Precise Point Positioning Inertial Navigation Integration for Kinematic Airborne Applications

Ryan Watson

Follow this and additional works at: https://researchrepository.wvu.edu/etd

Recommended Citation
https://researchrepository.wvu.edu/etd/6925
Effects of Parent and Peer Behaviors on Adolescent Sexual Behavior: Are Positive and Negative Peer Behaviors Moderators?

S. Michelle Watson

Thesis submitted to the
College of Education and Human Services
at West Virginia University

in partial fulfillment of the requirements for the degree of

Master of Arts
in
Educational Psychology
with an emphasis in Child Development and Family Studies

Kristin L. Moilanen, Ph. D., Chair
Jessica Troilo, Ph. D.
Lesley Cottrell, Ph. D.

Department of Learning Sciences and Human Development

Morgantown, West Virginia
2016

Keywords: [adolescence, sexual behaviors, problem behavior, parenting behavior, supportiveness, strictness, peer behaviors]

Copyright 2016 Stephanie Michelle Watson
ABSTRACT

Effects of Parent and Peer Behaviors on Adolescent Sexual Behavior: Are Positive and Negative Peer Behaviors Moderators?

S. Michelle Watson

Adolescents and young adults account for a significantly high proportion of unintended pregnancy and sexually transmitted infection cases in the United States. According to Jessor’s Problem Behavior Theory, combined protective factors, such as exposure to positive parenting and peer behaviors, create an environment that is supportive of conventional behaviors and discouraging of problem behaviors. There is an extensive amount of literature on parent and peer influences on adolescent sexual behavior but few studies address the interactive influence of both parent and peer behaviors on adolescent sexual risk-taking. The purpose of this study was to examine the relationship between maternal supportiveness and strictness on adolescent sexual risk-taking, as well as the moderating influence of peer involvement in positive or negative activities. A sample of 14-16 year old adolescents was drawn from the National Longitudinal Survey of Youth-1997 (NLSY-97; N = 4,008, 50.5% male, 59.4% White, 26.5% Black, and 13.3% other). Higher levels of maternal supportiveness, maternal strictness, and positive peer behaviors were each associated with lower levels of sexual risk-taking two years later. High levels of negative peer behaviors were related to high sexual-risk taking two years later. No interaction terms were significant. Important implications for positive peer relationships were also found. Future research should focus on the comparison of parental warmth and control variables as moderators for the relationship between peer influence and adolescent sexual risk-taking.
# Table of Contents

Abstract ........................................................................................................................................ ii

Table of Contents .......................................................................................................................... iii

List of Tables .............................................................................................................................. v

List of Figures ........................................................................................................................... vi

Chapter I: Introduction ............................................................................................................. 1
  Definition of Terms ..................................................................................................................... 1
  Statement of the Problem ........................................................................................................... 3
  Statement of Purpose .................................................................................................................. 6

Chapter II: Literature Review ................................................................................................. 9
  Theoretical Framework .............................................................................................................. 10
  Effects of Parental Supportiveness .......................................................................................... 18
  Effects of Parental Control ....................................................................................................... 21
  Effects of Positive Peer Behaviors ........................................................................................ 27
  Effects of Negative Peer Behaviors ......................................................................................... 38
  Effects of Parent and Peer Interactions .................................................................................. 43
  Demographic Controls ............................................................................................................. 51
  The Current Study ................................................................................................................... 53

Chapter III: Method ............................................................................................................... 56
  Participants and Procedures .................................................................................................... 56
  Measures ................................................................................................................................. 57
  Analysis Plan ............................................................................................................................ 60

Chapter IV: Results ................................................................................................................. 62
Preliminary Analyses .............................................................................................................................. 62
Hypothesis Testing ................................................................................................................................. 63

Chapter V: Discussion .............................................................................................................................. 66

Maternal Parenting Behaviors and Adolescent Sexual Risk-Taking ........................................................ 67
Peer Behaviors and Adolescent Sexual Risk-Taking ............................................................................. 69
Interactions Between Parents and Peers .................................................................................................. 71
Demographics and Sexual Risk-Taking ................................................................................................... 74
Limitations and Future Directions .......................................................................................................... 74
Conclusion .............................................................................................................................................. 78

Appendix A: Demographics ................................................................................................................. 80
Appendix B: Maternal Behavior .............................................................................................................. 81
Appendix C: Peer Behavior ...................................................................................................................... 82
Appendix D: Sexual Behavior ................................................................................................................ 83
References ............................................................................................................................................... 84
## List of Tables

Table 1: *Predictor Variables and Descriptive Statistics* .............................................................. 97  
Table 2: *Variable Correlations* ..................................................................................................... 98  
Table 3: *Summary of Longitudinal Models Predicting Sexual-Risk Behaviors at Time 2 with Poverty Level Ratio Included* ........................................................................................................ 99  
Table 4: *Summary of Longitudinal Models Predicting Sexual-Risk Behaviors at Time 2 without Poverty Level Ratio Included* ........................................................................................................ 100
List of Figures

Figure 1: *Theoretical Model* ........................................................................................................ 101
Chapter I

Introduction

Effects of Parenting and Peer Behaviors on Adolescent Sexual Behavior: Are Positive and Negative Peer Behaviors Moderators?

There is a long standing argument on whether parents or peers have the most influence on adolescent sexual development. On one side, parents serve as one of the first sources of socialization for optimal sexual development (Leftkowitz & Stoppa, 2006). Adolescents have described their parents as having the most influence on their sexual behavior (Moore, Raymond, Mittelstaedt, & Tanner, Jr., 2002). On the other hand, Spainer (1976) proposed that peers have a greater influence than parents. Adolescents have reported discussing sexuality more often with their friends than with their parents (Pistella & Bonati, 1998). In early adolescence, peers begin to influence short-term choices such as music, clothing, and hairstyle, however, parents still had a stronger influence over choices with long-term consequences such as sexual behavior and substance use (Wang, Peterson, & Morphey, 2007). More research is needed on how parent and peer behaviors interact to predict adolescent sexual risk-taking. The purpose of this study is to examine the effects of parent and peer behaviors on adolescent sexual behavior and determine whether positive or negative peer behaviors serve as moderators between parenting processes and adolescents’ sexual behavior. A better understanding of these relationships could enlighten researchers of antecedents to risky sexual behavior and lay the foundation for innovative prevention strategies.

Definition of Terms

Before moving forward is it essential to define key terms used throughout this investigation to ensure a better understanding of the relationships between parenting and peer
behaviors and adolescent sexual behavior. First, parenting behaviors are practices used by parents that vary depending on the context of the situation and are used to enable socialization goals (Darling & Steinberg, 1993). Examples include monitoring (e.g., tracking children’s whereabouts and structuring their activities), behavior management (e.g., negotiation and limit setting), and social cognitions (e.g., norms, values, and parenting goals representing the parent’s belief system) (Dishion & McMahon, 1998). The parenting behaviors of interest in this study are perceived maternal supportiveness and strictness. Researchers have defined maternal supportiveness as a measure of the quality of parent-child relationships that helps to shape adolescents’ attitudes and beliefs, which in turn influences adolescents’ choices and relationships (Parkes, Henderson, Wight, & Nixon, 2011). Parents’ encouragement, closeness, lovingness, trust, understanding, and connectedness with children are all examples of how researchers have conceptualized parental supportiveness (Ream & Savin Williams, 2005; Trejos-Castillo & Vazsonyi, 2009). The current study measures maternal supportiveness as the degree to which participants perceive their mothers to act supportive towards them. Maternal strictness is perceived as a form of discipline in which restrictive rules or expectations regarding adolescents’ behaviors and activities are enforced (Schuster, Mermelstein, & Waschlag, 2013). In this study, whether participants perceived their maternal figure as strict or permissive was used to measure maternal strictness. The relationship between maternal parenting behaviors and adolescent sexual-risk behavior is further discussed in the literature review.

The present study also considers the effects of perceived peer behaviors. Peer behaviors in this study refer to positive and negative behaviors, demonstrated by peers that are common during adolescence. For instance, positive peer influences include the amount of peers involved in conventional behaviors, which are acts that society deems appropriate and conforms to
society’s standard of norms (Jessor & Jessor, 1977). In this study, conventional behaviors are measured by frequency of church attendance, participation in extracurricular activities, preparation for college, and volunteer work. On the other hand, negative peer influences include the amount of peers involved in problem behaviors, which are acts that go against societal norms and are unacceptable in society (Jessor & Jessor, 1977). Problem behaviors in this study include substance use, delinquency, and sexual intercourse. Positive and negative peer behaviors and their influence on adolescent sexual behavior are discussed further in the literature review.

Finally, the present study focuses on overall sexual risk-taking as the outcome. A composite of sexual risk behavioral outcomes considered in this investigation included being sexually initiated (i.e., ever having had sex with someone of the opposite sex), young age at sexual initiation (i.e., 14 years or younger), high number of lifetime partners (i.e., 2 or more partners), not using a method of birth control during sexual intercourse in the last 12 months (e.g., condom, birth control pills, etc.), and not using a condom during sexual intercourse in the last 12 months. Adolescent sexual risk-taking is a key factor in this study and a brief explanation of the impact sexual risk-taking has on society is presented below.

Statement of the Problem

Young people often will engage in risky sexual behaviors that lead to poor health outcomes, such as unplanned pregnancy and sexually transmitted infections (STIs; Healthy People 2020, 2012; Satterwhite, 2008). Almost half of all high school students in the United States reported having sexual intercourse (Center for Disease Control and Prevention [CDC], 2013a). Approximately one quarter (26%) of adolescents have not initiated sexual intercourse by the time they turn 20 years old; however almost half (48%) of 17 year olds have initiated sexual intercourse and most adolescents initiate at 18 and 19 years old, with more males initiating than
females (Finer & Philbin, 2013). By twelfth grade, 15% of high school students have had sex with four or more people in their lifetime (CDC, 2013a). Forty-one percent of high school students that have had sexual intercourse in the previous three months did not use a condom the last time they had sex (CDC, 2013a). Half of all new cases of STIs in 2013 were diagnosed among young people ages 15 to 24 years old (Satterwhite, 2008). In 2013, almost 10,000 adolescents and young adults ages 13-24 years old were diagnosed with the Human Immunodeficiency Virus (HIV; CDC, 2013b). Given that many (i.e., 78%) high school students that were sexually active in 2013 had never been tested for HIV (CDC, 2013a), there may have been even more adolescents and young adults that contracted the HIV virus than what was reported.

