the variables included in this research. The Pearson’s correlation coefficients for each correlation are reported and discussed in the next chapter. Prior to examining the correlations among different categories of variables (i.e., peer associate measures, parental control measures, and control measures) I ran correlations within categories of variables to be sure that correlation coefficients were not large enough to indicate that multicollinearity might be problematic within these analyses. Results indicated that the only instance where multicollinearity may be of concern was among the various male associate measures and this concern is addressed in the next chapter when discussing the results of these correlations.

Examination began with how each type of male associate was associated with the presence of the other types of male associates and how the presence of female friends related to the presence of male associates. The next set of correlations focused on the associations between male associates and parental control measures as well as how male associates and female associates differed in associations with parental control.

Before beginning to compute bivariate regression analyses, correlations between each male and female associate variable and the two substance use indices were run. Results indicated significant associations between each peer associate variable and the *combined substance use index* but correlation results for each peer associate variable and the *minor substance use index* were not statistically significant.

After examining the effects of peer associates on female substance use, associations and relationships between parental control and female substance use were examined. I began this examination with a series of correlations between each parental control measure and each of the substance use indices. Similar to the associations with peer associates, parental control measures were significantly correlated with the *combined substance use index* but the correlation coefficients for most parental control measures and the *minor substance use index* were not statistically significant.

Finally, correlations for each additional control measure (i.e., *ethnicity, race, age, and religiosity*) and each of the substance use indices were run to determine associations between each of these measures and female substance use. Again results indicated significant associations with the *combined substance use index* but not statistically significant correlations with the *minor substance use index*.

Regression Analyses

All regression analyses were run using Complex Samples General Linear Models (CSGLM) of regression. As addressed earlier in this chapter, the Add Health data needs to be analyzed using a complex sampling design that takes into account the appropriate weights. But the types of analyses available to use with a complex sampling design are limited in SPSS. With only four types of regression analyses available, I chose the most appropriate form of regression analysis when using a dependent variable that is continuous and independent variables that are categorical.

Using CSGLM regression produces parameter estimates, standard errors, confidence intervals, *t*-tests, and design effects for model parameters. In addition, researchers can request estimated marginal means for each category of a variable included in the model and tests for significant differences in estimated marginal means between each category of a variable and a comparison category. While parameter estimates are useful in quantifying the effect of each predictor on the dependent variable while holding all other variables in the model constant, the estimated marginal means are more easily interpretable.

Using estimated means may provide a more accurate estimate of substance use for respondents meeting specific criteria on a variable than would be predicted by the use of a slope to calculate expected substance use. Using categorical variables in these analyses means that interpretations of coefficients or standardized coefficients are not meaningful in the way that they are for continuous variables. For example, a coefficient for *race* cannot be interpreted as “a one unit increase in *race* results in a _____ increase in substance use.” Rather, comparisons among categories of *race* can be interpreted by using estimated means and differences in those means to determine significant differences between categories. Therefore, the results for

regression analyses reported in the next chapter are discussed in terms of estimated means and significant differences in means among categories of a variable.

Bivariate regression analyses were first run for each variable to determine individual effects on female substance use. Beginning with peer associate variables, results of each bivariate regression indicated each peer associate variable had a significant effect on the *combined substance use index* but that most peer associate variables were not statistically significant when regressed on the *minor substance use index*. Similar results were found for the bivariate regressions of most parental control variables on each substance use index. Therefore, only the bivariate regression results using the *combined substance use index* are reported in depth in the next chapter and all multivariate regression models were run using the *combined substance use index* as the dependent variable.

Following the bivariate regressions of peer associate and parental control measures on the *combined substance use index*, a series of multivariate regression analyses were run in which one combined measure for male associates (i.e., *male associate combinations*) was regressed on substance use while parental control measures were controlled for to determine if the effects of peer associates on female substance use were mediated by the parental control measures¹³. Rather than regressing each individual peer associate measure on substance use while controlling for parental control, using the *male associate combinations* measure allowed me to run only one multivariate regression model for each set of parental controls rather than running analyses for each individual measure of peer associates. By taking into account the presence and absence of each type of male associate while controlling for the presence of female friends, the *male*

¹³ I attempted to include interaction terms in these regression models to determine if there were significant interaction effects between *male associate combinations* and each parental control. Though results reported estimated means for all possible combinations of categories for each variable included in the interaction terms, results did not report significance. Therefore, interaction terms were excluded from all multivariate regressions.

associate combinations measure allows for comparisons to be made among categories without having to run numerous multivariate regression analyses. Therefore, all multivariate models were run using the *male associate combinations* measure.

Finally, one final multivariate regression model was run that included the *male associate combinations* measure and all parental control and additional control variables that were statistically significant in previous regression models. Variables that did not have statistically significant effects on female substance use in previous regression models were dropped from the final regression model¹⁴. This resulted in the exclusion of *autonomy friends*, *autonomy curfew*, *father home*, and *ethnicity* from the final regression model.

¹⁴ Excluding variables that did not have significant effects in earlier regression models had very little effect on the r^2 for the final model. Including these variables in the final model would have resulted in an r^2 of 29.4 while excluding them resulted in a model r^2 of 27.0.

CHAPTER V RESULTS

The results of all data analyses are reported in this chapter. I initially computed correlations—among male associate measures, between male associate and female associate measures, and between male associate, female associate, and parental control measures—to determine if relationships existed between variables. I then ran bivariate regressions to determine the effect of each male and female associate variable on substance use.

Before running multivariate models that regressed *male associate combinations* on the *combined substance use index*, bivariate regressions where each parental control measure was regressed on substance use were run. Then three separate models for *male associate combinations* and *combined substance use index* were run controlling for each set of parental control measures—parentally granted autonomy, parental presence at home, and time spent in shared activities with parents—before running a model controlling for all parental controls measures. Finally, after running bivariate regressions for each additional control measure (i.e., *ethnicity*, *race*, *age*, and *religiosity*) a final model that included *male associate combinations*, all parental control variables, all additional control variables, and the *combined substance use index* was run. Results for all analyses are discussed below.

CORRELATIONS

Peer Associate Variables

My review of the literature indicated that having a larger cross-sex friendships network is related to an increased likelihood of having a romantic relationship (Connolly & Johnson, 1996; Connelly et al. 1998). Research also indicated that sexual partners are likely to be either

romantic partners, former romantic partners, or friends (Cooksey et al., 2003; Manning et al., 2000; Manning et al. 2005). Based on this literature, I expected to find a significant correlation between the presence of male friends and these other two types of male associates. Therefore, my analyses began with computing correlations between each type of male associate. The results are reported in Table 21 and provide more information about how the presence of one type of associate was related to the presence of other types of associates.

Each individual male associate variable, whether measured dichotomously or as a count variable, was positively correlated with every other male associate variable. All correlations were significant at the .001 level except the correlation between *number of male friends* and the dichotomous *has sexual partner* measure was significant at only the .05 level. This included the relationships between male friends and romantic partners, male friends and sexual partners, and between romantic partners and sexual partners. These results indicated that having male friends is positively correlated with having romantic and sexual partners and having romantic partners is positively correlated with having sexual partners.

Table 21. Correlations among Male Friends, Romantic Partners, and Sexual Partners¹⁵

	Has Male Friend	Number of Male Friends	Has Romantic Partner	Number of Romantic Partners	Has Sexual Partner
Has Male Friend	1.00				
Number of Male Friends	.584***	1.00			
Has Romantic Partner	.281***	.210***	1.00		
Number of Romantic Partners	.254***	.268***	.793***	1.00	
Has Sexual Partner	.123***	.076*	.292***	.272***	1.00

* $p \leq .05$, *** $p \leq .001$

¹⁵ Although at least one of the correlation coefficients (i.e., between *has romantic partner* and *number of romantic partners*) may be highly correlated, none of these measures are ever included in the same regression model and therefore do not create a potential problem with multicollinearity.

These correlations may in part reflect overlap in one male being nominated in more than one capacity. Directions to respondents indicated that a current boyfriend should be listed as male friend 1 in the friendship nomination data. Although at least one of the correlation coefficients (i.e., between *has romantic partner* and *number of romantic partners*) may be highly correlated, none of these measures are ever included in the same regression model and therefore do not create a potential problem with multicollinearity.

Also of interest are the correlations between the presence of female associates and male associates. Results of correlations between each female friend and male associate measure are reported in Table 22. With regards to the combined measures for the presence of male associates, both *has male associate* and *number of types of male associates* were positively correlated ($p \leq .001$) with both measures of female friends¹⁶. These results show that the presence and larger number of female friends is associated with an increased likelihood of the presence and a larger number of types of male associates. A correlation could not be computed between *male associate combinations* and *has female friend* since *has female friend* was held constant in the creation of the *male associate combinations* measure. The correlation between

Table 22. Correlations among Female Friend and Male Associate Measures

	Has Female Friend	Number of Female Friends
Has Male Friend	.245***	.204***
Number of Male Friends	.204***	.530***
Has Romantic Partner	.062***	.078
Number of Romantic Partners	.071***	.139***
Has Sexual Partner	.008	-.075*
Has Male Associate	.165***	.146***
Number of Types of Male Associates	.122***	.070*
Male Associate Combinations	.	-.060

* $p \leq .05$, *** $p \leq .001$

¹⁶ The correlation between *number of female friends* and *number of types of male associates* was only significant at the .05 level.

male associate combinations and *number of female friends* was not statistically significant.

Correlations run between the two measures for female friends and the two measures for male friends produced similar results. Not only were *has female friend* and *has male friend* significantly correlated ($p \leq .001$) with one another, *number of male friends* and *number of female friends* were also significantly correlated ($p \leq .001$). Each of these correlations was positive in direction indicating that having larger numbers of female friends is associated with having larger numbers of male friends.

The associations between female friends, romantic, and sexual partners revealed that while *has female friend* was positively correlated ($p \leq .001$) with *has romantic partner*, the correlation between *has romantic partner* and *number of female friends* was not statistically significant. The correlations for both female friend measures were positively correlated ($p \leq .001$) with *number of romantic partners*. While the correlation between *has female friend* and *has sexual partner* was not statistically significant, the correlation between *has sexual partner* and *number of female friends* was negative and statistically significant but only at the .05 level. Thus it appears that while the presence of female friends is associated with a greater presence of male friends and romantic partners, fewer female friends may be associated with an increased likelihood of sexual partners.

Peer Associates and Parental Controls

Table 23 (see Appendix N) contains a table that lists all the male and female associate variables and the correlations between each of them and each of the measures of parental control. The results for the combined measures of male associates—*has male associate*, *number of types of male associates* and *male associate combinations*—are reported before turning to each

individual measure for the various types of male associates. Each of the combined measures for the presence of male associates is positively correlated ($p \leq .001$) with the *autonomy index*. *Has male associate* and *number of types of male associate* (but not *male associate combinations*) were positively correlated ($p \leq .001$) with the *autonomy friends* measure. Additionally, the *autonomy curfew* measure was positively correlated ($p \leq .001$) to the *number of types of male associate* and *male associate combinations* but not with the dichotomous *has male associate* variable. These results indicate that increased autonomy granted to female respondents by their parents is associated with a larger number of male associates.

The parental presence at home measures (i.e. *mother home* and *father home*) were both negatively correlated ($p \leq .001$) with *has male associate*, *number of types of male associates* and the *male associate combinations* measures. While *time with mother* and *time with father* were both negatively correlated ($p \leq .001$) with *number of types of male associates* and *male associate combinations*, neither correlated with the *has male associate* measure. In contrast to parentally granted autonomy, each of these correlations was negative and suggest that both parental presence at home and time spent in shared activities with parents are associated with having fewer male associates.

In looking at each form of male associate individually, significant correlations with parental control measures were found to be in the same direction as those correlations found for the combined male associate variables discussed above. The *autonomy index* was positively correlated ($p \leq .001$) with each of the dichotomous measures—*has male friend*, *has romantic partner*, and *has sexual partner*—as well as the count measures for each—*number of male friends* and *number of romantic partners*. The correlations for *autonomy curfew* and *autonomy friends* were not as consistent.

The *autonomy friends* measure was positively correlated with *number of male friends* ($p \leq .01$), the dichotomous *has male friends* measure ($p \leq .001$), and the dichotomous *has romantic partner* measure ($p \leq .05$) but not with *number of romantic partners* or *has sexual partner*. The *autonomy curfew* measure was positively correlated ($p \leq .001$) with *has sexual partner* but correlations between *has sexual partner* and *has male friend*, *number of male friends*, *has romantic partner*, and *number of romantic partners* were not statistically significant. The positive correlations indicate that, similar to the findings for the combined measures of male associates, greater autonomy of female respondents is associated with an increase in number of male associates.

Both parental presence at home variables (*mother home* and *father home*) were negatively correlated with *has male friend* ($p \leq .01$), *has romantic partner* ($p \leq .001$), *number of romantic partners* ($p \leq .001$), and *has sexual partner* ($p \leq .001$). These correlations indicate that parental presence at home is associated with a decreased likelihood of having male friends, romantic partners, and sexual partners.

Time with mother and *time with father* were negatively correlated ($p \leq .001$) with both *has romantic partner* and *number of romantic partners* as well as *has sexual partner*. They were not significantly correlated with either measure of male friends. These results indicate that time spent in shared activities with parents is associated with a lesser likelihood of association with male romantic partners and sexual partners but not male friends.