Additionally, unplanned pregnancies are higher among 18 to 24 year old women than any other age group (Healthy People 2020, 2012). Almost half of all adolescent pregnancies are caused by ineffective use of birth control (Manlove, Ryan, & Franzetta, 2003). Interestingly, adolescent pregnancy rates have reached a record low of 26.5 live births for every 1,000 women ages 15-19 years old in 2013, a 10% decrease from 2012 (Martin, Hamilton, Osterman, Curtin, & Mathews, 2015). Adolescent pregnancy rates for all races decreased from 2012 to 2013, however, adolescent birth rates of Black and Hispanic youth remain two times higher than that of Whites and American Indian rates are one and a half times higher than that of Whites (Martin et al., 2015). Even though adolescent pregnancy rates have declined in the past few years, the United States still has the highest adolescent pregnancy rate in the westernized world (Sedgh, Finer, Bankole, Eilers, & Singh, 2015).

The negative short- and long-term effects of unplanned pregnancy during adolescence on society have been a concern for caregivers, health care providers, researchers, and the federal
government for many years. For a start, most adolescent mothers will drop out of school: only 50% of adolescent mothers obtain a high school diploma by the age of 22 years old, compared to the 90% of women that had not given birth in adolescence (Perper, Peterson, & Manlove, 2010). Limited education can lead to limited job opportunities, which in turn effect the financial stability of the household (Behavioral Health: Sexual Activity and Fertility, 2000). Children of adolescent mothers are then affected by the economic stability of the household through limited educational and community resources. For instance, children of adolescent mothers are more likely to have poor school performance, drop out of school, have health problems, be incarcerated during adolescence, and become unemployed as young adults (Hoffman, 2008). In addition, Meade, Kershaw, and Ickovics (2008) found that daughters born to adolescent mothers were 66% more likely to become adolescent mothers themselves. U.S. taxpayers paid at least $9.4 billion in 2010 for adolescent pregnancy and childbirth due to increased levels health care and foster care, increased levels of incarceration of children born to adolescent parents, and lost tax revenue due to limited educational attainment and lower income among adolescent mothers (National Campaign to Prevent Teen and Unplanned Pregnancy, 2013). Even after controlling for risk factors of adolescent pregnancy, such as poverty, low parental education, residence in single-parent homes, and poor academic performance, the social and economic effects of adolescent pregnancy persist (Hoffman, 2008).

Above all, the decrease in adolescent birth rates as of recently has great implications. In recent years adolescents have become less sexually active and are using birth control methods more often (Santelli, Lindberg, Finer, & Singh, 2007). The shift in adolescent pregnancy rates and adolescent sexual risk-taking has been attributed to pregnancy prevention strategies (Kirby, Crosby, Santelli, & DiClemente, 2009). Therefore, the negative effects of risky sex on
adolescents, their families, and society can be minimized with the implementation of prevention and intervention techniques. Furthermore, intervention strategies designed for adolescent problem behaviors that address multiple domains such as individual, peers, parents, school, etc. are more effective than those that target only one domain (Jackson, Geddes, Haw, & Frank, 2012). The current study aims to enhance multi-domain intervention efforts by examining how parent and peer behaviors work together to predict adolescent sexual behavior.

Statement of Purpose

Sexual behavior during adolescence is a normative part of development (Tolman & McClelland, 2011). Adolescents can explore sexuality in safe and healthy ways with the help of intervention strategies targeted towards multiple influences on sexual behavior (Lee, Cintron, & Kocher, 2014). The implications of interactions between parent and peer relationships to inform intervention strategies is not well understood because research on the influence of parent and peer relationships on adolescent sexual behavior has been limited. The current study focuses on how parenting and peer behaviors work together to either encourage or discourage adolescents from engaging in risky sexual behaviors, thus providing more insight for the development of intervention/prevention techniques designed for adolescent sexual risk-taking.

Parenting styles can have different effects on adolescents’ sexual development. For instance, Baumrind’s (1966) three main parenting styles are based on levels of parental warmth (e.g., supportiveness) and parental control (e.g., strictness). High levels of both warmth and control result in the most positive outcomes for children and are therefore referred to as positive parenting behaviors. Parental control, in particular, has shown to be an important parenting practice for predicting adolescent sexual behavior. Because adolescence is characterized by the desire for more autonomy (Zimmer-Gembeck & Collins, 2006), parents have the challenge of
deciding how much control adolescents should have in making decisions regarding their own lives such as how and with whom they spend their free time. The level of parental control is related to various sexual behavior outcomes in adolescence (Borawski, Levers-Landis, Lovegreen, & Trapl, 2003). Parental warmth has also been related to adolescents’ sexual risk-taking (Parkes et al., 2011; Trejos-Castillo & Vazsonyi, 2009). Therefore, maternal supportiveness and strictness were included in this study to better understand the relationship between parenting and adolescent sexual behaviors.

Adolescents are influenced to engage in an array of activities and behaviors based on peers’ modeling of behaviors (Padilla-Walker & Bean, 2009). Peers’ involvement in various activities can have both positive and negative influences on adolescent development depending the types of activities. For example peers engaged in conventional behaviors, such as extracurricular activities and attending religious services, will encourage the adolescent to engage in similar behaviors, resulting in more positive outcomes for the adolescent (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2007; Mott, Fondell, Hu, Kowaleski-Jones, & Menaghan, 1996). Adolescents that are exposed to more peers who are involved in problem behaviors, such as delinquency, substance use, and risky sexual behavior, will be encouraged to participate in those behaviors as well (Crockett, Raffaelli, & Shen, 2006). The difference between positive and negative peer behaviors has yet to be explored in the literature. Therefore, the distinction between positive and negative peer behaviors is used in this study to better understand ways in which researchers can maximize the benefits and decrease the risks of peer relationships on adolescent sexual behavior in intervention programs.

Ultimately, the purpose of this study is to investigate parenting and peer behaviors on adolescent sexual behavior. The study focuses on exploring the influence of maternal
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

supportiveness and strictness and peer involvement in various positive or negative activities on adolescent sexual behaviors. Rather than focusing on only one aspect of parenting behaviors, the current study compares the influence of two prominent aspects of parenting (i.e., parental warmth and control) on adolescents’ sexual risk-taking. Furthermore, the study provides novel insights on how peer relationships can influence adolescent sexual behavior by investigating the difference between positive and negative peer influences on adolescent sexual risk-taking. Lastly, the moderating effect of positive and negative peer behaviors on the relationship between maternal parenting behaviors and adolescent sexual behavior is assessed in this study. An explanation of how these variables work together to develop the framework for this study is discussed in more detail in the subsequent section.
Chapter II

Literature Review

The following review of literature provides background information on existing knowledge regarding parenting and peer behaviors on adolescent sexual risk-taking. First, an overview of Jessor and Jessor’s (1977) Problem Behavior Theory (PBT) is presented, accompanied by a discussion of how it is used in this study to understand the way a child’s environment interacts with the child to encourage or derail risky sexual behavior. Afterwards, the influence of parenting behaviors on adolescent sexual behavior will be examined, specifically maternal supportiveness and strictness. Then, peer involvement in various positive activities (e.g., attending religious services or participating in extracurricular activities) and negative activities (e.g., participating in a gang or engaging in risky sexual behavior) and their influence on adolescent sexual behavior will be discussed. Next, evidence providing support for the interaction between parenting and peer behaviors on adolescent sexual risk-taking and a case for considering peer behaviors as a potential moderator of the relationship between parenting practices and sexual risk-taking will be explored. Subsequently, a brief overview of observable trends in adolescent sexual risk-taking in terms of age, sex, race, and socioeconomic status (SES) is presented. Lastly, a summary of the presented literature will be provided, followed by an explanation of the hypotheses for the current study. It should be noted that some studies presented below include samples of early and late adolescents (12-13 years and 18-19 years respectively), mostly because of wide age ranges in some samples and limited research on parenting and peer behaviors (e.g., Lewis, Lee, Patrick, & Fosses, 2007; Mueller, Bensyl, Vesely, Oman, & Aspy, 2010). Even though developmental pathways may be different between the current sample (i.e., ages 14-16 years) and other age groups, these studies provide
information of the effects of parent and peer behaviors at different times during adolescence and sexual development.

**Theoretical Framework**

PBT by Jessor and Jessor (1977) is widely used in the literature for interpreting behavioral problems in adolescence such as delinquency, alcohol and drug use, and sexual risk-taking. The theory is based on a social-psychological framework that consists of four systems, each containing factors that determine whether an adolescent is more or less likely to engage in problem behaviors. These four systems are problem behavior, personality, perceived environment, and social environment. Jessor and Jessor (1977) stated that problem behaviors are outcomes of both the adolescent’s personality and their perceived and social environments. Each of these systems is discussed in turn below. See Figure 1 for a list of variables.