I then computed correlations for all the same parental control measures using both female friend variables (i.e., *has female friend* and *number of female friends*) to see how female friends compared to male friends with regard to parental control. Similar to the measures for male friends, both *has female friend* and *number of female friends* were correlated with *autonomy*

friends. However, while both male friend measures were positively correlated with the *autonomy index*, neither measure for female friends was correlated with *autonomy index* or *autonomy curfew*. Thus while not related to the presence of female friends, parentally granted autonomy is related to the presence of male friends.

The results for correlations with the parental presence at home variables showed that *father home* was positively correlated with both *has female friend* ($p \leq .001$) and *number of female friends* ($p \leq .01$). *Mother home* was positively correlated ($p \leq .001$) with *number of female friends* but not with *has female friend*. The association between female friends and parental presence was very different from that found for male friends. While *has male friend* (but not *number of male friends*) was found to be negatively correlated ($p \leq .01$) with both *mother home* and *father home*, the correlations between female friends and these parental presence at home measures was positive. These results indicate that while parental presence at home is associated with greater likelihood of female friendships, it may be associated with a lesser likelihood of male friendships. Finally, while both of the time spent in shared activities measures (i.e. *time with mother* and *time with father*) were positively correlated ($p \leq .001$) with both measures of female friends, the correlations between each time spent in shared activities measure and both *has male friend* and *number of male friends* were not statistically significant.

BIVARIATE RELATIONSHIPS

Minor Substance Use

Prior to running correlations and bivariate regressions, my plan had been to use two separate substance use indices as dependent variables. By running analyses for both a *minor substance use index* and a *combined substance use index*, I would be able to compare the

influences of male associates on minor substance use and substance use when harder substances were included. However, correlations for the *minor substance use index* and each male associate variable indicated that none of the male associate variables—*has male friend*, *number of male friends*, *has romantic partner*, *number of romantic partners*, *has sexual partner*, *has male associate*, *number of types of male associate*, or *male associate combinations*—had statistically significant correlations with the use of minor substances. The correlations between minor substance use and both female friend measures were also not statistically significant. Results of correlations between each substance use index and all other variables included in these analyses are reported in Table 24.

In addition to correlations between the male and female associate variables and the *minor substance use index* not being statistically significant, correlations between the *minor substance use index* and most of the parental control measures were also not statistically significant. The only variable that had a significant positive correlation with minor substance use was *mother home* ($p \leq .01$).

Bivariate regression analyses confirmed that the majority of variables included in this research did not significantly affect minor substance use. With regards to male and female associate variables, only *number of male friends* ($p \leq .01$) and *number of female friends* ($p \leq .05$) had positive effects on minor substance use and those were negligible¹⁷. With regard to parental control measures, results for bivariate regressions indicated that *father home* was the only parental control measure to significantly affect ($p \leq .05$) minor substance use. The effect of father presence at home was negative, indicating that increased father presence decreased the

¹⁷ The r^2 for the *number of male friends* bivariate model suggested that the number of male friends explained 1 percent of the variance in minor substance use; the r^2 for the *number of female friends* was even smaller at .003.

Table 24. Correlations between Substance Use Indices and other Variables

	Minor Substance Use Index	Combined Substance Use Index
Peer Associate Measures		
Has Male Friend	.001	.147***
Number of Male Friends	.028	.150***
Has Romantic Partner	.015	.283***
Number of Romantic Partners	.021	.304***
Has Sexual Partner	.007	.393***
Has Male Associate	.007	.155***
Number of Types of Male Associates	.013	.404***
Male Associate Combinations	.000	.412***
Has Female Friend	-.029	.067***
Number of Female Friends	-.019	.018
Parental Control Measures		
Autonomy Index	-.032	.200***
Autonomy Curfew	-.009	.091***
Autonomy Friends	-.032	.046**
Mother Home	-.053**	-.163***
Father home	-.035*	-.072***
Time with Mother	-.016	-.150***
Time with Father	-.017	-.150***
Additional Control Measures		
Ethnicity	.032	-.026
Race	-.007	-.100
White/Caucasian	.007	.182***
Black/African American	-.014	-.180***
Native American/American Indian	.066***	-.034*
Asian/Pacific Islander	-.012	-.011
Other	-.01	-.013
Age	-.058***	.222***
Religiosity	.031	.210***

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

likelihood of female substance use. The model r^2 indicated that *father home* explained only .2 percent of the variance in minor substance use.

As almost all of the main variables had no significant correlation or bivariate association with minor substance use, all regression models reported below were run using the *combined substance use index* as the dependent variable. After an examination of the bivariate effects of each male and female associate measure on substance use, multivariate models were run using one combined male associate measure—*male associate combinations*. This combined measure takes into account the presence of various types of male associates without having to run individual models for each type of male associate. Multivariate models were first run with just the inclusion of parental control measures before final models were run with the inclusion of both parental control measures and other control variables.

Male Associates and Combined Substance Use

Correlation results indicated that all male associate variables were positively correlated ($p \leq .001$) with the *combined substance use index*. These results show that although the presence of male associates may not be related to the use of minor substances, it is related to substance use when harder substances are involved.

Bivariate regressions were run individually for each male associate variable and the *combined substance use index*. Table 25 (see Appendix O) reports the significance levels and the r^2 for each of these bivariate models.

Each of the male associate and female associate variables significantly ($p \leq .001$) affected substance use. Based on the r^2 for each bivariate model, when both a dichotomous and a count measure were available, the count measure explained a much larger percent of the variance in

female substance use. While *has male associate* only explains 2.4 percent of the variance in substance use, the *number of types of male associates* measure explains 18.5 percent of the variance and the *male associate combinations* measure explains 18.3 percent of the variance.

Has male friend explained 2.4 percent of the variance in female substance use while *number of male friends* explained 4 percent of the variance. As for the two other types of male associates included in these analyses, romantic partners and sexual partners explained more variance in female substance use than that of male (and female) friends. With regard to romantic partners, the dichotomous measure (i.e., *has romantic partner*) once again explained a smaller amount of the variance in female substance use than the count measure (i.e., *number of romantic partners*). *Has romantic partner* explained 8.2 percent of the variance while *number of romantic partners* explained 10 percent of the variance. The only measure for sexual partners used in these analyses (i.e., *has sexual partner*) explained 15.7 percent of the variance in female substance use—a far greater amount than that which was explained by male friends or male romantic partners.

In running these bivariate regressions, I used the “estimated means” function to test the significance of differences in the estimated means for each category within a variable. The dependent variable (i.e., *combined substance use index*) was created using factor analysis and thus the scores for *combined substance use index* have a mean of 0 with a standard deviation of 1.0. Descriptive statistics indicate that this *combined substance use index* has a range from -3.62 to 5.22.

The results of the bivariate regressions for each of the combined male associate measures on substance use are reported in Table 26. The results for the individual male associate measure

Table 26. Bivariate Regressions of Combined Male Associate Measures on Substance Use

Bivariate Models	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Has Male Associate on Combined Substance Use Index (N = 3328)</i>				
Intercept	.05	.04		
No Male Associates	-.56***	.04	-.52	
Has Male Associates	.00 ^a	0	.05	.57***
<i>Number of Types of Male Associate on Combined Substance Use Index (N = 3328)</i>				
Intercept	.83***	.08		
No Male Associates	-1.35***	.08	-.52	
Has 1 Type Male Associate	-1.18***	.08	-.35	.17***
Has 2 Types of Male Associate	-.80***	.08	.03	.55***
Has 3 Types of Male Associate	.00 ^a	.	.83	1.35***
<i>Male Associate Combinations on Combined Substance Use Index (N = 3242)</i>				
Intercept	.13	.09		
No Male Associates	-.55***	.09	-.42	
Has MF but no RP or SP	-.55***	.09	-.42	.00
Has MF & RP but no SP	-.16	.09	-.03	.39***
Has MF, RP, and SP	-.67***	.11	.80	1.22***
Other	.00 ^a	.	.13	.55***

*** p ≤ .001

bivariate regressions are found in Table 27. Each male associate variable had a positive effect on substance use indicating that the presence of male associates produced a significantly higher ($p \leq .001$) estimated mean of female substance use than the estimated means for female respondents without male associates. Beginning with the combined male associate measures, those who had at least one type of male associate (*has male associate* = 1) had an estimated substance use mean that was .57 higher than those who had no male associates. Similar results are found when looking at the *number of types of male associates* where having 1, 2, or 3 types of male associates resulted in a significantly higher estimated mean than having no male associates. While the difference in estimated means between “no types of male associates” and “1 type of male associate” is only .17, the difference for those with “2 types of male associates” is .55, and those with “3 types of male associates” is 1.35. This difference in estimated means between those with “no types of male associates” and those with all “3 types of male associates” is by far the largest difference found for any of the male associate (and female associate) variables included in these analyses.

Estimated means for *male associate combinations* indicate that female respondents with no male associates had an estimated mean substance use of -.42. Females who had male friends but no romantic or sexual partners also had an estimated mean substance use of -.42. Thus there was no difference in substance use between females with no male associates and females with male friends but no romantic or sexual partners. Comparing these results to those found for *number of types of male associates* illustrates the importance of not only accounting for the number of male associates, but the type of association.

Additional results from the bivariate regression of *male associate combinations* on the *combined substance use index* indicate that females who had both male friends and romantic

Table 27. Bivariate Regressions of Individual Male Associate Measures on Substance Use

Bivariate Models	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Has Male Friend on Combined Substance Use Index (N = 3354)</i>				
Intercept	.05	.04		
No Male Friends	-.45***	.04	-.40	
Has Male Friends	.00 ^a	.	.05	.45***
<i>Number of Male Friends on Combined Substance Use Index (N = 914)</i>				
Intercept	.34**	.13		
No Male Friends	-.79***	.14	-.44	
Has 1 Male Friend	-.40**	.15	-.05	.39***
Has 2 Male Friends	-.34	.13	.10	.54***
Has 3 Male Friends	-.24	.14	.15	.59***
Has 4 Male Friends	-.19*	.14	.04	.48***
Has 5 Male Friends	.00 ^a	.	.34	.78***
<i>Has Romantic Partner on Combined Substance Use Index (N = 3310)</i>				
Intercept	.20***	.05		
No Romantic Partners	-.60***	.05	-.40	
Has Romantic Partners	.00 ^a	.	.20	.60***
<i>Number of Romantic Partners on Combined Substance Use Index (N = 3297)</i>				
Intercept	.48***	.13		
No Romantic Partners	-.88***	.13	-.40	
Has had 1 Romantic Partner	-.38**	.13	.10	.50***
Has had 2 Romantic Partners	-.04	.14	.44	.84***
Has had 3 Romantic Partners	.00 ^a	.	.48	.88***
<i>Has Sexual Partner on Combined Substance Use Index (N = 3345)</i>				
Intercept	.74***	.07		
No Sexual Partners	-.96***	.07	-.21	
Has had Sexual Partners	.00 ^a	.	.74	.95***

* p ≤ .05, ** p ≤ .01, *** p ≤ .001

partners had an estimated mean substance use .17 higher than those without male associates. Females who had all three types of male associates had an estimated mean 1.22 higher than those without male associates. Females who had some other combination of male associates—had romantic partner but no male friends or sexual partners, had sexual partner but no male friends or romantic partners, had male friends and sexual partners but no romantic partners, or had romantic and sexual partners but no male friends—had an estimated mean substance use of .13 which is .55 higher than the estimate mean for those with no male associates.

The results for *has male friend* indicated that those with male friends had an estimated mean substance use that was .45 units higher than those without male friends. The results for *number of male friends* indicated a positive effect on substance use whereby larger numbers of male friends resulted in a greater likelihood of substance use. The difference in estimated means for those with 1 male friend from those with no male friends was only .39 but the difference for those with 5 male friends from those with none was .78.

The estimated differences in means for those with no romantic partners compared to those with romantic partners were larger than the differences for male friends and the differences for sexual partners were larger yet. The difference in estimated means for *has romantic partner* was .60. For *number of romantic partners*, the differences increased with each additional romantic partner—with the difference for having had only 1 romantic partner being .50 and the differences for having had 2 or 3 romantic partners being .84 and .88 respectively. The difference in means for *has sexual partner* was even larger than those found for male friends and romantic partners with those who had had sexual partners having an estimated mean .95 units higher than those who had not had a sexual partner. These findings indicate that female respondents with male associates had significantly higher estimated means of substance use than

those without them and that these differences were more pronounced for romantic and sexual partners than for male friends.

Comparing Female and Male Associate Effects on Combined Substance Use

The relationships and effects of male associates on substance use are important in and of themselves, but they need to be compared with the relationships and effects of female friends on substance use. Correlation results indicated that female friends may not influence substance use in the same way that relationships with males do. Whereas all male associate measures were significantly correlated with the *combined substance use index*, only the dichotomous measure for female friends (i.e., *has female friend* but not *number of female friends*) had a significant positive correlation with substance use. Yet results of bivariate regressions for both female friend variables on the *combined substance use index* indicated that both *has female friend* and *number of female friends* had a positive effect ($p \leq .001$) on substance use. Results of these bivariate regressions are reported in Table 28.

Table 28. Bivariate Regressions of Female Friend Measures on Substance Use

Bivariate Models	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Has Female Friend on Combined Substance Use Index (N = 3354)</i>				
Intercept	.01			
No Female Friends	-.39***	.04	-.38	
Has Female Friends	.00 ^a	.10	.01	.39***
<i>Number of Female Friends on Combined Substance Use Index (N = 916)</i>				
Intercept	.12	.11		
No Female Friends	-.66***	.14	-.54	
Has 1 Female Friend	-.08	.14	.03	.57***
Has 2 Female Friends	.04	.16	.15	.69***
Has 3 Female Friends	.05	.12	.16	.70***
Has 4 Female Friends	-.13	.12	-.02	.52***
Has 5 Female Friends	.00 ^a	.	.11	.65***

*** $p \leq .001$

Results for *number of female friends* indicated that having any number of female friends results in a significantly higher ($p \leq .001$) estimated mean for substance use than having no female friends. These findings indicate that having female friends is associated with increased likelihood of substance use just as the presence of male friends was. Yet taken together, the amount of difference in estimated means for both *has male friend* and *has female friend* variables (.45 and .39 respectively) are not as large as those differences found for *has romantic partner* (.60) and *has sexual partner* (.95).

In looking at the model r^2 for the bivariate regressions of each female friend variable on substance use, findings indicate that female friends explain little of the variance in female substance use. Table 29 reports the model r^2 for the bivariate regressions of each female friend variable as well as male friend variables so that comparisons can be made.

The amount of variance explained by the female friend measures was much less than that of the male friend measures. *Has female friend* explained only one half of one percent while *number of female friends* tripled that and explained 1.4 percent of the variance. For the male friend measures, *has male friend* explained 2.1 percent of the variance in female substance use but *number of male friends* doubled that amount with 4 percent of the variance explained. These numbers indicate that male friends explain a greater percentage of the variance in female adolescent substance use than female friends do but the amount of variance explained by each of

Table 29. Model r^2 for Bivariate Regressions of Male and Female Friend Variables on Combined Substance Use

Friend Variable	Model R^2
Has Male Friend*	.021
Number of Male Friends*	.04
Has Female Friend*	.005
Number of Female Friends*	.014

* $p \leq .001$

these is still low in comparison to romantic and sexual partners.

Parental Control and Substance Use

Before adding the parental control measures into the regression analyses between male associate variables and the *combined substance use index*, I first ran a series of correlations and bivariate regressions to determine if parental control measures were indeed related to substance use. Results indicate that both parental presence variables (i.e., *mother home* and *father home*) were negatively correlated ($p \leq .01$) with the *combined substance use index*. Each of the time spent in shared activities measures (i.e., *time with mother* and *time with father*) were also negatively correlated ($p \leq .01$) with female substance use. Finally, all three parentally granted autonomy measures (i.e. *autonomy curfew*, *autonomy friends*, and the *autonomy index*) were positively correlated ($p \leq .01$) with the *combined substance use index*. Thus, while parental presence at home and time spent in shared activities decrease the likelihood of substance use, parentally granted autonomy measures were positively correlated with female substance use demonstrating increased autonomy to be associated with an increased likelihood of substance use. These results are in keeping with the tenets of social control and social bond theory as well as the conceptual model for this research.

Results of bivariate regressions of parental control measures on the *combined substance use index* indicate that each parental control measure significantly affects female substance use. Table 30 (see Appendix P) shows the r^2 for each bivariate regression of a parental control variable on the *combined substance use index*.

Table 31 reports the results of the bivariate regression models for each of the parentally granted autonomy measures. All three parentally granted autonomy measures—*autonomy index*,

Table 31. Results for Bivariate Regressions of Parentally Granted Autonomy Measures on Substance Use

Bivariate Models	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Autonomy Index on Combined Substance Use Index (N = 3271)</i>				
Intercept	-.19***	.05		
Autonomy Index = 0	-.50***	.15	-.32	
Autonomy Index = 1	-.59***	.09	-.40	-.08
Autonomy Index = 2	-.50***	.07	-.31	.01
Autonomy Index = 3	-.50***	.06	-.32	.00
Autonomy Index = 4	-.27***	.05	-.08	.24
Autonomy Index = 5	.00 ^a		.19	.51***
<i>Autonomy Curfew on Combined Substance Use Index (N = 3269)</i>				
Intercept	.14*	.06		
No Autonomy on Curfew Decisions	-.22***	.05	-.08	
Has Autonomy on Curfew Decision	.00 ^a		.14	.22***
<i>Autonomy Friends on Combined Substance Use Index (N = 3273)</i>				
Intercept	.00	.04		
No Autonomy on Friend Decisions	-.14*	.06	-.13	
Has Autonomy on Friend Decisions	.00 ^a		.00	.13*

* $p \leq .05$, *** $p \leq .001$

autonomy curfew, and *autonomy friends*—had positive effects on female substance use ($p \leq .001$ for *autonomy index* and *autonomy curfew*; $p \leq .05$ for *autonomy friends*). As autonomy increased, likelihood of substance use increased. The *autonomy index* explained 4.9 percent of the variance in substance use while *autonomy curfew* explained 1 percent and *autonomy friends* explained only .2 percent. Differences in estimated means indicated that those who had autonomy on curfew decisions had an estimated substance use mean .22 higher than those who did not and those who had autonomy on friend decisions had an estimated mean .13 higher than those without. Although the overall model indicated that the *autonomy index* was significantly related to substance use, tests for differences in estimated means indicated that the only category significantly different from those coded as “0” (i.e., the adolescent was not allowed to make her own decisions on any of the 5 categories of autonomy included in this index) on the *autonomy index* were those who were coded as “5” (i.e., the adolescent was allowed to make her own decisions).

Results for the bivariate regressions of *time with mother* and *time with father* are reported in Table 32 (see Appendix Q) and indicate a negative effect ($p \leq .001$) on substance use. These measures explained 2.5 and 2.6 percent, respectively, of the variance in substance use. Respondents who spent no time in shared activities with their mother or who had no residential mother had an estimated mean for substance use of .25. Those who spent time in all 3 activities included in the *time with mother* measure had an estimated substance use mean .61 lower than those who spent no time in shared activities with their mother. Respondents with no residential father or who spent no time in shared activities with their father had an estimated mean for substance use of .07—a difference of .17 units higher than those who spent time in all 3 activities included in this measure.

Both *mother home* and *father home* had negative effects on female substance use. Results of the bivariate regressions of mother home and father home are reported in Table 33. While maternal presence was significant at the .001 level and explained 3 percent of the variance in substance use, paternal presence was significant at the .01 level and explained only .6 percent of the variance in substance use. Respondents whose mother was never at home or who had no residential mother figure had an estimated substance use mean .74 units higher than those whose mother was always home after school and at bedtime. Differences in estimated means for father home indicate that those with a father always at home had an estimated mean only .17 higher than those whose father was never home.

MULTIVARIATE REGRESSION ANALYSES

The original plan for this research was to run multivariate regression analyses for all male associate measures while controlling for parental control measures. I concluded the overall focus of the research would have been lost in the excessive reporting of regression results. Therefore, I only used the *male associate combinations* measure in all multivariate regression analyses. The *male associate combinations* measure has the added benefit of being able to distinguish between types of male associates. Additionally, by creating response categories for the presence of each type of male associate without the presence of the other two types, I could examine the effects of male friends on female substance use separate from romantic and sexual partners. Preliminary analyses indicated that models using *male associate combinations* explained a greater percent of the variance in female substance use than models using *has male associate* or *number of types of male associates*.

Table 33. Results for Bivariate Regressions of Parental Presence at Home Measures on Substance Use

Bivariate Models	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Mother Home on Combined Substance Use Index (N = 3347)</i>				
Intercept	-.018***	.04		
Mother Never at Home	.74***	.11	.56	
Mother Almost Never At Home	.34**	.11	.17	-.39*
Mother Home Some Of the Time	.24***	.05	.07	-.49***
Mother Home Most Of the Time	.11*	.05	-.06	-.62***
Mother Always Home	.00 ^a		-.18	-.74***
<i>Father Home on Combined Substance Use Index (N = 3350)</i>				
Intercept	-.10	.07		
Father Never at Home	.17*	.08	.07	
Father Almost Never At Home	.13	.08	.04	-.03
Father Home Some Of the Time	.10	.08	.00	-.07
Father Home Most Of the Time	-.06	.08	-.16	-.23***
Father Always Home	.00 ^a		-.1	-.17*

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

To examine if the effects of male associates on substance use change once parental control is accounted for, I ran a series of multivariate regression models in which *male associate combinations* was regressed on the *combined substance use index* with the inclusion of parental control measures in the model. One model was run with the parentally granted autonomy measures, another with the parental presence at home measures, a third with the time spent in shared activities measures, and a fourth that included all parental control measures. Results indicate that the effects of male associates remain significant ($p \leq .001$) with the inclusion of parental control measures in the model. Table 34 reports the model r^2 for each regression model and the significance of each variable included in these models.

Male Associate Combinations and Parentally Granted Autonomy Measures

The model combining *male associate combinations* with each of the three parentally granted autonomy measures—*autonomy index*, *autonomy curfew*, and *autonomy friends*—explains 20.1 percent of the variance in substance use. Within this model, *male associate combinations* and the *autonomy index* each had significant positive effects ($p \leq .001$) on substance use. Although *autonomy friends* and *autonomy curfew* were found to significantly affect substance use in the bivariate regression analyses, they were no longer significant once included in a model with *autonomy index* and *male associate combinations*.

A test for the difference in estimated means indicated that the estimated mean for those with no male associates (only female friends) was -.50. Female respondents with male friends but no romantic or sexual partners had an estimated mean substance use of -.48—which was not significantly different from those with only female friends. Those with both male friends and romantic partners had an estimated mean substance use of -.17 while those with all three types of

Table 34. Model r^2 for Regressions of Male Associate Combinations and Parental Control Measures on Combined Substance Use Index

Multivariate Regression Models	Model r^2
<i>Male Associate Combinations & Parentally Granted Autonomy Measures</i>	.201
Male Associate Combinations***	
Autonomy Index***	
Autonomy Curfew	
Autonomy Friends	
<i>Male Associate Combinations & Parental Presence at Home Measures</i>	.195
Male Associate Combinations***	
Mother Home***	
Father Home	
<i>Male Associate Combinations & Time Spent in Shared Activities Measures</i>	.196
Male Associate Combinations***	
Time with Mother***	
Time with Father***	
<i>Male Associate Combinations & All Parental Control Measures</i>	.221
Male Associate Combinations***	
Autonomy Index***	
Autonomy Curfew	
Autonomy Friends	
Mother Home*	
Father Home	
Time with Mother*	
Time with Father***	

* $p \leq .01$, *** $p \leq .001$

male associate had an estimated mean of .57. Those placed in the “other” category because of some other combination of male friends, romantic partners, and sexual partners had an estimated mean of -.06. The estimated substance use means for each of these three categories were significantly higher than for females with no male associates. The results for male associate combinations and the autonomy index are reported in Table 35.

Similar to the results from the bivariate regression of autonomy index on substance use, the only category to significantly differ from those coded as “0” on the *autonomy index* were those who were coded as “5.” The estimated mean for substance use among those coded as “0” was -.27 while those coded as “5” had an estimated mean substance use of .13. Estimated means for *autonomy curfew* and *autonomy friends* are not discussed since these variables were not significant.

Table 35. Regression Results for Male Associate Combinations and Parentally Granted Autonomy Measures on Substance Use (N = 3160)

	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
No Male Associates	-.49***	.10	-.50	
Has Male Friends	-.49***	.10	-.48	.02
Has MF and RP but no SP	-.14	.09	-.17	.33***
Has MF, RP, and SP	.65***	.12	.57	1.07***
Other	.00 ^a		-.06	.44***
Autonomy Index = 0	-.41*	.17	-.27	
Autonomy Index = 1	-.29***	.09	-.15	.12
Autonomy Index = 2	-.29***	.06	-.15	.12
Autonomy Index = 3	-.31***	.05	-.18	.09
Autonomy Index = 4	-.14**	.04	-.01	.26
Autonomy Index = 5	.00 ^a		.13	.40*
No Autonomy on Curfew Decisions	-.07	.05	-.14	
Has Autonomy on Curfew Decisions	.00 ^a		-.07	.07
No Autonomy on Friend Decisions	-.02	.05	-.11	
Has Autonomy on Friend Decisions	.00 ^a		-.09	.02

* p ≤ .05, ** p ≤ .01, *** p ≤ .001

Male Associate Combinations and Parental Presence at Home Measures

The regression model including *male associate combinations* and the two measures for parental presence at home indicated that the presence of male associates and maternal presence at home significantly affected ($p \leq .001$) substance use but that father presence at home did not have a significant effect on female substance use. This finding for *father home* differed from the bivariate regression results in which father presence significantly affected substance use.

The amount of variance explained by this model was 19.5 percent. While male associate presence increased the likelihood of substance use, maternal presence resulted in a decreased likelihood of substance use. Table 36 reports the parameter estimates, standard errors, estimated means, and differences in means for substance use across all categories of *male associate combinations*, *mother at home*, and *father at home*.

The estimated mean of substance use for those without male associates (*male associate combinations* = 0) was -.50 which was significantly lower than the means for those who had both

Table 36. Regression Results for *Male Associate Combinations* and Parental Presence at Home Measures on Substance Use (N = 3231)

	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
No Male Associates	-.51***	.10	-.50	
Has Male Friends	-.51***	.10	-.48	.02
Has MF and RP but no SP	-.14	.09	-.12	.38***
Has MF, RP, and SP	.66***	.09	.66	1.16***
Other	.00 ^a		.01	.51***
Mother Never at Home	.44***	.10	.37	
Mother Almost Never at Home	.17	.10	.06	-.31
Mother Home Some of the Time	.17***	.05	.06	-.31*
Mother Home Most of the Time	.07	.04	-.04	-.41***
Mother Always Home	.00 ^a		-.11	-.48***
Father Never at Home	.03	.07	.08	
Father Almost Never at Home	.07	.08	.11	.03
Father Home Some of the Time	.06	.07	.10	.02
Father Home Most of the Time	-.06	.08	-.02	-.10
Father Always Home	.00 ^a		.05	-.03

* $p \leq .05$, *** $p \leq .001$

male friends and romantic partners (*male associate combinations* = 2), had all three types of male associates (*male associate combinations* = 3), or had some “other” combination of male associates (*male associate combinations* = 4). Once again, the estimated mean for females with male friends but no romantic or sexual partners was not significantly different from those with only female friends and no male associates.