**Problem behavior.** Problem behavior is an act that raises societal concern in which the behavior is unacceptable and fails to conform to society’s standards (Jessor & Jessor, 1977). A specific behavior can differ in various settings based on personal and social meaning, context, age, and time in history (Jessor & Jessor, 1977). In this study, risky sexual behavior is examined as a problem behavior because there are high rates of unintended pregnancy and STI outbreaks among adolescents, which can have negative effects such as health issues, higher dropout rates, lower career opportunities, and poverty (Domenico & Jones, 2007). Other problem behaviors include alcohol and drug use, and deviant behaviors such as delinquency. On the other hand, conventional behavior includes acts that are acceptable norms in society, such as religious involvement and academic achievement (Jessor & Jessor, 1977). Participation in either form of behavior leaves less time for participation in the other. It is common that problem behaviors cluster together and people who engage in one are likely to engage in others (Jessor & Jessor,
1977). Demonstrated in Moilanen (2015), high levels of sexual risk-taking at ages 14 and 15 years was associated with high levels of delinquency at that age, however adolescents that reported less delinquency demonstrated faster growth in sexual risk taking from ages 14 and 15 to ages 22 and 23 years old. Participants with high levels of substance abuse in early adolescence also demonstrated more rapid growth of sexual risk taking into young adulthood. In general, engaging in one problem behavior can lead to involvement in others. Further discussion on ways in which adolescents can be influenced to participate in problem behaviors is presented below.

**Personality.** Although not considered in the present study, personality is characterized by social cognitive characteristics that could lead to problem behaviors, such as motivational instigation, personal beliefs, and personal control (Jessor & Jessor, 1977). Motivational instigation consists of whether the adolescents’ value and expectation of achieving specific goals will influence behavior to perform actions based on those goals. For instance, a common goal that can be of high value and expectation for adolescents is peer acceptance and, therefore, adolescents may be influenced to act in certain ways to gain peer acceptance. For example, if an adolescent believes that many of their peers are sexually active, they may engage in sexual activity out of their desire for peer acceptance (Bazargan & West, 2006).

Personal beliefs and personal control both demonstrate the cognitive controls against engaging in problem behaviors (Jessor & Jessor, 1977). Personal beliefs, however, are related to problem behavior indirectly, while personal control is directly associated with risk behaviors. Personal beliefs consist of the adolescent’s perceptions of the self, society, and the self within society. Those perceptions act as a control against motivational instigations to engage in problem behaviors. Personal control refers to the attitudes and moral principles of the adolescent that control against problem behavior. For example, deciding to engage in problem behaviors based
on the advantages and disadvantages that a person feels toward that behavior directly refers to whether that person will actually engage in the behavior or not (Jessor & Jessor, 1977). Overall, motivational instigations can encourage adolescents to want to engage in problem behaviors, while personal beliefs and personal control can act as buffers against problem behaviors.

**Perceived environment.** Next, the perceived environment is unique to each adolescent and refers to the individual’s experiences within their own environment, including their perceptions of models, encouragement to participate in problem behaviors, and their perception of social controls discouraging problem behavior (Jessor & Jessor, 1977). Within this construct, variables are classified as either distal or proximal. Distal variables are the social contexts in which the adolescent is found that include parental control, peer control, and parents versus peers influence (Jessor, Donovan, & Costa, 1991). Distal variables are indirectly related to problem behaviors, in that they predict whether the perceived environment is encouraging or discouraging of problem behavior. This is determined by the support and control from parents and peers, which group is more influential, and whether there is cohesion or conflict between the expectations of the adolescent from the two groups (Jessor & Jessor, 1977). Most often, when adolescents are centered more in the peer social context rather than in the parent context, they are more likely to participate in problem behavior, including sexual intercourse (Jessor & Jessor, 1977). The comparison between the environments that parents and peers provide is important for this study because the interaction between these two groups is what determines whether an adolescent will engage in problem behaviors. In an ideal scenario, there would be no discrepancies in expectations of adolescents from parents and peers and adolescents would be more influenced by positive parent and peer behaviors versus negative behaviors. However, many adolescents do not have positive influences from both parents and peers (Jessor & Jessor,
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

1977). This study addresses whether positive parenting behaviors can compensate simultaneously for negative peer behaviors, and vice versa.

In addition to determining which social context an adolescent resides in, proximal variables determine whether that social context is conducive to problem behavior. These variables are directly related to problem behavior. For instance, being within a social context that is prone to problem behavior provides the adolescent with opportunities to learn and engage in the behavior, and the perspective that the disadvantages of engaging in that behavior are irrelevant due to the models and support that the adolescent receives from their perceived environment (Jessor & Jessor, 1977). Parents and peers in a social context serve as models for expected behavior, therefore, if adolescents are in a social context in which it is perceived that most peers are engaging in sexual intercourse, they are going to be more likely to engage in sexual intercourse themselves because it appears as if sex is acceptable and expected among that social group. If an adolescent were in a social group where problem behavior is prevalent, the only way to offset this would be to have strong disproval from parents or peers, and/or strong personality controls against the problem behavior. In conclusion, the perceived environment system includes the influence of people in the adolescents’ environment, such as parents and peers, and whether that environment is conducive to problem behavior.

Social environment. The final system in the PBT model, the social environment, consists of three variables: demographics, religious membership, and positive-negative life events. Demographic characteristics within the current study include factors such as income, age, gender, and race (Jessor et al., 1991). Income can influence the prevalence of problem behavior being that low income status indicates less support for conventional behavior (Jessor et al., 1991). SES is used in this study for descriptive purposes, along with other controls such as the
child’s age, sex, and race. The other variables included in this part of PBT, such as parental occupation and education level, are not considered in the present study. Religious membership characterizes a person into a social institution that can vary from conservative to liberal indicating support for conventional behavior or lack thereof. Positive-negative life events are important experiences that shape one’s perception of life and others such as graduation ceremonies, or death of a close family member for example. Many of the variables in the social environment system are distal to problem behavior compared to the other systems.

**PBT and sexual activity.** Most studies that have tested PBT have examined problem behaviors such as delinquency, drug and alcohol abuse and ever having had sexual intercourse (Donovan & Jessor, 1985; Osgood, Johnston, O’Malley, & Bachman, 1988; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). Few studies have examined risky sexual behavior as it pertains to age of initiation, number of partners, condom use, STIs, and pregnancy. Originally, this theory was not developed to fit sexual-risk behaviors however, PBT can still be applicable to sexual-risk behaviors given how problem behaviors are related to adolescent sexual behavior. It makes sense that PBT would be applicable to sexual risk behavior, not only because of the research supporting the relationship between problem behavior and sexual behavior, but also because in Jessor’s theory, problem behaviors, including substance abuse, delinquency, and sexual risk-taking, are clustered together to form one condition of problem behavior (Jessor & Jessor, 1977).

Evidence supporting this claim include Jessor and Jessor’s (1977) original examination of PBT in which a Multiple Problem Behavior Index (MPBI) was used wherein problem behaviors were characterized as one construct. Jessor and Jessor (1977) analyzed whether having engaged in one problem behavior was related to higher likelihood of engaging in other problem behaviors
in a longitudinal studies of high school and college samples. The high school sample consisted of 432 mostly White, middle class students who were in seventh-nineth grade in 1969 and were surveyed annually for four consecutive years. The college sample consisted of 205 mostly White, middle class students who were first year students in 1970 and were also surveyed annually for four consecutive years. For both samples, each area of problem behavior was measured on a dichotomous scale (i.e., drinker versus nondrinker, problem drinker versus non problem drinker, marijuana user versus non marijuana user, non-virgin versus virgin, and high general deviance versus low general deviance) and chi-square analyses were used to explore associations between each of the variables. For the High School Study, all of the behaviors were significantly related to each other for both males and females. For example, adolescents who used marijuana were more likely to be non-virgins compared to those that did not use marijuana. The College Study showed similar levels of interrelatedness but the relations were not as pronounced as with the other study perhaps because of the high amounts of college students engaging in problem behavior. Nonetheless, college students who were problem drinkers were more likely to be involved in high general deviance than those who were not problem drinkers. Overall, the evidence from this research supports the notion that those who engage in a specific problem behavior will likely engage in other problem behaviors at a higher rate than those who don’t participate in that specific problem behavior, especially for high school students.

Since Jessor and Jessor’s (1977) original work, substantial accumulated evidence demonstrates the degree to which other problem behaviors covary with sexual risk-taking during adolescence, including substance use and delinquency. In a large ($N = 15,425$) nationally representative sample of high school students drawn from the Youth Risk Behavior Surveillance System (YRBSS), having ever used substances (e.g., cigarettes, alcohol, marijuana, stimulants,
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

opioids, prescription drug abuse, etc.), younger age at first use, and greater frequency of use was associated with ever having had sexual intercourse, younger age of sexual initiation, greater number of sexual partners, greater involvement in unprotected sex, and more frequent sexual experiences under the influence of substances (Thamotharan, Grabowski, Stefano, & Fields, 2015). Further, in a meta-analysis conducted by Ritchwood, Ford, DeCoste, Sutton, and Lochman (2015), early sexual initiation, multiple sex partners, unprotected sex, and risk of STIs were more likely for adolescents who frequently engaged in substance use (i.e., alcohol use, prescription drug abuse, and use of illicit substances) compared to those who did not use substances. Longitudinal evidence has also been demonstrated by Moilanen (2015) in which high levels of substance use (i.e., lifetime use of alcohol, tobacco, marijuana, etc.) were related to higher levels of growth in sexual risk-taking at a faster rate from middle adolescence to young adulthood than those with low levels of substance use. According to the literature it is evident that substance use and sexual risk-taking are highly correlated with each other.

Delinquency and deviant behaviors are also related to adolescent sexual risk-taking. A study using data from the National Longitudinal Study of Adolescent Health (Add Health) found that adolescents age 15 years and older with higher levels of delinquency (e.g., property damage) had greater levels of high-risk sexual behaviors (e.g., ever had nonromantic sex and never used a condom) than those with lower levels of delinquency (Chen, Thompson, & Morrison-Breedy, 2010). Adolescents ages 12-14 years recruited from three New England public schools for an HIV prevention intervention study that reported skipping school at least once were more likely to report higher frequency of engaging in sexual intercourse (i.e. oral, vaginal and anal), precoital activities (i.e., kissing or rubbing genitals with or without clothes), and more opposing attitudes regarding abstinence from sex (e.g., “I think it’s ok for kids my age to have sex.”) (Houck,
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

Hadley, Tolou-Shams, & Brown, 2012). In studies involving comparatively higher risk samples, gang involvement, one way in which negative peer behaviors is measured in the current study, was associated with increased risky sexual behavior compared to non-gang members (Voisin et al., 2004; Wingood et al., 2002). In a study where adolescent male detainees aged 14-18 from detention facilities in Georgia were surveyed, participants who were ever affiliated with a gang were more likely to have had sexual intercourse, have impregnated someone within two months before detainment, and have had sexual intercourse with multiple partners simultaneously than those who have no history of gang involvement (Voisin et al., 2004). Females are also affected by being involved in a gangs, given that 522 African American females aged 14-18 who had been involved in a gang were more likely to have contracted *Trichomonas vaginalis* and *Neisseria gonorrhoeae* than those who were not involved in a gang (Wingood et al., 2002). In the end, it’s clear that delinquency and sexual behavior are positively related.