Results for *mother at home* indicate that females whose mothers were “never” at home or who had no residential mother figure had an estimated mean for substance use of .37. Those whose mother was “almost never” home after school and at bedtime (*mother at home* = 1) did not differ significantly from those whose mother was never home. All other categories of *mother at home* had significantly lower estimated means for substance use than those whose mother was “never” home. Respondents whose mother was home “some of the time” had an estimated mean substance use of .06, those whose mother was home “most of the time” had an estimated mean of -.04, and those whose mother was “always” home had an estimated mean of -.11. Estimated means for *father at home* are not discussed since paternal presence did not significantly affect substance use in this model.

Male Associate Combinations and Time Spent in Shared Activities

The third multivariate regression model included *male associates combinations* and the time spent in shared activities variables (i.e. *time with mother* and *time with father*). Results indicated that all three variables significantly affected ($p \leq .001$) substance use and that this model explained 19.6 percent of the variance in substance use. The results for this model are reported in Table 37.

Table 37. Regression Results for *Male Associate Combinations* and Time Spent in Shared Activities Measures on Substance Use (N = 3241)

	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
No Male Associates	-.51***	.09	-.34	
Has Male Friends	-.49***	.09	-.34	.00
Has MF and RP but no SP	-.13	.08	.03	.31***
Has MF, RP, and SP	.65***	.11	.82	1.16***
Other	.00 ^a		.16	.50***
No Time Spent with Mother	.34***	.07	.08	
Time Spent in 1 Shared Activity	.21***	.06	-.05	-.13*
Time Spent in 2 Shared Activities	.16***	.05	-.10	-.18**
Time Spent in 3 Shared Activities	.00 ^a		-.26	-.34***
No Time Spent with Father	.11	.07	.02	
Time Spent in 1 Shared Activity	-.01	.08	-.10	-.12**
Time Spent in 2 Shared Activities	-.08	.09	-.16	-.18***
Time Spent in 3 Shared Activities	.00 ^a		-.09	-.11

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

There was not a significant difference in the estimated mean substance use for female respondents with no male associates and those who claimed male friends but not romantic or sexual partners. The differences in estimated means for all other categories of *male associate combinations* did differ significantly from those with only female friends and no male associates. Females who had male friends and romantic partners but no sexual partners had an estimated mean substance use of .31. Those with all three types of male associate had an estimated mean of .82—a difference of 1.16 from those with no male associates. Respondents who claimed some “other” combination of male associates had an estimated mean for substance use of .16. While *male associate combinations* was positively related to substance use, *time with mother* and *time with father* were negatively related to substance use. As the amount of time spent with parents increased, the likelihood of substance use decreased. The estimated means of substance use for respondents who spent no time in shared activities with mother or father were .08 and .02 respectively. The estimated mean for respondents who spent time in 3 shared activities with mother was -.26—a difference of .34 from those who spent no time with their mother. While the differences in estimated means for respondents who spent time in 1 activity or 2 activities with their mother (.13 and .18, respectively) were smaller and only significant at the .05 and .01 level, the difference in estimated mean for those who had shared in all 3 activities with their mother was larger (.34) and significant at the .001 level. This may indicate that the effects of parental involvement on adolescent substance use are a product of “amount of time” spent together. Since mothers are usually readily available to their children, most adolescents spent time in at least 1 activity with their mother and therefore those differences are much smaller and presumably less meaningful.

Results for *time with father* are not as consistent. Respondents who spent time in 1 or 2 activities with their father differed significantly from those who spent no time with their father. The difference between those who spent no time in activities with their father and those who spent time in 3 activities with their father was not statistically significant and may be the result of so few respondents having spent time in 3 activities with their father.

Male Associate Combinations and All Parental Control Measures

Finally, a regression model including *male associate combinations* and all 7 parental control measures indicated that the presence of male associates affected substance use ($p \leq .001$) even when all measures of parental control were included in the model. This combined model explained 22.1 percent of the variance in substance use and the results for this model are reported in Table 38 (see Appendix R). In addition to *male associate combinations* significantly affecting substance use, several of the parental control measures had significant effects on substance use—including the *autonomy index* ($p \leq .001$), *mother at home* ($p \leq .01$), *time with mother* ($p \leq .01$), and *time with father* ($p \leq .001$). The remaining parental control measures—*autonomy curfew*, *autonomy friends*, and *father at home*—did not significantly affect female substance use.

For most variables included in this model, patterns of estimated means and differences in means are similar to the results of regression models already discussed. Results indicate that respondents with male friends and female friends but no romantic or sexual partners do not differ significantly from respondents with only female friends. Respondents who had romantic and/or sexual partners—whether in combination with male friends or without—had significantly higher estimated means of substance use than respondents with only female friends.

Results indicated that the *autonomy index* had a positive effect on substance use whereby an increase in autonomy resulted in an increased likelihood of substance use. Once again the only category of respondents to significantly differ from those who had no autonomy (*autonomy index* = 0) were those who claimed to have autonomy for every measure included in the *autonomy index*.

Although father presence at home did not have a significant effect on substance use, *mother at home* was significant ($p \leq .01$) and had a negative effect on substance use. As maternal presence at home increased, the likelihood of substance use decreased. Respondents who had no residential mother or whose mothers were never at home after school and at bedtime had an estimated mean substance use of .20. Having a mother at home, even if it was “almost never,” significantly decreased the likelihood of substance use.

Both *time with mother* and *time with father* had significant negative effects on substance use. Spending more time in shared activities with both mother and father resulted in a decreased likelihood of substance use. Respondents who spent time in all 3 shared activities with their mother had a significantly lower estimated mean of substance use—a difference of .24. *Time with father* results indicate that those who spent time in 1 or 2 shared activities (but not all 3) had significantly lower estimated substance use means than those who spent no time in shared activities with a residential father figure.

FINAL MULTIVARIATE REGRESSION MODEL

For the final regression model, I regressed *male associate combinations* on the *combined substance use index* while controlling for all parental control measures as well as other control variables that previous research has shown to affect substance use. These additional control

variables include *ethnicity*, *race*, *age*, and *religiosity*. Prior to running this final regression model, I ran a series of bivariate correlations and regressions to determine the effects of each control variable on substance use.

Bivariate Relationships between Control Measures and Substance Use

Similar to the correlation results for male associate variables and parental control variables, the results of correlations between each control variable and substance use indices varies depended upon whether the *minor substance use index* or the *combined substance use index* was used. Once again using the *combined substance use index* resulted in significant correlation coefficients with the variables of interest while the use of the *minor substance use index* did not result in statistically significant correlation coefficients. As only the *combined substance use index* was used in the final regression model in which these control variables were included, I only report the results of the correlations between these control variables and the *combined substance use index* below.

Correlations with the *combined substance use index* indicate that *race*, *age*, and *religiosity* were each significantly correlated ($p \leq .01$) with substance use. The *ethnicity* measure for being Hispanic/Latino was the only control variable without a significant effect on substance use. *Age* was positively correlated with substance use indicating that an increase in age was associated with an increased likelihood of substance use. Because of the way that *religiosity* is coded, the positive correlation with the *combined substance use index* indicates that as religion is considered to be more important in a respondent's life, the frequency of substance use decreased.

Although the overall measure of race used in these correlations had a significant relationship, it was not interpretable. To make the results interpretable, I reran correlations using

a series of dichotomous measures for race. Results of the correlations indicate that the dichotomous measure for White/Caucasian and Black/African American were significant. The correlation for the dichotomous measure of White/Caucasians was positive, indicating that White/Caucasians had higher levels of substance use than non-Whites. The correlation for Black/African Americans was negative indicating that Blacks used fewer substances than non-Blacks. Each of these correlations was significant at the .01 level. Additionally, the dichotomous measure for native American/American Indian was significant at the .05 level and negative indicating that Native American/American Indians used fewer substances than non-native Americans.

Results for bivariate regressions of each control variable on the *combined substance use index* indicated similar patterns of relationships. The measure for ethnicity showed no significant effect on substance use. All other control variables (i.e. *race*, *age*, and *religiosity*) were found to have significant ($p \leq .001$) effects on the combined substance use index. The model r^2 and significance levels for each bivariate regression are reported in Table 39.

Results for each bivariate regression model in which a control variable was regressed on the combined substance use index are reported in Table 40. The bivariate regression of *race* on substance use indicated that race accounts for 3.7 percent of the variance in substance use.

White/Caucasians had an estimated mean for substance use of .13 with all other categories of

Table 39. Model r^2 for Control Variable Bivariate Regressions on Combined Substance Use

Control Variable	Model r^2
Ethnicity	.001
Race*	.037
Age*	.062
Religiosity*	.056

* $p \leq .001$

Table 40. Bivariate Regressions of Control Measures on the *Combined Substance Use Index*

Bivariate Regressions	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Ethnicity (N = 3345)</i>				
Not Hispanic/Latino	.10	.05	.01	
Hispanic/Latino	.00 ^a		-.09	-.1
<i>Race (N = 3355)</i>				
White/Caucasian	.19*	.08	.13	
Black/African American	-.26***	.08	-.32	-.44***
American Indian/Native American	-.13	.12	-.19	-.32**
Asian/Pacific Islander	.03	.17	-.04	-.17
Other 5	.00 ^a		-.06	-.19*
<i>Age (N = 3354)</i>				
Age 11			-.65	
Age 12			-.48	.17***
Age 13			-.31	.34***
Age 14			-.10	.55***
Age 15			.08	.73***
Age 16			.21	.86***
Age 17			.26	.91***
Age 18			.19	.84***
Age 19			-.05	.60***
Age 20			-.28	.37
<i>Religiosity (N = 3352)</i>				
Religion "Very Important"	-.48***	.06	-.24	
Religion "Fairly Important"	-.09	.07	.15	.39***
Religion "Fairly Unimportant"	.24	.12	.48	.72***
Religion "Not Important"/ No Religion	.00 ^a	.	.24	.48***

* p ≤ .05, ** p ≤ .01, ***p ≤ .001

race except Asian American/Pacific Islanders having significantly lower levels of substance use. *Age* positively affected substance use indicating that an increase in age resulted in an increased likelihood of substance use. The model r^2 for this bivariate regression indicated that *age* explained 6.2 percent of the variance in substance use. The bivariate regression for *religiosity* indicated negative effects on substance use and explained 5.6 percent of the variance in substance use. Thus, as the importance of religion in a respondent's life increased, likelihood of substance use decreased.

Multivariate Regression Model of Male Associate Combinations & Control Variables

Prior to running the final regression model in which all previously significant parental control and control measures are combined with the *male associate combinations* measure in a regression on the combined substance use index, I ran a multivariate model that included only *male associate combinations* and each previously significant control variable. The reason for running such a model is to allow for comparisons between this model and the final model which includes measures for parental control. Such a comparison will provide insight into whether parental control measures mediate the effects of male peer associates on female substance use.

The results of the multivariate regression analyses of *male associate combinations* and each of the previously significant control variables (i.e., *race*, *age*, and *religiosity*) on the *combined substance use index* can be found in Table 41 (Appendix S). Each of the variables included in this model were found to have significant effects ($p \leq .001$) on female substance use and the model r^2 was .25 suggesting that 25 percent of the variation in female substance use was explained by the presence of male associates, race, age, and religiosity.

Male associate combinations continued to have a significant effect on female substance use even with the inclusion of control variables. Similar to the results of the bivariate analyses, females with both male and female friends did not significantly differ in frequency of substance use from those with only female friends. The presence of romantic partners and/or sexual partners resulted in significant differences in substance use from females with only female friends.

Whereas the results for the bivariate analysis of race indicated that all racial categories but Asian Americans/Pacific Islanders significantly differed from White/Caucasians, results from this multivariate analysis indicated that Blacks/African Americans were the only racial category to significantly differ from White/Caucasians. Results for age and religiosity were similar to those found in the bivariate regression analyses.

Final Regression Model

The final multivariate regression model included the *male association combinations* measure as well as all parental control measures (i.e. *autonomy index*, *autonomy curfew*, *autonomy friends*, *mother home*, *father home*, *time with mother*, and *time with father*) and additional controls (i.e. *ethnicity*, *race*, *age*, and *religiosity*) that were significant in all previous regression models. Excluding variables that were not significant in previous models (i.e., *autonomy friends*, *autonomy curfew*, *father home*, and *ethnicity*) resulted in a model r^2 of .27 while inclusion of those variables indicated a model r^2 that was only slightly larger ($r^2 = .29$).

Male associate combinations continued to have a significant effect ($p \leq .001$) on female substance use even with parentally granted autonomy, parental presence at home, time spent with

parents, race, age, and religiosity controlled for. Additionally, all parental control measures and additional controls had significant effects on substance use in this model.

While *autonomy index* had a positive effect ($p \leq .001$) on female substance use, *time with mother* ($p \leq .01$), *time with father* ($p \leq .001$), and *mother home* ($p \leq .01$) had positive effects. *Race* ($p \leq .001$), *age* ($p \leq .05$), and *religiosity* ($p \leq .001$) all had significant effects on substance use with increases in age and religiosity increasing the likelihood of female substance use.

Table 42 (see Appendix T) reports the parameter estimates, standard errors, estimated means, and differences in means for each variable included in the final model. The results for *male associate combinations* indicate the same results as those found in all previous regression analyses although the amount of difference between categories is not as large. Respondents who claimed male and female friends but no romantic or sexual partners did not differ significantly from those with only female friends. All other possible combinations of male associates resulted in significantly higher levels of substance use. Those with all three types of male associates had an estimated substance use mean .99 higher than those with no male associates.

While *autonomy index* had a positive effect ($p \leq .001$) on female substance use, *time with mother* ($p \leq .01$), *time with father* ($p \leq .001$), and *mother home* ($p \leq .01$) had negative effects. The positive effect of *autonomy index* of substance use indicates that an increase in autonomy resulted in an increased likelihood of substance use but none of the differences in estimated means were significantly different from the comparison group. All other parental control measures included in this model had negative effects on substance use indicating that as maternal presence at home and time spent in shared activities with mother and father increased, the likelihood of substance use decreased.

Race ($p \leq .001$), *age* ($p \leq .05$), and *religiosity* ($p \leq .001$) all had significant effects on substance use with increases in age and religiosity increasing the likelihood of female substance use. The significant effects ($p \leq .001$) of *race* on substance use indicate that when using White/Caucasians as a comparison group for *race*, Black/African Americans and American Indians/Native Americans used significant fewer substances than White/Caucasians while Asian/Pacific Islanders and those in the “Other” category did not differ significantly from whites.

Results of all regression analyses are discussed in further detail in the next chapter. Potential methodological concerns are addressed and the results presented in this chapter are used to answer the guiding research questions used in this research and address the support or lack thereof for the conceptual model employed.

CHAPTER VI DISCUSSION AND CONCLUSIONS

The conceptual model used to guide this research incorporated types of peer relationships and exercise of parental control to examine the impact of cross-sex peers (i.e., male associates) on the likelihood of female deviance. Lower levels of parental control were not only expected to be associated with the presence of male associates but also expected to mediate the effects of male associates on female substance use. The results of data analyses reported in the previous chapter do not provide support for this conceptual model, although the majority of the hypotheses within this research were supported. Females with male associates used more substances than females without male associates and the difference in substance use when compared to females without male associates increased as the number of types of male associates increased. All types of male associates increased the likelihood of female substance use, but the effects of romantic and sexual partners were greater than the effects of male friends. Contrary to much of the literature reviewed in Chapter 2, female friends were also found to increase the likelihood of substance use.

Results indicate that the effects of male associates on female substance use are more complex than simply stating that male associates have a negative effect on female deviance that differs from the effects of female associates. While romantic and sexual partners have an effect on female substance use that significantly differs from the effects of female friends, male friends explain a much smaller amount of the variance in female substance use and do not differ significantly from female friends in their effects on the likelihood of substance use. These findings support the importance of taking type of association into account when studying cross-sex influences on adolescent behavior.

Although the general conceptual model was not supported, each of the three types of parental controls included in these analyses significantly affected the likelihood of female substance use. The effects of these parental control measures were in the direction predicted in the hypotheses with parentally granted autonomy having positive effects on substance use (i.e., increasing the likelihood of substance use) while parental presence at home and time spent in shared activities with parents had negative effects on female substance use, decreasing the likelihood of substance use. Thus, although controlling for parental control did not lessen or negate the effects of male associates on female substance use, the variables still affected the likelihood that female adolescents would use illegal substances.

THE EXTENT OF MALE PRESENCE IN THE LIVES OF ADOLESCENT FEMALES

Much of the literature reviewed in Chapter 2 emphasized the need to study cross-sex peer associations during adolescence. The literature indicated that while same sex associations still dominate during adolescence (Lempers & Clark-Lempers, 1993), the number of contacts with cross-sex peers increases (Cairns et al., 1985) and cross-sex friends become possible companions (Blyth & Foster-Clark, 1987; Blyth et al., 1982; Connolly et al., 1998; Csikszentmihalyi et al., 1977). I began my research with an examination of the extent to which male and female peer associates were present in the lives of the female respondents included in this research. My focus then shifted to the extent to which the presence of one form of male associate was related to the presence of other types of male associates.

The presence of male and female friends in female respondents' lives was indicated by friendship nominations with the majority of female respondents having nominated at least one female friend and at least one male friend (96.7 and 87.8 percent, respectively). Analyses of the

friendship nomination data indicated higher rates of female friends than male friends for female respondents. These results fit with findings from previous research that suggest that although cross-sex friendships may increase during adolescence, same sex friendships are still preferred (Schofield, 1981).

Results also indicated that romantic and sexual partners were not as often present in female respondents' lives as male and female friends were. Nominations of romantic partners for the 18 months prior to data collection revealed that 65 percent of female respondents had had at least one romantic partner. The number of female respondents claiming to have had a sexual partner was much lower with only 21.7 percent of females having had at least 1 sexual partner. Thus, although associations with cross-sex peers do occur during adolescence, female friendships still make up the majority of female adolescents' associates and even when male associates are present they most often are friends or romantic partners rather than sexual partners.

Types of Male Associates

While many researchers have failed to distinguish between the various types of cross-sex association in adolescence, one of the ways in which this research contributes to existing literature regarding cross-sex peer influences on deviance is by accounting for these differences in type of association. By separating male friends from romantic and sexual partners, I was able to establish the individual effects of each on female substance use. Although the results of this research reiterate the importance of separating types of associates, it is also important to look at the extent of overlap in types of male associates.

As the literature review indicated, the increase in cross-sex friends that occurs during adolescence is thought to be related to the emergence of romantic, and possibly even sexual, partners (Connolly & Johnson, 1996; Connelly et al., 1998; Dunphy, 1963). Findings by other researchers indicate that having larger cross-sex friendship networks is related to an increased likelihood of having romantic relationships (Connolly & Johnson, 1996; Connolly et al., 1998). The correlations reported for each of the male associate variables provided a clearer picture of how the presence of one type of male associate was related to the presence of other types of male associates.

Correlation results indicated that each type of male associate included in this research was positively correlated ($p \leq .001$) with every other type of male associate. Male presence in one capacity was associated with an increased likelihood of male associates in other capacities. Furthermore, having larger numbers of female friends was associated with an increased likelihood of having male associates. But while the presence of female friends was associated with a greater presence of male friends and romantic partners, having fewer female friends was associated with an increased likelihood of having sexual partners. The positive association between female friends and both male friends and romantic partners may indicate that greater sociability or popularity with female friends is associated with greater sociability or popularity with male friends.

MALE ASSOCIATE EFFECTS ON FEMALE SUBSTANCE USE

Using female substance use as an indicator of deviance, I examined the effects of three types of male associates on female deviant behavior. As most research that focuses on the role of peer relationships in adolescent development has focused on same sex peers (Sippola, 1999)

and failed to distinguish between same and cross-sex peer relationships (Thorbecke & Grotevant, 1982; Youniss & Smollar, 1985), I compared the effects of cross-sex peers with same sex peers on one form of adolescent deviant behavior—the use of illegal substances.

By combining the principles of social learning and differential association theory with gender differences in deviant behavior and power differentials resulting from societal gender stratification, I expected to find significant effects of male associates on female substance use. As suggested by Giordano (2009), if males are more likely to be deviant than females and people learn deviant behaviors from peer associates, then it is logical to expect that females may more often learn about deviant modes of behavior from male rather than female companions. While this research was not set up to examine the processes by which females may “learn” deviant behaviors from males, the results indicate a significant effect of male associates on female substance use.

Results from both the bivariate regressions of each individual male associate measure and the multivariate regressions of *male associate combinations* on the *combined substance use index* indicated a significant positive effect of the presence of male associates on female substance use. The presence of each type of male associate—male friend, romantic partner, and sexual partner—increased the likelihood of female substance use. These results showed support for my first hypothesis in which I predicted that “females with male associates—regardless of the type of association—will have used significantly more substances than females without male associates.”

The significant effects of male associates on female substance use were only found when the measure of substance use included the use of cocaine, inhalants, and “other” drugs such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills without a doctor’s prescription.

Correlation and bivariate regression results indicated that most male associate variables were not significantly correlated with minor substance use (i.e., cigarettes, alcohol, and marijuana) and that only *number of male friends* had a significant effect on minor substance use¹⁸. Thus, male associates likely have little or no effect on minor substance use but have a significant effect when harder substances are the focus. Therefore, researchers must use caution when examining substance use and keep in mind that results may vary depending upon what substances are included in measures for substance use.

My second hypothesis regarding male associates stated that “the greater the number of types of male associates, the more likely it is that a female will have used illegal substances.” Results from the regressions of both *number of types of male associates* and *male associate combinations* on female substance use provide support for this hypothesis and indicate that each of these measures explained approximately 18 percent of the variance (18.5 and 18.3 percent, respectfully) when used in bivariate regressions on female substance use. These results indicated that as the number of types of male associates increased the likelihood of female substance use increased. Female respondents with 2 types of male associates had higher estimated means of substance use than those with only 1 type of male associate and those with all 3 types of male associates had higher estimated means than those with only 2 types of male associates. While these results focus on an increase *across types* of male associates, the regression results for *number of male friends* and *number of romantic partners* indicate that increases in male associates *within type* also had a positive effect on female substance use.

Taken together, the results of this research suggest that the *numbers* of male associates matter and corroborate research by Hundleby and Mercer (1987) in which the number of cross-

¹⁸ Although the effect for *number of male friends* was significant, it explained less than 1 percent of the variance in minor substance use.

sex friends was found to be positively associated with adolescent drug use. Although research by Haynie (2003) as well as Heinze and colleagues (2004) found no effect for the number of male friends on delinquency involvement, this discrepancy may be the result of my focus on substance use specifically rather than delinquency in general.

Differences in Male Associate Effects on Substance Use by Type of Association

The results discussed in the previous section provide an answer to my first research question of whether female adolescents with male associates were more likely to engage in deviant behaviors (i.e., substance use) than those without male associates. The answer to that question is a resounding “yes.” While a discussion of those results hinted at the importance of distinguishing between types of male associates, the results did not provide a clear answer to another of my research questions—“how does the effect of male associates on female substance use vary by type of association (i.e., friend, romantic partner, or sexual partner)?”

Comparisons across types of male associates revealed romantic and sexual partners had stronger effects on female substance use than male friends. While the amount of variance in female substance use explained by *has male friends* was only 2.4 percent, *has romantic partner* and *has sexual partner* explained 8.2 and 15.7 percent, respectively, of the variance. An examination of estimated means indicated that estimated differences in means for those with no romantic partners compared to those with romantic partners were larger than the differences for male friends and the differences for sexual partners were larger yet. These findings support my third hypothesis which stated that “romantic partners and sexual partners will explain a greater amount of the variance in female substance use than male friends.”

Assuming that adolescents share a stronger bond with romantic and possibly even sexual partners than with their male friends, these results may also lend credibility to the idea that peers with whom an individual has an especially strong bond may be more influential than peers who are not as strongly connected to the individual (Giordano, 2003). Future research should examine characteristic differences among friendships, romantic relationships, and sexual relationships that may result in varying levels of influence. Based on the principles of differential association, differences in intensity, frequency, priority, and duration among these three types of association presumably result in differing levels of influence.

Comparing Male and Female Associate Effects on Substance Use

My third research question asked how the effects of male associates differ from the effects of female associates. If female's friendships with other females are more supportive of attitudes and beliefs that discourage offending (McCarthy et al., 1999) and are less tolerant of deviant or illegal activity (Brown, 2003), then results should have indicated a negative effect for the presence of female friends. Yet the results of bivariate regressions for both female friend variables on the *combined substance use index* indicated a positive effect ($p \leq .001$) of female friends on female substance use. Therefore the effects of female friends are in the same direction as those of male friends and results fail to corroborate previous research that indicates female friendships should have a negative effect on female deviance.

Not only are the effects of female friends not in the direction to be expected based on previous research findings, but also results from regression analyses of the *male associate combinations* measure on the *combined substance use index* indicate that female friends and male friends did not differ significantly in their effects on female substance use. For each

regression analysis run, the estimated means of substance use for *male associate combinations* indicated no significant difference for respondents with only female friends compared to respondents with both female and male friends but no romantic or sexual partners.

Although female and male friends did not differ significantly in their effects on female substance use, the model r^2 for the bivariate regressions of each female and male friend measure on substance use indicate that female friends did not explain as much of the variance in female substance use as male friends. While the *has male friend* explained 2.1 percent of the variance in female substance use and *number of male friends* explained 4 percent, *has female friend* only explained 0.5 percent and *number of female friends* explained 1.4 percent of the variance. These findings may also be used to emphasize the importance of noting the ways in which peer associate presence is measured. When measured dichotomously, peer associate measures explain a much smaller amount of the variance in female deviant behavior than when an ordinal measure is used.

Female friends were found to significantly differ from the other two measures of male associates—romantic and sexual partners. Respondents who had romantic and/or sexual partners—whether in combination with male friends or without—had significantly higher estimated means of substance use than respondents with only female friends. In cases of female respondents with all three types of male associates, differences in estimated means indicated that having male friends, romantic and sexual partners resulted in an estimated mean of +1.0 units (or more) than the comparison category of females with only female friends and no male associates. Even in the final model with all parental control and additional control variables accounted for, the differences in estimated means between these two groups of female respondents was .99. These differences in estimated means between respondents who had female friends but no male

associates and respondents who had all three types of male associate were the largest observed for any of the variables included in this research.