In conclusion, the literature has not fully explored the relationship between elements of the percieved environment and adolescent sexual behavior. Some studies in the upcoming literature review investigate the influence of peers and/or parents on other problem behaviors such as substance use and delinquency. Finding studies on peer behaviors was also difficult because much of the previous research has reviewed adolescents’ involvement in problem behavior and little is known on how the perception of peer involvement in problem or conventional behavior is associated with adolescent problem behavior. Given that there are strong, consistent examples of the relationship between adolescents’ involvement in sexual risk-taking and other problem behaviors, it is reasonable to assume that behavioral outcomes of substance abuse and delinquency, in the literature, will be similar to that of sexual behavior.
Effects of Parental Supportiveness

According to PBT (Jessor & Jessor, 1977), parents can influence the likelihood of adolescents engaging in problem behavior by providing an environment that is more or less favorable to involvement in problem behavior. One way that parents can do this is by providing support to adolescents. In this study, the degree to which adolescents’ perceived their maternal figure to be supportive was used directly to predict adolescent sexual-risk taking behavior and also its interaction with peer behaviors. Supportiveness has been defined as the quality of parent-child relationships (Parkes et al., 2011). Positive parent-child relationships characterized by supportiveness allow for adolescents to be more responsive towards parents’ attitudes about adolescent sexual behavior (Jaccard, Dodge, & Dittus, 2002). For example, parents’ expectations of their children to not have sex during adolescence may decrease the likelihood that adolescents engage in risky sexual behavior in order to avoid disappointing their parents (e.g., Kulbok et al., 2010). Further examples of the relationship between supportiveness and adolescent sexual risk-taking are presented below.

In an international sample, Parkes and colleagues (2011) investigated whether parenting processes could influence aspects of adolescent sexual behavior, such as sexual debut and condom use. It was expected that high levels of parental supportiveness would be related to high levels of adolescents’ sexual risk avoidance. Participants included 1,854 10th grade students from school districts in central Scotland (M_{age} = 15.5 years). Parents’ supportiveness was examined with eight items that determined whether adolescents felt their parents were encouraging and loving, trusted their judgment, understood things they were going through, treated them like a baby, and tried to control everything. Adolescents were also asked about how often they disagreed with their parents on topics such as drinking, clothes, and homework. Adolescent
sexual risk was measured as whether participants had ever experienced anal or vaginal sexual intercourse and the frequency of condom use. Results found that adolescents with greater parental supportiveness were more likely to have not initiated sexual intercourse by the time of the interview compared to adolescents with less parental support. For those who had initiated sexual intercourse, parental supportiveness was also positively associated with adolescent condom use. The findings of this study demonstrate that parental supportiveness is a protective factor of adolescent sexual-risking taking. Not only could supportiveness help delay sexual initiation, but it also encourages positive sexual development in adolescence such as using condoms consistently.

Few studies have focused on adolescent minorities at risk for engaging in sexual risk-taking. Therefore, Trejos-Castillo and Vazsonyi (2009) conducted a study that examined maternal parenting, including supportiveness, and risky sexual behaviors among first and second generation Hispanic immigrant adolescents ages 12-16 year old. Although the focus was on differences between first and second generation immigrants, it was assumed that maternal supportive would serve as a protective factor against risky sexual behavior. The study sample contained 2,016 adolescents of Hispanic origin drawn from Add Health. Data on maternal supportiveness was collected at Time 1 and was measured by a five item scale that included questions such as, “How close do you feel to your mother” and “Most of the time, your mother is warm and loving to you (Trejos-Castillo & Vazsonyi, 2009, p. 728).” At Time 2, risky sexual behavior was measured by several items including age of sexual initiation, recent birth control use, method of birth control used, STI history, and number of lifetime sexual partners. Results demonstrated that high levels of maternal support at Time 1 was related to low levels of sexual risk-taking at Time 2. These finding demonstrate the need for development of positive parent-
child relationships in minority and immigrant youth. Therefore, more research that examines the relationship between parental supportiveness and adolescent sexual risk-taking is a valuable avenue of research for all youth regardless of race or ethnicity.

Many studies have examined supportive parenting as a form of relationship quality, however Cox, Shreffler, Merten, Schwedtfeger Gallus, and Dowdy (2015) analyzed supportive parenting by examining multiple aspects of parenting (i.e., relationship conflict, positive regard, monitoring, and communication). The researchers performed a study that assessed the influence of parental supportiveness on early adolescents’ attitudes toward sex. It was hypothesized that high levels of parental supportiveness would be linked to adolescents who are less likely to endorse attitudes that support sexual activity among early adolescents. The sample included 1,736 7th grade students recruited from schools in urban areas of the South Central of the United States ($M_{age} = 13.14$ years; 50% male). Participants were mostly low income (85%), Hispanic (31.1%) or African American (39.4%), and majority lived in a nuclear home with two biological parents. Parental supportiveness was evaluated based on adolescent perceptions of a variety of topics regarding parents’ parenting processes. Sexual attitudes were measured by how much adolescents agree that it is normal for boys and girls their age to engage in sexual activity. Results supported the researchers’ hypothesis. Adolescents who perceived high levels of supportive parenting techniques were less likely to approve of sexual activity during early adolescence. This study demonstrates the influence of supportive parenting on adolescents’ attitudes about sex. Therefore, parents could play a significant role in influencing the adolescent sexual-risk behavior by providing a supportive environment in which adolescents are susceptible to messages about healthy sexual development during adolescence.
Based on the literature, parental supportiveness has an influence on adolescents’ sexual risk-taking behavior. For example, supportive parenting has a positive influence on adolescent attitudes, increasing disproval of sexual activity among girls and boys their age (Cox et al., 2015). Therefore, parental supportiveness is important during early adolescence and increases the likelihood that adolescents will delay sexual initiation and develop safe sex practices (Parkes et al., 2011). It is also evident that supportive parenting practices are protective in a variety of cultures including Hispanic immigrant youth (Trejos-Castillo and Vazsonyi, 2009). The purpose of this study is to further examine how supportive parenting is related to adolescent sexual risk-taking and if maternal supportiveness interacts with positive or negative peer behaviors to predict risk sexual behavior in adolescence.

**Effects of Parental Control**

Another parenting behavior used in the current study to predict sexual risk outcomes in adolescence is maternal strictness. To determine maternal strictness, participants were asked whether their parent was strict or permissive. Strictness limits the likelihood that adolescents will be involved in problem behavior (Schuster et al., 2013). The likelihood for adolescents to be susceptible to peer pressure increases around age 14 (Berndt, 1979). Therefore less control from parents (i.e., high levels of autonomy) provides more opportunities for adolescents to be persuaded to engage in problem behaviors by peers. According to Barnes, Hoffman, Welte, Farrell, and Dintcheff (2007), 15- to 18-year-olds who spend more time with their peers than with their family are more likely to be involved in sexual activity, substance abuse, and delinquency. More time spent with family served as a protective factor against all of these behaviors, including sexual activity. Also, strictness is separate but related to other forms of parental control such as autonomy-granting and parental monitoring (Pomerantz & Ruble, 1998).
Being that few studies examining adolescent sexual-risk behavior have measured strictness as a form of parental control, literature for parental strictness and other forms of parental control, such as autonomy-granting and parental monitoring are discussed in further detail below.

First, Deptula et al. (2010) examined the association between allowed independence and adolescent sexual risk behaviors using data from Add Health. The researchers attempted to address several research questions, one of which is whether allowed independence is associated with condom use cross-sectionally. Another question is whether allowed independence is associated with sexual initiation longitudinally. In the first wave of the study completed in 1994, 16,980 male and female adolescents (49.7% males, $M_{age} = 16.01$ years) responded to questions pertaining to whether they had initiated sexual intercourse and frequency of engaging in unprotected sex in the past year. They also reported on the degree to which the parents allowed them to make decisions about their life in areas such as friends, clothing, television, and eating habits. Approximately one year later in Wave II, participants again reported on whether they ever had had sexual intercourse. In Wave III, completed between 2001 and 2002, respondents reported their history of unintended pregnancy in the context of a relationship since Wave II. In addition they were tested for three STIs and asked about their history of STI diagnosis within the past year at Wave III. Results indicated that at Wave I high levels of allowed independence was associated with concurrent high levels of unprotected sexual intercourse than those with less allowed independence. Sexual initiation at Wave II was also associated with high levels of allowed independence at Wave I. Allowed independence did not predict history of unintended pregnancy and STIs in young adulthood. It can be concluded from these findings that more allowed independence during early adolescence could lead to more opportunities to initiate and engage in risky sexual intercourse throughout the adolescent years.
To further analyze the effect of autonomy-granting on sexual behavior over time, Moilanen (2015) conducted a study in which the purpose was to explore how sexual risk behavior changes from adolescence to young adulthood using 22 variables, one of which was autonomous decision-making, to predict latent growth factors. PBT was also used in this study to explain the relationship between the variables examined. Although not clearly stated, it was implied that high levels of autonomy would predict higher levels of sexual behavior. The data used for this study was a sample of 740 adolescents starting in the 1986 wave of the Children of the National Longitudinal Survey of Youth-1979 (CNLSY-79). Proportions for gender and three ethnic groups (i.e., Hispanic, African American, European American) were evenly distributed. Sexual risk-taking was measured using a composite of number of sex partners in the past year and contraceptive use at last intercourse. Decision-making autonomy was measured using seven self-report questions addressing whether adolescents were able to make decisions in different areas of their lives without parent input (e.g., how to spend their money). Results indicated that high levels of autonomous decision-making at ages 12-13 years were also related to high initial levels of sexual risk-taking at ages 14-15 years. Therefore, adolescents whose parents allowed them to make decisions regarding various aspects of their lives on their own were at increased risk of high sexual risk-taking. Too much freedom in regards to decision-making may allow adolescents more opportunities to interact with peers and be involved in risky sexual behavior.