PARENTAL CONTROL EFFECTS ON FEMALE SUBSTANCE USE

In addition to examining the peer effects on female deviance, I also examined familial influences on female deviance by using a conceptual model that incorporated measures of parental control in testing the effects of male associates on female substance use. Using three forms of parental control—parentally granted autonomy, parental presence at home, and time spent in shared activities with parents—I first examined the effects of parental control on female substance use before including them in a model with the *male associate combinations* measure to determine if parental control mediated the relationship between male associates and female substance use.

Parentally Granted Autonomy

Although not directly taken from Hirschi's (1969) elements of attachment or involvement, I included measures of parentally granted autonomy in my analyses because I saw an adolescent's autonomy as being directly related to the element of opportunity discussed in relation to parental control affecting female deviance. I suggested that when parents are not controlling decisions regarding things like who their children hang out with, what time they must return home on weekends, and what time they must go to bed then adolescents may make decisions that increase their opportunities for delinquency. Therefore, I had hypothesized that "parentally granted autonomy would be positively related to female substance use whereby an increase in autonomy was associated with an increased likelihood of substance use."

Results indicated that parentally granted autonomy had a positive effect on female substance use. All three parentally granted autonomy measures (i.e., *autonomy curfew*, *autonomy friends*, and the *autonomy index*) were found to be positively correlated ($p \leq .01$) with the *combined substance use index* and the results of bivariate regressions for each parentally granted autonomy variable indicated a positive effect on substance use. But while the *autonomy index* explained 4.9 percent of the variance in substance use, *autonomy curfew* and *autonomy friends* explained even smaller amounts of the variance in female substance use (1 and .2 percent, respectively).

Additionally, the *autonomy curfew* and *autonomy friends* measures were significant only in the bivariate regression models but not in any of the multivariate models. While the *autonomy index* remained significant in the multivariate models this may be due to greater variance from using an ordinal measure (i.e., *autonomy index*) than dichotomous measures (i.e., *autonomy curfew* and *autonomy friends*). The significance of the *autonomy index* may be the product of extreme differences between those with no autonomy (i.e., *autonomy index* = 0) and those with autonomy on all measures included in the index (i.e., *autonomy index* = 5) while the failure to find significant effects of *autonomy curfew* and *autonomy friends* could be due to only minor incremental differences between those with autonomy (i.e., respondents coded as 1) and those without autonomy (i.e., respondents coded as 0) on these two measures.

Considering that the focus of this research was on peer effects on female deviance, I had expected both *autonomy friends* and *autonomy curfew* to be important in the ways in which parental control might mediate the effects of male associates on female substance use. But the lack of significant results for each of these variables in the multivariate regression models

suggested otherwise. Future research should further explore the possibility of an adolescent's autonomy affecting the likelihood of deviant behavior.

Parental Presence at Home

A review of the literature on parental supervision and monitoring indicated that parental monitoring and supervision was related to delinquency in general (see Cookston, 1999) and substance use specifically (see Chilcoat & Anthony, 1996; Cookston, 1999; Kim et al., 1999) with high levels of parental supervision and monitoring being associated with lower levels of delinquency (see Cookston, 1999). Previous research indicated that adolescent females were more likely to engage in the use of illegal substances and to associate with deviant peers when parental monitoring is weak (Svensson, 2003). Based on findings of previous research and the basic tenets of social control and social bond theories, I had expected to find that higher levels of parental presence at home to be associated with lower levels of female substance use. Results confirmed this was the case at least regarding bivariate associations between each parental control measure and substance use.

In using parental presence at home as a measure of parental supervision and monitoring, I had hypothesized that “parental presence at home will be negatively related to substance use whereby an increase in parental presence is associated with a decreased likelihood of female substance use.” Results for the bivariate regressions of *mother home* and *father home* on the *combined substance use index* showed support for this hypothesis. Both variables were found to have negative effects on female substance use whereby an increase in maternal and paternal presence at home was associated with a decreased likelihood of female

substance use. Yet when included in multivariate models of regression, the effects of paternal presence at home were not statistically significant.

Both the model r^2 and differences in estimated means suggest that maternal presence has a greater effect on female substance use than paternal presence. The bivariate model r^2 for *mother home* was much higher than that found for *father home* (3 and .6 percent, respectively) and the greatest differences in estimated means for *mother home* were .74 but only .17 for *father home*. These findings are further corroborated by the findings of the multivariate regression models in which *father home* did not have a significant effect on female substance use while *mother home* remained significant in all multivariate regression models. Taken together these findings indicate a larger effect for maternal presence than paternal presence on female substance use.

Another finding for the parental presence measures that is worthy of comment is that they were the only parental control measures found to be associated with minor substance use. While parentally granted autonomy and time spent in shared activities with parents affected substance use when hard substances were included in the substance use measure, they were not found to be associated with the *minor substance use index* in either correlations or bivariate regression models. *Mother home* was found to have a significant positive correlation with minor substance use but the results of the bivariate regression model indicated maternal presence did not have a statistically significant effect on minor substance use. Although *father home* did not have a significant correlation with minor substance use, it did have a significant negative effect on the *minor substance use index* in a bivariate regression analysis¹⁹. These findings suggest a relationship between parental presence at home and minor substance use but the results are

¹⁹ Even with significant bivariate regression results, the model r^2 indicated *father home* explained less than 1 percent of the variance in minor substance use.

inconclusive. Future research should further explore the relationship between parental presence at home and the use of minor substances among adolescent females and researchers need to remember the importance of distinguishing between substance use measures that only include minor substances compared to those that include both minor and hard substances.

Time Spent in Shared Activities with Parents

Time spent in shared activities with parents was included in these analyses as an indicator of both attachment to parents and involvement in conventional activities. Based on Hirschi's (1969) explanations for why the elements of attachment and involvement are expected to effect adolescent delinquency, I hypothesized that "time spent in shared activities with parents will be negatively associated with female substance use." Results for *time with mother* and *time with father* in both the bivariate and multivariate regression analyses indicated that time spent in shared activities with parents had a negative effect on female substance use.

The model r^2 and differences in estimated means indicated a larger effect for *time with mother* than for *time with father*. These results are similar to those found for maternal and paternal presence at home and, when taken together, may indicate that mother's control over female adolescents has a greater effect on substance use than father's control. If so, these results would corroborate findings by Kim and colleagues (1999) that mothers are particularly important in the greater monitoring of female adolescents than male adolescents.

FINAL MODEL

The conceptual model used in this research suggested that the effects of male associates on female substance use may be mediated by parental control. Assuming level of parental

control to be associated with the likelihood of having male associates, the effects of male associates on female substance use may be in part due to the lower levels of parental control that led to associations with males in the first place. If this were true, the effects of male associates on female substance use should have been either lessened or negated once parental control measures were controlled for in the regression models. Results of two multivariate regression analyses—one including only the *male associate combinations* measure and control variables and another including *male associate combinations*, parental control measures, and control measures—provide no support for this conceptual model.

The *male associate combinations* measure had significant effects on female substance use even when parental control measures were controlled for. Furthermore, *male associate combinations* remained significant in the final model in which additional control measures were also included. Thus, in answer to my research question regarding whether the effects of male associates on female substance use were mediated by parental control, the answer would be “no.” These results combined with the large amount of variance in female substance use explained by the combined male associate measures suggest that the presence of male associates has significant effects on female substance use and that these effects are larger than those of all other variables included in these analyses.

In addition to male associates, many of the parental control measures had significant effects on female substance in the final model. The *autonomy index*, both measures of time spent in shared activities with parents, and maternal presence were all found to have significant effects on female substance use even once race, age, and religiosity were controlled for. Additionally, results for *race*, *age*, and *religiosity* were significant. *Age* had a positive effect on female substance use with an increase in age associated with an increased likelihood of substance use.

An increase in the importance of religion was found to decrease the likelihood of substance use. Finally, differences in estimated means indicated that Blacks/African Americans and American Indians/Native Americans were less likely to use substances than their White/Caucasian counterparts.

Taken together these variables explained only 27 percent of the variance in female substance use. While this is not a particularly good model r^2 , the addition of other variables that had been included in previous regression analyses but found not to have significant effects on female substance use did not substantially improved the amount of variance explained by the model.

METHODOLOGICAL CONCERNS

The use of secondary data for this research was more efficient in terms of time and cost, but there are problems that arise from using secondary data. Most of my concerns focus on variable measures, that is the imprecision of some of the variable measures. For example, the self-report data on deviant behavior is limited in the Add Health data and the questions are often too simplistic. Therefore, the substance use index used as an indicator of deviance is not very sophisticated. Additional concerns are addressed below and center on issues of measuring male associates and the possible overlap of male associate measures, the strong relationship between sexual partners and deviant behavior, and the possibility that low levels of parent control were affected by the number of respondents not living with their parents.

Overlap of Types of Male Associates. One possible methodological concern regarding the correlations among the types of male associates is the potential for the same male to be nominated in more than one context. For example, when female respondents indicated they had

a current boyfriend, they were directed to nominate that person as their first male friend. Therefore, those who were coded as having at least one male friend on the *has male friend* measure may have actually been referring to their current boyfriend rather than a separate male associate who was only a friend. This raises concern over the same male being used in more than one capacity and the inability to separate *male friend 1* from current romantic partner and possibly even current or past sexual partners. While the public use version of the Add Health data does not provide a way to account for this possibility, future research should consider using the restricted version of the Add Health data in which identification of individuals nominated for each male friend and romantic partner position would allow researchers to determine the extent to which the same male was being nominated for more than one type of association.

There is similar concern over the possibility that a single male could have been nominated as both a romantic partner and sexual partner. Although a review of the literature indicated a problem in assuming sexual partners and romantic partners are synonymous (Manning et al., 2006; Manning et al., 2005), that does not mean that sexual partners and romantic partners are never one and the same. Therefore it is possible that the significant correlation between romantic and sexual partners is due to the same individual being nominated for both positions.

To address this potential methodological concern, I used the *male associate combinations* measure in all multivariate regression analyses. While this problem could not be solved in the bivariate analyses using individual measures for each type of male associate, using *male associate combinations* in the multivariate models ensured that this problem was avoided to some extent. By creating response categories for the presence of each type of male associate without the presence of the other two types, I could examine the effects of male friends on

female substance use separate from romantic and sexual partners. Although there is no guarantee that those coded as having both male friends and romantic partners or those coded as having all three types are not referring to one person who fulfills all roles, I could at least separate those who had platonic relationships with male friends from those where overlap with romantic or sexual partners was a distinct possibility. The *male associate combinations* measure also provided me with the information necessary to examine the extent of overlap between types of male associates.

Sexual Partners and Deviant Behavior. One methodological concern regarding the effects of sexual partners on female substance use is the relationship between sexual activity and problem behaviors such as illegal drug use (e.g., Billy et al., 1984; Hagan & Foster, 2001; Jessor & Jessor, 1977). It could be argued that the strong correlation between sexual partners and female substance use is due to sexual activity being a deviant behavior just as illegal drug use is a deviant behavior. Therefore, the correlation could be the result of engaging in one form of deviance increasing the likelihood of engaging in other forms of deviance. If this were the case, then the significant effects of sexual partners on female substance use may not actually be due to sexual partner influence on female behavior. While my analysis of the Add Health data did not provide a way to ensure that sexual partner effects were due to sexual partner influence, future research ought to explore ways of ensuring that this finding is the result of sexual partner influence and not the result of one deviant behavior being associated with an increased likelihood of engaging in other deviant behaviors.

Parental Control Measures and Lack of Residential Parents. One possible concern regarding the greater effects of mother's control on their daughter's substance use is that it is possible that low levels of maternal presence at home and time spent with mother were indicative of respondents

not living with either parent. Since children of divorced or unmarried parents are more likely to live with the mother than father (Eggebeen, Snyder, & Manning, 1996; Meyer & Garasky, 1993), respondents claiming their mother was “never home” or that they had not spent time with their mother may be indicative of the respondent not residing in the same household as either parent.

Even if true, respondents should be residing in a household with at least some form of parental figure even if it is not their biological mother or father. The Add Health data does account for other persons who may serve as parental figures and live in the same household as the respondent. In such cases, respondents were directed to answer question using these alternative parental figures and this should address the concern of respondents not living with their biological parents.

SUGGESTIONS FOR FUTURE RESEARCH

To further understanding of cross-sex peer influences on deviance, future research should continue to examine the gendered nature of the relationship between peer associates and deviant behavior. Though this research examined the role of cross-sex influences on female deviance and addressed differences between female and male friend influences, further research should be conducted on the influence of female and male associates on male and female deviance. While findings of this research did not support significant differences in the influences of male friends and female friends, other researchers have found significant differences in female and male friend effects on behavior with female-female friendships having higher expectations for their friends' behaviors (Brown, 2003), being more supportive of attitudes and beliefs that discourage offending (McCarthy et al., 1999), and being less tolerant of deviant or illegal activity (Brown, 2003) than male-male friendships. Future research should examine cross-sex peer effects by

focusing on male deviance and the role of female peer associates in deterring or encouraging male deviance. Such research would benefit from distinguishing between types of female associates including female friends, romantic partners, and sexual partners.

Another avenue future research should explore is whether the significant effects of male associates on female substance use are the result of males “pushing” or “introducing” females into deviant and criminal behavior. This would require the use of longitudinal data and the ability to control for female’s deviance prior to association with male peers. While the research reported here clearly indicates an association between male associates and female substance use, it cannot be used to establish whether the relationship between male associates and substance use was the result of males initiating females into deviant or criminal behavior as reported in previous research (for example, Gold, 1970; Pettitway, 1987; Steffensmeier, 1983; Steffensmeier & Allan, 1996; Steffensmeier & Terry, 1986; Warr, 2002).

One other consideration for future research on the effects of cross-sex peers on delinquency is to pay particular attention to the ways in which the presence of peers are measured. Results from this research indicate that dichotomous measures for each type of peer association explained very little of the variance in female substance use when compared to the use of count measures. For example, while the dichotomous measures of *has male friend*, *has female friend*, and *has romantic partner* each explained 2.1, 0.5, and 8.2 percent (respectfully) of the variance in female substance use, the count measures of *number of male friends*, *number of female friends*, and *number of romantic partners* explained 4, 1.4, and 10 percent, respectively. Therefore, comparisons of research findings on peer effects need to take into consideration variation in the ways in which peer presence was measured.

Future research should also continue to explore the effects of parental control on female substance use, both individually and in relation to peer effects. Results of this research indicate that level of parental control affects the likelihood of female substance use. Though this research cannot be used to make comparisons between female and male deviance, future research should address the ways in which parental control affects female and male adolescents differently as well as affecting the gender of peer associations.

Future research should also continue to explore the relationship between peer associates and parental control. Correlation results indicated a positive relationship between level of parental control and presence of male associates. Researchers should use longitudinal data to determine the directionality of this relationship and perhaps reexamine the possibility of parental control mediating the effects of male associations on female substance use once there is a clearer understanding of the association between parental control and presence of male associates.

CONCLUSIONS

By focusing on female deviance, the results of this research address some of the questions raised by gender based analyses of deviant and criminal behavior by examining one contributor to female deviance—social relationships with others. In examining the effects of social relationships on deviance, this research focused on two types of social relationships—peer and parental—to further understanding of cross-sex peer and parental influences on female deviance. Although there was a significant association between the presence of cross-sex peers and parental control, parental control was not found to mediate the effects of male associates on female deviance. Thus, the overall model used to guide this research needs revision.

Findings indicate that while gendered analyses of crime have been accurate in highlighting the role of negative male influences on female behavior (Chesney-Lind & Shelden, 1998; Miller, 1998; Richie, 1996), it is critical that attention be paid to the type of association shared with male associates. One of the key findings of this research was that it is not the mere presence of male associates, but rather it is the type of association that results in significant differences between male and female peer effects on deviance. While romantic partners and sexual partners have strong negative effects on female deviance, the results of this research suggest that male friend effects on female deviance, while also negative in direction, are not as strong and do not differ significantly from the effects of female friends.

Although the findings of this research confirm the importance of focusing on male influences on female deviant behavior, it cannot be proven from this research that males provide the "gateway" or entry into the "street life" or other deviant associations (Giordano, 2009). This research only provides confirmation of a significant relationship between male peer associates and female substance use. To establish whether male associates provide the opportunities necessary for females to enter into deviance would require the use of longitudinal data and the ability to control for female deviance prior to association with males. Future qualitative research should continue to explore the processes by which associations with male peers provide opportunities to engage in deviant and criminal behavior.

In addition to peer influences on female deviance, this research also provided insight into understanding the effects of parental control on female deviant behavior. Although the conceptual model that suggested parental control mediates the effects of male associates on female substance use was not supported, parental control was still a significant predictor of female substance use. Although three types of parental control—parentally granted autonomy,

parental presence at home, and time spent in shared activities with parents—were included in these analyses, other aspects of the parent-child bond were not accounted for. The parental control measures used here focused on parental monitoring/supervision and the absence of opportunities to engage in delinquency. Other aspects of the parent-child bond might focus on more socio-emotional aspects of that bond. Perhaps a more all encompassing measure of parental control would produce results that would support the conceptual model.

The significant effects of both peer and parental influences on female deviance provide support for the theories discussed in Chapter 3. The significant effects of peer associates on female substance use provide support for differential association and social learning theories while the significant effects of parental control provides support for Hirschi's (1969) social bond theory and social control theory. But the results support the need to further understand the role gender plays in the basic tenets of each of these theories. Future research should continue to test these theories of peer and parental influences while focusing on the gender of persons involved in peer and parental relationships.

With both sociologists and criminologists working to explain why people deviate from social norms and rules, this research adds to current understandings of adolescent deviance and characteristics such as gender that are consistently found to be related to deviance. By focusing on female adolescents this research contributes to efforts made by researchers to explain the processes by which females come to engage in deviant behavior. With most "classic" theories of deviance and crime focusing on explanations for male behaviors, paying little or no attention to females, further research is needed to establish whether the factors that influence male deviance and crime may be used to explain such behaviors in females or if new theoretical explanations must be developed to account for female deviance and crime.

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APPENDICES

APPENDIX A
ADOLESCENT FEMALES

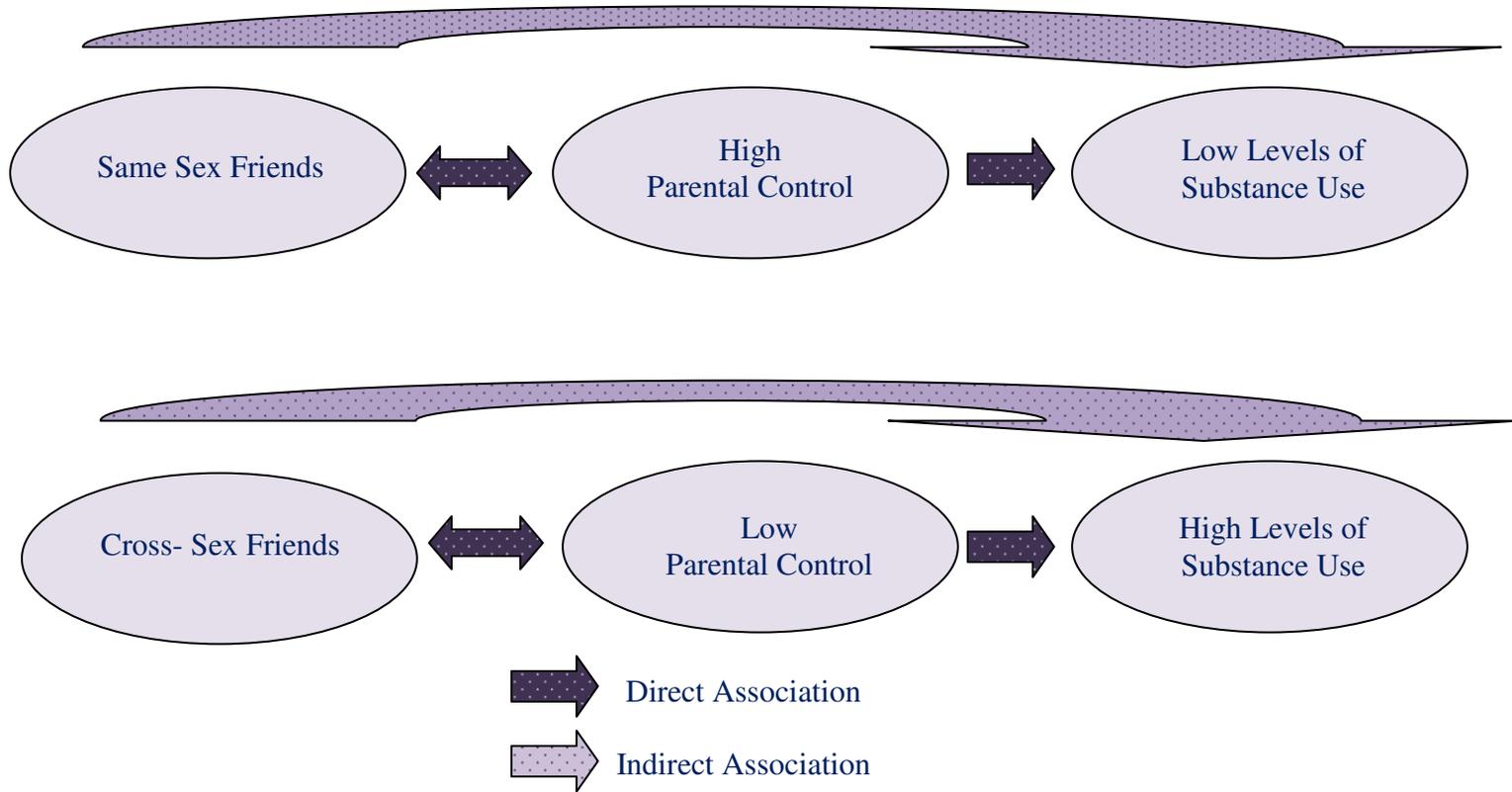


Figure 1. Conceptual Model

APPENDIX B

THE UNIVERSITY of TENNESSEE

**Institutional Review Board
Office of Research**

1 534 White Avenue
Knoxville, TN 37996-1529
Phone: 865.974.3466
Fax: 865.974.7400

August 10, 2010

Title: Adolescent Female Substance Use: An Examination of Male Peer Influences"

Sarah Whiteford
Sociology
11710 South Williamsburg Drive
Knoxville, TN 37934

Suzanne Kurth
Sociology
921 McClung Tower
4-6021

The project listed above has been reviewed and has been certified as EXEMPT from review by the Institutional Review Board (IRB).

Unless there are major changes in the experimental methods or project design, no further reporting to this office is required. The responsibility for oversight of this project becomes that of the Principal Investigator(s), Student Advisor (if any), and the Departmental Review Committee.

We wish you success in your research endeavor.

Sincerely,



Brenda Lawson
Compliance Officer and IRB Administrator
Office of Research

Enclosure

APPENDIX C

Table 1. Variables included in Analyses

Variable	Type of Measurement
Dependent Variables	
Minor Substance Use Index	Continuous
Combined Substance Use Index	Continuous
Independent Variables	
Individual Peer Associate Measures	
Has Male Friend	Dichotomous
Number of Male Friends	Ordinal
Has Female Friend	Dichotomous
Number of Female Friends	Ordinal
Has Romantic Partner	Dichotomous
Number of Romantic Partners	Ordinal
Has Sexual Partner	Dichotomous
Combined Male Associate Measures	
Has Male Associate	Dichotomous
Number of Types of Male Associates	Ordinal
Male Associate Combinations	Categorical
Parental Control Measures	
Parental Granted Autonomy Measures	
Autonomy Index	Ordinal
Autonomy Curfew	Dichotomous
Autonomy Friends	Dichotomous
Parental Presence at Home	
Mother Home	Ordinal
Father Home	Ordinal
Time Spent in Shared Activities	
Time with Mother	Ordinal
Time with Father	Ordinal
Additional Control Measures	
Ethnicity	Dichotomous
Race	Categorical
White/Caucasian	Dichotomous
Black/African American	Dichotomous
American Indian/Native American	Dichotomous
Asian/Pacific Islander	Dichotomous
Other	Dichotomous
Age	Ordinal
Religiosity	Ordinal

APPENDIX D

Table 8. Frequencies and Percentages of Female Respondents with Romantic Partners

Romantic Partner Nominations	% of Females with Romantic Partner	# of Female with Romantic Partner	Total N
Romantic Partners			
Romantic Partner 1	65.3	2,161	3,310
Romantic Partner 2	19.0	637	3,344
Romantic Partner 3	5.0	169	3,353

APPENDIX E

Table 10. Possible Combinations for Male Associate Combinations

<i>Male Associate Combinations codings</i>	Male Friend Present	Romantic Partner Present	Sexual Partner Present
0	No	No	No
1	Yes	No	No
2	No	Yes	No
3	No	No	Yes
4	Yes	Yes	No
5	Yes	No	Yes
6	No	Yes	Yes
7	Yes	Yes	Yes

APPENDIX F

Table 11. Original Frequencies & Percentages for Male Associate Combinations

Combinations of Male Associate	% of Females with Specified Combination	# of Females with Specified Combination
No Male Associates	8.6	280
Has Male Friend but no Romantic or Sexual Partners	24.7	802
Has Romantic Partner but no Male Friend or Sexual Partner	2.6	84
Has Sexual Partner but no Male Friend no Romantic Partner	.2	7
Has Male Friend and Romantic Partner but no Sexual Partner	42.6	1,382
Has Male Friend and Sexual Partner But no Romantic Partner	1.4	47
Has Romantic Partner and Sexual Partner but no Male Friend	.6	19
Has Male Friend, Romantic Partner and Sexual Partner	<u>19.2</u>	<u>621</u>
Total:	100.0	3,242

APPENDIX G

Table 12. Frequencies and Percentages for Male Associate Combinations

Combinations of Male Associate	% of Females with Specified Combination	# of Females with Specified Combination
No Male Associates	8.6	280
Has Male Friend but no Romantic or Sexual Partners	24.7	802
Has Male Friend and Romantic Partner but no Sexual Partner	42.6	1,382
Has Male Friend, Romantic Partner and Sexual Partner	19.2	621
Other Combinations	<u>4.7</u>	<u>157</u>
	Total: 100.0	3,242

APPENDIX H

Table 13. Parental Allowance of Female Respondents to Make Own Decisions

Allowed to Make Decisions Regarding	% of Female Respondents Allowed to Make Own Decisions	N	Total N
Time to be home on weekend nights	28.5	933	3269
People hang around with	85.6	2803	3273
What to wear	90.8	2973	3274
How much Television watched	83.3	2730	3277
Television programs watched	77.7	2545	3275
Time to go to bed on week nights	67.3	2204	3276
What to eat	83.2	2728	3278

APPENDIX I

Table 15. Time Spent in Shared Activities with Mother & Father (during previous 4 weeks)