In another investigation examining the effects of parental control on adolescent sexual behavior, Borawski, et al. (2003) hypothesized that high levels of negotiated unsupervised time between parents and adolescents would result in adolescents’ engaging in high levels of involvement sexual behavior and substance use but in safe ways such as using condoms consistently. The sample consisted of 692 9th and 10th grade adolescents (\(M_{age} = 15.6\) years,
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

50.1% female, 40.8% White, 36% African American, and 20.5% Hispanic) from urban high schools in the Midwest. Adolescents reported on their perception of how their parents manage the ways in which they spend unsupervised time with peers. Behavioral outcomes were measured by sexual behavior (i.e., ever had sexual intercourse, number of partners in the last four months, condom use, and STI history in the past 18 months) and use of substances (i.e., frequency of tobacco, alcohol, and marijuana use). Adolescents who reported that their parents allowed them to have more unsupervised time with peers reported more frequency of sexual activity and substance use than those who were allowed less unsupervised time with peers. However, those adolescents with more negotiated unsupervised time were more likely to use condoms and to refrain from having sex if a condom was not available. When considering age of sexual initiation, intentions to have sex, having unprotected sex, and being diagnosed with a STI, those with more negotiated unsupervised time were no more at risk than those with less negotiated unsupervised time. Results were the same even when controlling for other parenting practices, such as parental monitoring and parental trust. Therefore, adolescents who are more responsible may get more opportunities to negotiate time use and be allowed more autonomy, which would ultimately give them more opportunities to engage in risk behaviors.

Parental monitoring is another form of parental control that has been associated with adolescent problem behavior quite often in the literature. One example includes Huang, Murphy, and Hser’s (2012) investigation of the relationship between parental monitoring and problem behaviors using discrete-time survival mixture modeling to analyze 5,305 adolescents drawn from the NLSY-97. It was hypothesized that consistent parental monitoring in early adolescents will delay adolescent sexual initiation and restrain adolescents from engaging in risky sexual behavior and other problem behaviors. Data from nine waves of the study, from 1997-2005, were
analyzed and adolescents between the ages 12-14 years old at baseline were assessed annually. Parental monitoring was assessed by the adolescents’ perception of how much their parent knows about their close friends, their close friends’ parents, who they are with when they are not at home, their teachers, and what they do at school. Sexual behavior was not measured until age 14, however, it was assessed using age of sexual initiation and sexual risk (i.e., number of sexual intercourse experiences, frequency of condom use, and number of sexual partners in the last year). Substance use included the quantity and frequency of smoking cigarettes, drinking alcohol, and using marijuana. Delinquency was measured by incidents of getting arrested.

Parental monitoring trajectories included High (n = 3,781), Increasing (n = 262), Decreasing (n = 443), and Low (n = 819). Adolescents in the High group were more likely to be sexually experienced and engaged in more risky sexual behaviors than those in the Low group over time. The Increasing group reported more marijuana use than the High group from 14-16 years old. After 16 years, the High group had the highest levels of alcohol use. The High group also reported the lowest arrest rate over time, while the Low group reported the highest arrest rate. The findings of study on parental monitoring appear to be similar to that of autonomy-granting studies mentioned above.

To further understand the relationship between various levels of autonomy-granting and sexual behavior, researchers Lanza, Huang, Murphy, and Hser (2012) examined how autonomy-granting coupled with responsiveness in early adolescence predicated sexual risk-taking behaviors in late adolescence through latent class analysis. It was hypothesized that the low responsiveness/high autonomy-granting class would be related to high levels of risky sexual behavior in adolescence and the high responsiveness/moderate autonomy would be associated with low levels of risky sexual behavior. The study sample consisted of 4,743 adolescents drawn
from the National Longitudinal Survey of Youth-1997 (NLSY-97), the same dataset that was used for the current study. In Round I of the study in 1997, adolescents aged 12 to 14 years old reported on perceptions of autonomy-granting and responsiveness from their primary maternal figure. Autonomy-granting was assessed by who set the limits on how late they can stay out at night, who they can hang out with, and what kinds of TV shows or movies they can watch. Responses included either parent, adolescent, or both. Responsiveness was assessed as how often the child receives praise, criticism, blame, etc. Adolescents reported on their sexual behavior including frequency of sexual intercourse, condom use, and number of sexual partners once at age 16 and again at age 18. Results indicated that adolescents with parents that were in the low responsiveness/high autonomy-granting class had the highest levels of sexual risk-taking at age 16 and 18 compared to high responsiveness/low autonomy-granting, moderate responsiveness/moderate autonomy-granting, and high responsiveness/moderate autonomy-granting. The class with the lowest sexual risk-taking levels was high responsiveness/moderate autonomy-granting compared to the other classes. High levels of autonomy coupled with little responsiveness may allow adolescents too much freedom in decision-making and reliance on peer support groups, which in turn provides more opportunities for adolescents to engage in problem behaviors. Providing just enough autonomy along with high levels of responsiveness allows adolescents to rely on the parents for support and gives them the tools to make healthy decisions when pressured from peers to engage in problem behavior.

Additional support for the association between parental control and adolescent sexual risk-taking can be found in literature on other problem behaviors. Mounts (2004) conducted a study focusing on the relationship between adolescents’ perceptions of autonomy granting and problem behaviors such as delinquency and substance use in adolescence. It was hypothesized
that high levels of autonomy granting will be associated with low levels of delinquency and substance use. The sample consisted of 322 adolescents in the seventh and eighth grades from suburban areas outside of a large city in the Midwest. Participants responded to questions about the perception of their parents’ level of autonomy granting regarding their relationships with peers. Delinquent behavior was measured by frequency within the past three month of using a fake identification, stealing, or fighting physically. Substance use was measured by frequency within the past three months of using alcohol, marijuana, and other drugs. Results indicated that high levels of autonomy-granting were associated with high levels of delinquency and substance use. It is evident from this study that high levels of autonomy granting is associated with a multitude of problem behaviors in addition to sexual risk-taking.

The literature has shown that autonomy-granting has a significant relationship with adolescents’ sexual behavior. Generally, high levels of autonomy granting have been associated with high levels of sexual risk outcomes (Deptula et al., 2010; Moilanen, 2015) and other problem behaviors (Mounts, 2004) with the exception of adolescents who use condoms consistently (Barnes et al., 2003). Moderate or balanced levels of autonomy granting are more protective than high or low levels when assessed with adolescent sexual risk behavioral outcomes (Lanza et al., 2012). Reflecting this literature, the goal of this study is to further the research on the influence of parental control on adolescent sexual behavior and examine how peer behaviors factor into those linkages.

Effects of Positive Peer Behaviors

The present study also considered possible impacts of peers’ involvement in various activities. Peers can compete or collaborate with parents in encouraging an environment that is conducive to problem behavior (Jessor & Jessor, 1977). In the current study, positive peer
behaviors include productive and prosocial behaviors performed by the majority of peer within an adolescent’s environment. In the present study, positive peer behaviors are considered using a multi-item index assessing the degree to which adolescents perceive their peers to be involved in prosocial activities (i.e., attendance in religious services, participation in school activities, volunteering, and college planning). Previous research has been limited in investigating the influence of peer involvement in these positive activities on adolescent sexual risk-taking. To date, the majority of the literature on this topic has included how the influence of the adolescent’s own participation in positive activities is related to their own sexual behavior (e.g., Hardy & Raffaelli, 2001); thus, below these types of studies are discussed in order to provide evidence for the potential impact of peer involvement in such activities. There are no known examples in which a composite of these various forms of positive peer behavior has been considered. Yet, there is some information about the influences of peer participation in religious services and extracurricular activities on adolescent sexual risk-taking, which are discussed in turn below. Also discussed below is more literature on how positive peer behaviors are associated to other problem behaviors that related to sexual behavior such as substance use and delinquency.

Religiosity. To start, the role of religion can be very influential in predicting adolescent sexual activity. Some religions are disapproving of premarital sex and contraceptive use, which can influence the attitudes of adolescents and discourage them from engaging in risky sexual activities (Wallace & Williams, 1997). Religiosity is measured in several different ways throughout the literature, such as frequency of attending religious services (defined in this study as one form of positive peer behavior), involvement in religious activities, importance of religion in one’s life, and frequency of prayer (Hardy & Raffaelli, 2001). In this study peer religiosity is
measured by the perception of the percentage of kids in school that go to religious/church services on a regular basis. The subsequent sections will discuss relationships between adolescents’ own religiosity on sexual behavior. Following that a further examination of the literature on peer religiosity and how it is associated with problem behavior is discussed.

**Effects of adolescents’ own religiosity on their sexual behavior.** Adolescents’ own involvement in religious or church service will likely have positive outcomes in regard to sexual behavior. Hardy and Raffaelli (2001) conducted a study in which the goal was to examine bidirectional linkages between adolescents’ religiosity and first experience with sexual intercourse in a longitudinal study. They hypothesized that higher religiosity would be related to the less likelihood of initiating sexual intercourse than those who report lower religiosity. Another hypothesis was that respondents who initiate sexual intercourse during the study would be more likely to report less religiosity than those who remain virgins throughout the study. The sample consisted of 303 adolescents, ages 15-16 years old, drawn from the 1996 wave of the CNLSY-79 and who had not initiated sexual intercourse. At Time 1 adolescents were asked about their religiosity (i.e., a composite score of the frequency of attending religious services and importance of religion in their lives) and timing of sexual initiation. Religiosity and sexual initiation were assessed again two years later at Time 2. Results demonstrated that adolescents who reported higher levels of religiosity at Time 1 were less likely to have initiated sexual intercourse by Time 2. Sexual initiation between Time 1 and Time 2 had no significant relationship with religiosity at Time 2. Adolescents’ own religiosity can serve as a protective factor for their sexual debut, however religiosity was not affected by sexual initiation. Therefore religiosity may support an environment that discourages problem behavior, but this study does not address how adolescents that have initiated sexual intercourse are affected by religiosity.
In another analysis of sexual initiation, Mueller and colleagues (2010) directed a study on the association between religious service attendance (i.e., frequency in the past 12 months) and religious activity involvement (i.e., involvement or noninvolvement), separately, on adolescent sexual initiation. They also examined these religious influences in conjunction with other influences of sexual behavior such as positive peer role models (e.g., “Are most of your friends responsible?”). They hypothesized that in the presence of other influences, either religious attendance or religious involvement will be more associated with never having initiated sexual intercourse. Participants in the study included 1,281 adolescents between the ages of 13 and 19 years old from randomly selected households in two large cities in the Midwest. Adolescents completed self-administered questionnaires through a computer system. Adolescents that had not initiated sexual intercourse were more likely to report religious involvement and reported more religious attendance than those who had not initiated. With the inclusion of other influences on sexual behavior in the analysis, involvement in religious activities, not attendance, continued to have a significant relationship with sexual initiation. Involvement in religious activities and having positive peer role models were each related to never having had sexual intercourse when all the variables were included in the analysis. Attendance alone is not sufficient in predicting sexual initiation. It is likely that positive peer role models support adolescents who are involved in religious activities. Involvement in religious activities may also provide a social network of positive peer role models. Therefore, positive peer role models may encourage adolescents to engage in conventional behaviors, thereby decreasing the risk of problem behaviors such as risky sexual behavior.

It is necessary to examine the effects of religiosity in various ethnic groups given that the importance of religion varies across ethnic groups. African Americans, in particular, place a
large amount of value on religion and are among the most religious subpopulations in the developed world (Taylor, Mattis, & Chatters, 1999). McCree, Wingood, DiClemente, Davies, and Harrington (2003) conducted a study in which the purpose was to investigate the relationship between frequency of engaging in religious activities and sexual behavior among African American females. The sample included 522 females recruited from schools and clinics that were between the ages of 14 and 18 years and had sexual intercourse with a male partner within the previous six months. Adolescents were asked about the frequency in which they attend religious services, pray or meditate, have religious conversations with others, and talk to religious leaders. Sexual behaviors were assessed by age at first intercourse, frequency of STI/HIV-prevention communication with a partner, condom use in the past 6 months, attitudes about sex, and self-efficacy in sexual communication with a new or steady partners and refusal of unsafe sex. Results found that adolescents with greater religious involvement were more likely to report less risky sexual behavior, more self-efficacy, and greater positive attitudes regarding condom use. In particular, adolescents who had high levels of religious involvement were more likely to initiate sexual intercourse later and more likely to use a condom in the past 6 months. Even among sexually active adolescents, religiosity serves as a protective factor against sexual risk-taking behaviors.

*Effects of peer religiosity on adolescent sexual behavior.* Even though as of today few studies have examined the influence of peer participation in religious services on adolescent sexual risk-taking, the studies that have explored this topic show mixed results. Mott et al. (1996) explored how friends’ attendance at religious services was related to early sexual behavior in adolescents. Using data from the CNLSY-79, 450 adolescents age 14 or older by 1992 responded to surveys about frequencies of adolescent and peer church attendance and whether they initiated
sexual intercourse by age 14. Results found that adolescents who attended church frequently and had peers that attended the same church were less than half as likely to initiate sex before the age of 14 compared to those adolescents who did attend church frequently but did not have peers that attended the same church and those who did not attend church at all. Therefore, attendance at religious services combined with peer influence is protective of sexual initiation before 14 years of age.

Adamczyk and Felson (2005) investigated the influence of friends’ public and private religiosity on the likelihood of adolescent sexual initiation. They hypothesize that it will be easier for adolescents to avoid religious proscriptions about sex if they have friends who are also religious. A nationally represented sample of 3,657 adolescents in grades seven through twelve was drawn from the Add Health. Public religiosity was referred to as involvement in religious activities and attendance in church services. Private religiosity included the significance of religion in one’s life and frequency of prayer. Sexual behavior was indicated by whether the respondent had ever had sexual intercourse. Participants nominated friends from school to participate in the study and those friends reported on their own private and public religiosity. As friends’ private religiosity increased, the probability that an adolescent would initiate sex within one year decreased. Friends’ public religiosity was not significant in the analysis. In addition, within the same sample, Adamczyk (2009) found that after initiating sexual intercourse, private religiosity only changed slightly over one year; however those who were once in a religious peer group, after initiating sex, these youth tended to seek less religious friends, perhaps to avoid judgment from their original peer group. In conclusion, peer religiosity serves as a protective factor for adolescent sexual initiation. When religious adolescents associate themselves with other religious adolescents they are encouraged to avoid premarital sex because the friends in
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

their environment are supportive of that. In the event that adolescents become sexually active they may opt for a different peer group that is more accepting of premarital sexual behavior. Thus, peer groups are important for influencing behavior and vice versa.

In conclusion, these findings have important implications for how peers’ involvement in religious activities may influence adolescent sexual behavior. First, religiosity can serve as a protective factor for risky sexual behaviors during adolescence. For example, frequent church attendance and religious importance can delay the onset of sexual initiation in early adolescence (Hardy & Raffaelli, 2001). Religious involvement in particular is an important protective factor of adolescent sexual initiation (Mueller et al., 2010), especially when adolescents are either provided with supportive peer groups that attend the same church (Mott et al., 1996) or supported by peers with religious values (Adamczyk & Felson, 2005). Therefore, support from peers that attend and are involved in religious activities creates an environment for the adolescent that is unsuitable for problem behaviors.

**Effects of extracurricular activity involvement.** In the current study, extracurricular activities included any organized sports, clubs, and other school activities. The effects of peer participation in extracurricular activities on adolescent sexual behavior have yet to be explored in the literature. Even literature on the relationship between adolescents’ own participation in extracurricular activities and their sexual behavior remains limited. In Feldman and Matjasko’s (2005) original review of work published on the relationship between school-based extracurricular activities and adolescent development between the early 1980s and 2004, only three studies were mentioned when sexual behavior was examined as an outcome variable. The follow up review of literature containing work published between 2004 and 2009 only yielded five studies that examined sexual behavior (Farb & Matjasko, 2012). Needless to say, more
research is needed on specific aspects of extracurricular activity involvement (i.e., breath, depth and intensity), moderation of demographic factors (i.e., race, gender, and SES), and the influence of parents and peers on adolescent sexual behavior (Farb & Matjasko, 2012). Despite the restricted amount of research on this topic, what is currently known is discussed below.

The way adolescents spend their time can be an important indicator for problem behaviors. Barnes et al. (2007) investigated the association between adolescents’ time use and problem behaviors. Compared to time spent with parents or peers, it was hypothesized that involvement in extracurricular activities and hobbies would have no relationship with problem behavior. The study’s sample consisted of 606 adolescents ages 15 to 18 years old taken from the third wave of a longitudinal study on problem behaviors. Time use was measured by the frequency and average amount of hours spent per activity or hobby such as participating in clubs, playing a musical instrument, doing crafts, reading, etc. Sexual activity was assessed by frequency of sexual intercourse in the past year and number of lifetime sexual partners. Results revealed that adolescents who spend more time on extracurricular activities and hobbies were less likely to engage in risky sexual behavior. Furthermore, involvement in sports activities in particular was related to less cigarette and illicit drug use. Adolescents that spend more time alone relaxing are more likely to have higher levels of illicit drug use and sexual behavior than those who spend less time alone. This study supports the notion that adolescents that spend their time in extracurricular activities, sports, and other hobbies are less at risk for engaging in problem behaviors than adolescents who spend more of their time relaxing by themselves.

To further examine aspects of extracurricular activities, Rose-Krasnor, Busseri, Willoughby, and Chalmers (2006) did a study in which one of their goals was to assess the effects of breath and intensity of activity involvement on adolescent problem behaviors.
Participants included 7,430 high school students ages 13-18 years old in Ontario, Canada. Students took part in the Youth Lifestyle Choices Community-University Research Alliance project and completed questionnaires. Overall involvement was assessed with the average frequency of participation across eight activities (i.e., school or organized sports and clubs, musical instrument practice, theatre arts, volunteer work, leadership in school or community activities). Breath of involvement was measured by the number of activities that the participant was involved in and involvement intensity was measured by the average frequency of participation in only the activities the respondent had participated in. Risk behavior was assessed in a composite score of substance use (i.e., alcohol, cigarettes, marijuana, and hard drugs), sexual activity (i.e., oral sex, vaginal intercourse, and sexual touching), delinquency (i.e., sneaking out, joyriding, shoplifting, damaging others’ property, joining a gang, and carrying a weapon). Results specified that adolescents who reported more overall activity involvement were less likely to report problem behaviors. Breath, but not intensity was significant in the final model of hierarchical multiple regressions. Involvement in five or six activities out of eight was related to lower levels of problem behavior. Participation in school clubs, musical instrument practice, and volunteer work was associated with low levels of problem behavior, whereas participation in leadership activities and theater arts was related to high levels of problem behavior. Overall, activity involvement can decrease the likelihood of adolescents engaging in problem behaviors, however the amount of activities and the type, or perhaps, combination of activities may be more significant in predicting problem behavior involvement.