Shared Activity	% Who Shared Activity with Mother	% Who Shared Activity with Father
Went shopping	75.2	16.2
Played a sport	9.0	16.7
Attended a religious service or church event	39.7	22.1
Talked about dating or party attended	52.0	18.1
Attended a movie, play, museum, concert, etc.	27.2	15.0
Talked about a personal problem	45.5	12.4
Had a serious fight about behavior	34.2	17.7
Talked about school work or grades	61.1	36.4
Worked on a school project	13.5	7.8
Talked about other things done in school	52.2	31.0

APPENDIX J

Table 17. Parental Presence in the Home throughout the Day

Time Of Day	% of Female Respondents Whose Mother is Home	% of Female Respondents Whose Father is Home
When leaving for school		
Never	13.2	48.8
Almost never	5.2	6.8
Some of the Time	7.8	10.3
Most of the Time	12.7	9.5
Always/Takes to School	61.1	24.6
When returning from school		
Never	22.7	56.3
Almost never	12.2	11.2
Some of the Time	15.9	14.5
Most of the Time	19.6	7.8
Always/Picks up from School	29.5	10.2
Home at respondent's bedtime		
Never	6.4	34.3
Almost never	1.5	2.2
Some of the Time	3.9	8.5
Most of the Time	14.3	14.5
Always	74.0	40.4

APPENDIX K

Table 18. Frequencies and Percentages for *Mother Home* and *Father Home*

	% Females w/ Mother Home	# Females w/ Mother Home	% Females w/ Father Home	# Females w/ Father Home
0- Never	5.6	188	34.1	1,142
1- Almost never	4.5	152	9.6	320
2- Some of the Time	31.8	1,064	33.3	1,117
3- Most of the Time	32.2	1,077	14.9	498
4- Always/Picks Up from School	<u>25.9</u>	<u>866</u>	<u>8.1</u>	<u>273</u>
	Total: 100.0	Total: 3,347	Total: 100.0	Total: 3,350

APPENDIX L

Table 19 Respondents' Race and Ethnicity

Racial or Ethnic Group	% of Female Respondents in Each Group	# of Female Respondents in Each Group
Race		
White/Caucasian	65.3	2,193
Black/African American	25.1	841
American Indian/Native American	1.2	41
Asian/Pacific Islander	3.5	117
Other	<u>4.9</u>	<u>163</u>
	Total: 100.0	3,355
Ethnicity		
Hispanic/Latino	11.5	385
Non Hispanic/Latino	<u>88.5</u>	<u>2,960</u>
	Total: 100.0	3,345

APPENDIX M

Table 20. Self-Claimed Importance of Religion in Female Respondents' Lives

Level of Importance	# Female Respondents	% Female Respondents
Very Important	1,591	47.5
Fairly Important	1,081	32.2
Fairly Unimportant	176	5.3
Not Important at All/No Religion	<u>504</u>	<u>15.0</u>
	Total: 3,352	100.0

APPENDIX N

Table 23. Correlations between Peer Associate & Parental Control Measures

	Parental and Granted Autonomy			Parental Presence at Home		Time Spent in Shared Activities	
	Index	Curfew	Friends	Mom Home	Dad Home	With Mom	With Dad
Has Male Friend	.097 ***	.006	.068***	-.058**	-.035*	.004	-.009
Number of Male Friends	.120 ***	.063	.101**	-.027	.013	.022	.058
Has Female Friend	.023	.014	.079***	-.002	.044*	.039*	.061***
Number of Female Friends	.025	.015***	.129	.075*	.088**	.180***	.167***
Has Romantic Partner	.197***	.037*	.057*	-.139***	-.086***	-.137***	-.130***
Number of Romantic Partners	.181***	.022	.030	-.129***	-.055***	-.110***	-.101***
Has Sexual Partner	.155***	.083***	-.003	-.129***	-.100***	-.153***	-.171***
Has Male Associate	.123***	.010	.072***	-.070***	-.046***	-.024	-.034*
Number of Types of Male Associate	.221***	.062***	.056***	-.161***	-.100***	-.136***	-.147***
Male Associate Combinations	.204***	.061 ***	.014	-.162***	-.122***	-.166***	-.181***
Collapsed Male Associate Combinations	.191***	.061***	.014	-.140***	-.104***	-.158***	-.163***

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

APPENDIX O

Table 25. Model r^2 for Male Associate Variable Regressions on Combined Substance Use

Male Associate Variable	Model R^2
Has Male Associate*	.024
Number of Types of Male Associates*	.185
Male Associate Combinations*	18.3
Has Male Friend*	.021
Number of Male Friends*	.04
Has Romantic Partner*	.082
Number of Romantic Partners*	.10
Has Sexual Partner*	.157

* $p \leq .001$

APPENDIX P

Table 30. Model r^2 for Parental Control Variable Regressions on Combined Substance Use

Parental Control Variable	Model r^2
Autonomy Index***	.049
Autonomy Curfew***	.010
Autonomy Friends*	.002
Time Spent with Mother***	.025
Time Spent with Father***	.026
Mother Home***	.030
Father Home**	.006

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

APPENDIX Q

Table 32. Results for Bivariate Regressions of Time Spent in Shared Activities Measures on Substance Use

Bivariate Models	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
<i>Time with Mother on Combined Substance Use Index (N = 3351)</i>				
Intercept	-.36***	.05		
No Time Spent with Mother	.61***	.08	.25	
Time Spent in 1 Activity With Mother	.34***	.06	-.02	-.27***
Time Spent in 2 Activities With Mother	.21***	.05	-.15	-.40***
Time Spent in 3 Activities With Mother	.00 ^a		-.36	-.61***
<i>Time with Father on Combined Substance Use Index (N = 3351)</i>				
Intercept	-.29***	.08		
No Time Spent with Father	.41***	.08	.11	
Time Spent in 1 Activity With Father	.13	.08	-.16	-.27***
Time Spent in 2 Activities With Father	.01	.09	-.29	-.40***
Time Spent in 3 Activities With Father	.00 ^a		-.29	-.40***

***p ≤ .001

APPENDIX R

Table 38. Results for the Multivariate Regression of Male Associate Combinations and All Parental Control Measures on Substance Use (N = 3149)

	Parameter		Est. Mean	Difference from Comparison Category
	Estimate	S.E.		
No Male Associates	-.44***	.10	-.50	
Has Male Friends	-.42***	.10	-.48	.02
Has MF and RP but no SP	-.12	.09	-.17	.33***
Has MF, RP, and SP	.63***	.11	.57	1.07***
Other	.00 ^a		-.06	.44***
Autonomy Index = 0	-.40*	.16	-.30	
Autonomy Index = 1	-.29**	.09	-.19	.11
Autonomy Index = 2	-.25***	.06	-.16	.14
Autonomy Index = 3	-.28***	.05	-.19	.11
Autonomy Index = 4	-.12*	.05	-.02	.28
Autonomy Index = 5	.00 ^a		.10	.40*
No Autonomy on Curfew Decision	-.06	.05	-.16	
Has Autonomy on Curfew Decisions	.00 ^a		-.10	.06
No Autonomy on Friend Decisions	-.03	.05	-.14	
Has Autonomy on Friend Decisions	.00 ^a		-.11	.04
Mother Never at Home	.49***	.13	.20	
Mother Almost Never at Home	.11	.10	-.17	-.37*
Mother Home Some of the Time	.13**	.05	-.16	-.36**
Mother Home Most of the Time	.06	.04	-.22	-.42***
Mother Always Home	.00 ^a		-.28	-.48***
Father Never at Home	-.04	.07	-.17	
Father Almost Never at Home	.06	.08	-.07	.10
Father Home Some of the Time	.07	.07	-.06	.11*
Father Home Most of the Time	-.06	.08	-.19	-.02
Father Always Home	.00 ^a		-.13	.04
No Time Spent with Mother	.25***	.07	-.02	
Time Spent in 1 Shared Activity	.17**	.05	-.10	-.08
Time Spent in 2 Shared Activities	.13**	.05	-.13	-.11

Time Spent in 3 Shared Activities	.00 ^a		-26	-24***
No Time Spent with Father	.13	.08	-.01	
Time Spent in 1 Shared Activity	-.02	.09	-.16	-.15***
Time Spent in 2 Shared Activities	-.08	.09	-.21	-.20***
Time Spent in 3 Shared Activities	.00 ^a		-.13	-.12

Model $r^2 = .22$

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

APPENDIX S

Table 41. Results for the Multivariate Regression of Male Associate Combinations and All Control Measures on Substance Use (N = 3239)

	Parameter		Est. Mean	Difference from Comparison Category
	Estimate	S.E.		
No Male Associates	-.47***	.09	-.30	
Has Male Friends	-.48***	.09	-.31	-.01
Has MF and RP but no SP	-.19*	.08	-.02	.28***
Has MF, RP, and SP	.57***	.11	.74	1.04***
Other	.00 ^a	.	.17	.47***
White/Caucasian	.13	.07	.19	
Black/African American	-.22**	.07	-.16	-.35***
American Indian/Native American	-.04	.11	.02	-.17
Asian/Pacific Islander	.10	.12	.16	
Other	.00 ^a	.	.06	-.03
Age 11	-.40	.21	-.18	-.13
Age 12	-.37	.20	-.15	.03
Age 13	-.27	.20	-.05	.13
Age 14	-.15	.20	.07	.25***
Age 15	-.05	.20	.17	.35***
Age 16	-.04	.19	.17	.36***
Age 17	-.03	.20	.19	.38***
Age 18	-.11	.22	.11	.29*
Age 19	-.23	.27	-.01	.17
Age 20	.00 ^a	.	.22	.40
Religion “Very Important”	-.34***	.05	-.19	
Religion “Fairly Important”	-.12	.06	.02	.22***
Religion “Fairly Unimportant”	.11	.12	.25	.44***
Religion “Not Important”/ No Religion	.00 ^a	.	.14	.34***

Model $r^2 = .25$

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

APPENDIX T

Table 42. Final Regression Model: Male Associate Combinations, Parental Control Measures, and Control Variables Regressed on Substance Use (N = 3158)

	Parameter Estimate	S.E.	Est. Mean	Difference from Comparison Category
Intercept	.22	.24		
No Male Associates	-.43***		-.36	
Has Male Friends	-.42***	.10	-.36	.00
Has MF and RP but no SP	-.17*	.09	-.11	.25***
Has MF, RP, and SP	.57***	.08	.63	.99***
Other	.00 ^a	.10	.06	.42***
Autonomy Index = 0	-.24	.	-.12	
Autonomy Index = 1	-.17*	.14	-.05	.07
Autonomy Index = 2	-.17**	.08	-.04	.08
Autonomy Index = 3	-.22**	.06	-.10	.02
Autonomy Index = 4	-.08	.05	.04	.16
Autonomy Index = 5	.00 ^a	.	.12	.24
No Time Spent with Mother	.24***	.07	.08	
Time Spent in 1 Activity with Mother	.16**	.05	.00	-.08
Time Spent in 2 Activities with Mother	.12**	.04	-.03	-.11
Time Spent in 3 Activities with Mother	.00 ^a	.	-.16	-.24***
No Time Spent with Father	.04	.08	.06	
Time Spent in 1 Activity with Father	-.10	.09	-.07	-.13***
Time Spent in 2 Activities with Father	-.15	.09	-.13	-.19***
Time Spent in 3 Activities with Father	.00 ^a	.	.03	-.09
Mother Never at Home	.44***	.13	.29	
Mother Almost Never at Home	.06	.10	-.09	-.40*
Mother Home Some of the Time	.10*	.05	-.06	-.35**
Mother Home Most of the Time	.04	.04	-.11	-.42***
Mother Always Home	.00 ^a	.	-.16	-.47***
White/Caucasian	.09	.08	.11	
Black/African American	-.28***	.08	-.26	-.37***
American Indian/Native American	-.11	.12	-.10	-.21*
Asian/Pacific Islander	.09	.12	.10	-.01

Other	.00 ^a	.	.02	-.09
Age 11	-.28	.17	-.19	
Age 12	-.24	.17	-.15	.04
Age 13	-.18	.17	-.09	.10
Age 14	-.11	.17	-.02	.17
Age 15	-.03	.17	.06	.25*
Age 16	-.03	.16	.07	.26**
Age 17	-.06	.17	.03	.22**
Age 18	-.13	.19	-.03	.16**
Age 19	-.15	.26	-.05	.14
Age 20	.00 ^a	.	.09	.10
Religion "Very Important"	-.26***	.06	-.23	
Religion "Fairly Important"	-.08	.06	-.05	.18***
Religion "Fairly Unimportant"	.12	.13	.15	.38***
Religion "Not Important"/ No Religion	.00 ^a	.	.03	.26***

Model $r^2 = .27$

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

VITA

Sarah Gwynne Whiteford was born and raised in Paducah, KY. She graduated Reidland High School in 1999 as class valedictorian and attended Lambuth University on a full academic scholarship. She graduated Magna Cum Laude from Lambuth University in 2003 with a B.S. in Sociology and a B.A. in Psychology. From there she began her graduate studies at Florida State University and earned a M.S. in Social Science Research before transferring to the University of Tennessee and pursuing her Ph.D. in sociology with a specialization in criminology. While completing her doctoral studies at the University of Tennessee and teaching courses as a graduate teaching assistant, she was also employed as an adjunct faculty for Maryville College and Pellissippi State Technical and Community College. She has currently accepted a three-year Visiting Assistant Professor of Sociology position at Hartwick College in Oneonta, NY and began teaching courses in sociology and criminal justice there Fall 2010.