Since Farb and Matjasko’s (2012) investigation of the literature in 2009 there have been few studies that examine the relationship between adolescent extracurricular activities and adolescent sexual behavior. Moilanen, Markstrom, and Jones (2014) conducted a study in which
the purpose was to examine the relationship between involvement in extracurricular activities and substance use among American Indian adolescents. They hypothesize that more frequency of involvement in extracurricular activities will be associated with lower levels of substance use and less risky substance abuse behaviors. Participants included 5,701 adolescents in the 8th, 10th, and 12th grades drawn from the Arizona Youth Survey. Extracurricular activities were measured by the frequency in the last year of participating in school-based clubs, organizations or other activities. Substance use was measured by the frequency of alcohol use and illicit drug use such as marijuana, hallucinogens, prescription pain relievers, etc. Behaviors related to substance abuse were characterized as frequency of selling drugs, being drunk or high at school, drunk driving, and whether they had ever rode in a car with someone who was drunk. Findings indicated that adolescents who reported high involvement in extracurricular activities were more likely to report low levels of substance use. Also, more involvement in extracurricular activities was associated with low levels of all the substance use behaviors. This study provides evidence that involvement in extracurricular activities acts as a protective factor against problem behavior such as substance in populations that are underrepresented.

Sports activities may be one of the most popular extracurricular activities that adolescents partake in outside of school; therefore several researchers have been interested in the specific effects of being an athlete on adolescent problem behaviors including Miller, Melnick, Barnes, Sabo, and Farrell (2007). They hypothesize that involvement in sports will be related to high levels of minor delinquency and low levels of major delinquency. The sample consisted of 612 adolescents ages 13-16 years old drawn from the first and third wave of the longitudinal Family and Adolescent Study. The participants were mostly White (n = 424) and males consisted of 45% of the sample. Overall delinquency was measured by the frequency of engaging in delinquent
acts in the past year. Cheating in school, cursing, parental conflict, lying, binge drinking, staying out past curfew, having sexual intercourse, and skipping school characterized minor delinquency. Physical assault, drug use, vandalism, stealing, credit card fraud, and breaking and entering characterized major delinquency. Athletic involvement included jock identity (i.e. those who identify themselves as being in a jock peer group at school), athlete status (i.e. whether the adolescent had participated in football, basketball, baseball, swimming, or track), and frequency of engaging in sports per year. Athlete status has no significant relationship with overall delinquency and sports frequency only had a weak relationship with overall delinquency. Jock identity, however, had a positive relationship with all measures of delinquency except drug use and conflicts with mother. In particular, adolescents that identify themselves as jocks reported sexual intercourse more often than adolescents that did not classify themselves as jocks. Given that adolescents with athlete status were more likely to identify themselves as jocks than non-athletes, it is likely that the identity associated with being involved in sports give adolescents high status among peers and the opportunity to engage in more deviant behavior. Therefore, adolescents who are considered jocks in school or who are friends with them may be more encouraged to engage in risky sexual behavior.

In sum, the relationship between involvement in extracurricular activities and adolescent sexual behavior has been understudied in the literature. What is known is that adolescents who spend more time engaging in extracurricular activities, versus being with peers, are less likely to initiate sexual intercourse (Barnes et al., 2007). Involvement in extracurricular activities can also deter adolescents from other problem behaviors such as substance use (Moilanen et al., 2014). However, extracurricular activities can predict problem behavior depending on the type or combination of extracurricular activities (Rose-Krasnor et al., 2006). For example, those
involved in sports that identify as jocks are more likely to be involved in problem behavior (Miller et al., 2007). Overall, extracurricular activities have positive effects on adolescents’ sexual behavior. It is likely that those involved in extracurricular activities are supported by positive peer influences and discouraged from engaging in problem behaviors.

Effects of Negative Peer Behaviors

In addition, negative peer behaviors, such as peer involvement in gangs, substance abuse, and sexual activity can have negative impacts on adolescent sexual risk-taking (Potard et al., 2008). The next main effect examined in this study is the relationship between negative peer behaviors and adolescent sexual behavior. Negative peer behaviors represent the process in which adolescents are encouraged to engage in problem behaviors because peers within their environment are engaging in problem behavior. In the present study, negative peer behaviors are measured by the adolescents’ perception of the amount of peers that participate in cigarette smoking, substance abuse, illegal gang activities, skipping school, and sexual intercourse.

Negative peer behaviors create an environment for adolescents that is conducive to problem behavior by providing role models and the presence of social expectations to engage in problem behavior (Jessor & Jessor, 1977). Compared to positive peer behaviors, the effects of negative peer behaviors on adolescent risk behavior have been more prevalent in the literature thus far. For example, using a sample from the AddHealth data set, Maxwell (2002) found that on average, adolescents are almost twice as likely to engage in a risk behavior, such as substance abuse and sexual initiation, if a same-sex friend participated in that behavior one year earlier.

The effects of peer participation in risk behaviors on adolescent sexual behavior will be reviewed further below.
In a study using data from the CNLSY-79, Crockett et al. (2006) investigated the relationship between peer pressure in early adolescence and adolescent sexual risk-taking in mid-adolescence. It was expected that high levels of peer pressure would be related to high levels of risky sexual behavior. The sample consisted of 518 children drawn from three waves of the CNLSY-79 that were ages 8-9 in 1990. In 1994 when the participants were ages 12-13, negative peer pressure was assessed through a self-report measure indicating whether participants experienced pressure from peers to engage in delinquent behavior such as skipping school. In 1998 when participants were between the age of 16 and 17, risky sexual behavior was measured through self-report surveys and assessed as a composite defined by age of sexual initiation, numbers of sexual partners in the last year, and condom use during last intercourse. Also using self-report questions, peer pressure was assessed with five items addressing adolescents’ pressure from peers to engage in delinquent behaviors (e.g., truancy). Results found that participants who reported high levels of pressure from peers to engage in deviant activities at ages 12-13 also reported high levels of risky sexual behaviors at ages 16-17. An environment that includes high levels of negative peer pressure will likely provide adolescents with many opportunities to engage in problem behavior such as risky sexual behavior.

Using the same data set and sample from the Crockett et al. (2006) study, Moilanen’s (2015) research on predictors of latent growth analysis in sexual risk-taking behavior also examined negative peer pressure as a predictor of risky sexual behavior during adolescence. Adolescents who reported high levels of peer pressure in early adolescence experienced high initial levels of sexual risk-taking during middle adolescence, compared to those that reported lower levels of peer pressure. This may be because adolescents with more support from peers to engage in deviant behaviors such as delinquency will likely be influenced to engage in other
deviant behaviors such as drug and alcohol use, all of which could lead to high levels of sexual risk-taking behaviors.

Aside from peer pressure, in an investigation to determine how peers’ actual behavior influences adolescent behavior, Sieving, Eisenberg, Pettingell, and Skay (2006) examined the relationship between peer sexual behavior and adolescent sexual initiation. They hypothesized that adolescents with close friends who have high levels of engagement in sexual behavior will be more likely to initiate sexual intercourse. Also, adolescents would be more likely to initiate sexual intercourse if they believed that they would gain peers’ respect by having sex. The sample included 2,436 students drawn from Add Health that were in grades 9-11 and had never had vaginal intercourse at Wave 1 of the study. Adolescents also nominated friends to participate in the study. At Wave 1, in the 1994-1995 school year, participants completed questionnaires on perceived peer respect (i.e., perception of whether peers would receive respect for having sex) and peers’ sexual experience (i.e., number of nominated friends who reported ever having sexual intercourse). Also at Wave 1 and 18 months later at Wave 2, participants reported if they had ever had sexual intercourse. For those who had initiated sexual intercourse between Wave 1 and Wave 2, the month and year of first intercourse was reported. First, results indicated that adolescents who initiated sex between Waves 1 and 2 had more friends who were sexually experienced at Wave 1 than adolescents who did not initiate sexual intercourse. Second, adolescents who had initiated sex were also more likely to believe that they would gain respect from their peers if they had sex compared to those who did not initiate sex between Waves 1 and 2. The findings imply that adolescent sexual initiation could be influenced by sexual norms demonstrated by peers. Adolescents who have peer role models of sexual behavior may be more inclined to believe that sexual intercourse during adolescence is acceptable.
Youth perceptions of their peers’ behavior may also influence risky sexual behavior in adolescents and youth adults. Lewis and colleagues (2007) investigated how perceptions of risky sexual behavior influenced college students’ sexual behavior. The researchers hypothesized that students would misperceive peers’ risky sexual behavior and think that their peers were engaged in more risky sexual behavior than they actually were. They also predicted that perceptions of same-sex peers’ risky sexual behavior would be positively associated with students’ own sexual behaviors. The sample consisted of 687 first-year college students drawn from a longitudinal study examining a web-based marijuana intervention. Analyses involved cross-sectional data from six months into the longitudinal study. The average age of participants at that time was 18.53 years. Students completed surveys on their own risky sexual behavior (i.e., number of sexual partners, frequency of casual sex, and frequency of consuming alcohol before or during a sexual occurrence) and a typical peer’s sexual behavior in the last six months. Findings supported the first hypothesis. Students’ perception of participation in risky sexual behavior of the average student was higher than students’ reports of their own sexual behavior. For the second hypothesis, perceptions of each sexual risk behavior on students own sexual risk behavior was analyzed separately using hierarchal multiple regression to control for demographic variables and other problem behaviors. Results demonstrated that high levels of perceived peer involvement in casual sex was related to high levels of students’ casual sex. Perceived alcohol related sexual behavior also had a positive relationship with students’ alcohol related sexual behavior. Findings for number of sex partners were not significant. Despite peers’ actual involvement in problem behavior, the perception of their involvement is exaggerated to the extent that young adults are influenced by their peers to believe that certain behaviors are normative and acceptable within their environment and so they strive to meet those expectations.
According to Jessor and Jessor (1977), norms established by peers within an adolescent’s environment influence whether or not they would engage in risky sexual behavior. Coley, Lombardi, Lynch, Mahalik, and Sims (2013) set out to understand the relationship between social norms from peers and the accumulation of sexual partners from early adolescence to early adulthood. Although not clearly stated, it was implied that more peer social norms favorable toward sexual behavior would be related to high levels of partner accumulation over time.

Participants consisted of 14,797 adolescents drawn from the Add Health database that were in 7th through 12th grade at the study’s baseline wave. Data were collected in four waves occurring in 1995, 1996, 2001-2002, and 2007-2008. Parent and school data were also collected at Wave I. The average age of adolescents in Wave I was 15 years old and in Wave IV the average age of participants was 29 years old. Sexual partner accumulation was measured in each wave by the youth and consisted of self-report of cumulative number of lifetime partners. Social norms from peers, or peer approval, was measured by the youth’s perception of how much respect they would gain from peers and attention from the opposite sex if they engaged in sexual intercourse. Schoolmate sexual experience was assessed by self-reports of all survey youth in each school that have had sexual intercourse. Results indicated that high levels of perceived approval from peers was associated with higher numbers of sexual partners at Wave I and more growth in partner accumulation from early adolescence to young adulthood than their peers. Also, being in a school with more schoolmates who have initiated sexual intercourse was related to greater numbers of sexual partners at Wave I. In a peer-centered environment with the expectation that engaging in sexual intercourse will lead to more respect and popularity among peers, adolescents are encouraged to engage in sexual behavior.

In conclusion, the literature has found that an environment with negative peer behaviors
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

has a damaging effect on adolescent sexual behavior. Pressure from peers to engage in deviant behavior was related to high levels of risky sexual behavior and increased the likelihood that adolescents will engage in risky sexual behavior throughout adolescence (Crockett et al., 2006; Moilanen, 2015). Associating with friends that are sexually active increased the likelihood that adolescents would initiate sex within a year (Sieving et al., 2006). Negative peer pressure and negative peer associations present in adolescent environments supports an environment of established sexual norms for the individual and expectations of engaging in sexual behavior in order to be respected amongst peers. For instance, adolescents within schools with more sexually active students reported more sexual partners compared to those with less sexually active schoolmates (Coley et al., 2013). Adolescents who perceive their peers to be engaged in casual sex were more likely to participate in casual sex themselves despite the finding that adolescents tend to overestimate the sexual behavior of an average student their age (Lewis et al., 2007). In addition, perceived approval of one’s sexual behavior by peers was also related to high amounts of sexual partners (Coley et al., 2013). Overall the literature has demonstrated in several ways that negative peer behaviors are related to risky sexual behavior in adolescents.

Effects of Parent and Peer Interactions

It has been demonstrated in the literature that both parents and peers separately influence adolescent sexual behavior (e.g., Borawski et al., 2003). However, little is known about how parent and peer behaviors interact to predict sexual risk-taking in adolescence. The current study focused on the interaction between parents and peers and whether the relationship between maternal parenting variables and adolescent sexual-risk behavior will vary based on the degree of perceived positive and negative peer behaviors. Currently, there are few known studies that have examined interactions between parent and peer behaviors in this way. Most have focused
on parental control behaviors as moderators of peer influences on adolescent sexual behavior (e.g., Oudekerk et al., 2014). Very few have examined parental warmth variables such as responsiveness (e.g., Beyers, Veryser, & Verlee, 2015). There has also been research on how parent and peer interactions predict other adolescent problem behaviors such as substance use (e.g., Dishion, Nelson, & Bullock, 2004), which, as previously discussed, is correlated with adolescent sexual risk-taking (e.g., Ritchwood, 2014). Thus, it remains possible that such parent-peer interactions may also be present for the sexual risk-taking behaviors of interest in the present study. An examination of the literature on this topic is presented below.

Research has investigated aspects of parental control such as hostile psychological control and whether it moderates the relationship between peer attitudes about sex and adolescents’ risky sexual behavior before age 16 (Oudekerk et al., 2014). It was expected that the relationship between peer attitudes and adolescent sexual behavior would be more pronounced for adolescents whose mothers were psychologically controlling compared to those whose mothers were not psychologically controlling. Drawn from a longitudinal study, the sample included 173 adolescents who were 13 years old at baseline and reported a mother-figure living in their home. Adolescents also selected a close same-sex peer in which they spend time with and talk about things in their life to participate in the study. Initially, adolescents responded to self-report surveys on the level of which mothers use hostile psychological methods to control how the respondent behaves (e.g., guilt, anxiety, and love withdrawal). Also at baseline, the adolescents’ close peer reported on what age they think it is acceptable for their peers to have sexual intercourse. Sexual behavior was measured annually from baseline until the respondent turned 16 years old and included a composite of number of lifetime sexual partners, number of lifetime experiences engaging in sexual intercourse, and frequency of failing to use contraceptive
methods. The study found that maternal psychological control moderated the relationship between peer acceptance of sex and adolescents’ early sexual risk-taking. For respondents who reported that their mothers used high levels of psychological control, as peers’ acceptance of early sex increased adolescents’ risky sexual behavior before age 16 also increased. For those who reported that their mothers used a low level of psychological control, the relationship between peer acceptance of early sex and adolescent sexual risk-taking was not significant. While high levels of maternal psychological control complimented the effects of negative peer influences, low levels of control canceled out the negative influence from peers in predicting adolescent sexual behavior. This research supports the notion that negative parenting processes increase adolescents’ likelihood of being influenced by peers to engage in risk behaviors.

Findings from other parts of the world on parent and peer interactions may provide more understanding on this topic. Along these lines, Van de Bongardt, Graaf, Reitz, and Deković (2014) conducted a two-wave longitudinal study using 900 Dutch adolescents to investigate how peer norms (i.e., descriptive norms and peer pressure) predicted adolescent sexual intention and if parent-child sex communication moderated the effects of multiple peer influences. Due to inconsistencies in the previous literature on the effects of parent-child communication, the researchers did not have an explicit hypothesis for the moderating effect of parent-child communication on the relationship between peer influence and sexual behavior. The sample of adolescents was drawn from a larger longitudinal study and included participants between the ages of 12 and 17 who had no sexual experience at baseline (i.e., never experienced naked touching, manual sex, oral sex, or vaginal intercourse). Participants answered questions on parent-child sex communication and peer norms at Time 1 and answered questions on sexual intentions at Time 2. Sexual intention was assessed by desire to have sex in the next school year.
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

Parent-child sex communication was based on the frequency of discussion on topics such as love and relationships, engaging in sexual behaviors, potential sexual partners, STIs and unintended pregnancy, condoms, and contraception. Descriptive norms were assessed by the perception of best friends that have experience with sexual intercourse. Peer pressure was measured by feeling pressured from peers to have sex because so many others are already doing it. Findings demonstrated that parent-peer interactions were significant in predicting sexual intentions. For participants who reported low parent-child sex communication, there was a positive relationship between perception of peers having sex at Time 1 and their intentions to have sex at Time 2. Adolescents who reported high parent-child sex communication demonstrated no significant relationships between descriptive norms and sexual intentions. The opposite was true when assessing the moderating effect of parent-child sex communication on the relationship between experienced peer pressure and intentions to have sex. For participants who reported low sex communication with their parents, the relationship between peer pressure and sexual intention was not significant. Adolescents who reported high parent-child sex communication, demonstrated a negative relationship in that low levels of peer pressure was related to high levels of sexual intention. This research provides more understanding of how parent and peer influences interact. If parent-child sex communication can act as a buffer against negative influences from peers on adolescents’ intentions to have sex it is likely that other aspects of positive parenting will have the same effects. Therefore, autonomy-granting could out shine the effects of negative peer influences on adolescent sexual behavior.

In another international sample, Beyers and colleagues (2015) analyzed how parental warmth and control behaviors interact with peer descriptive and injunctive norms to predict adolescent sexual experience and timing of behaviors in a Belgian sample. It was hypothesized
that both parental warmth and control variables would buffer the effects of peer norms on adolescent sexual behavior. Participants included 992 Belgian adolescents ages 12-20 year old ($M_{age} = 15.58$ years). Adolescent responded to questions on parenting behaviors, peer norms, and their own sexual experience at once. Sexual behavior was assessed by whether adolescents’ had experience in 13 sexual behaviors (e.g., kissing, touching each other’s genitals, vaginal intercourse) and the age in which the first experience of each? occurred. The researchers analyzed several parenting behaviors such as responsiveness (e.g., warmth and support), behavioral control (e.g., discipline), psychological control (e.g., intrusive and manipulative control), and autonomy support (e.g., allowing children to make their own decisions). Peer descriptive norms were measured by the participants’ perception of peer’ and friends’ experience in the same 13 sexual behaviors mentioned above. Peer injunctive norms were measured by the participants’ perception of whether their peers think sexual activity during adolescence is acceptable. Results demonstrated no significant interactions containing parents’ responsiveness or behavioral control. However, results did show significant interactions between parents’ psychological control and peer genital sexual experience (e.g. fingering, vaginal intercourse), as well as between parents’ autonomy support and peers non-genital sexual experience (e.g., kissing, masturbation). High peer genital experience was related to earlier timing of sexual behavior when parents’ psychological control was low compared to when psychological control was high. Conversely, high peer non-genital experience was associated with earlier timing of sexual behavior when parents’ autonomy support was high versus when autonomy support was low. Results demonstrate that interactions between parent and peer behaviors may be present for some parenting behaviors, but not all, including the ones assessed in the current study such as supportiveness and strictness. Despite having examples of sexual behavior in a peer centered
environment, parental control behaviors such as psychological control and autonomy-granting limit adolescents’ opportunities to be influenced by negative peer influences.

The existing literature has demonstrated that positive parenting influences can compensate for negative peer influences in predicting adolescent sexual behavior. Not only have parent and peer interactions had an influence on adolescents’ sexual behavior in the literature, but they have also demonstrated an influence on other adolescent problem behaviors. Given that the research predicting adolescent sexual behavior is scarce, a couple of studies examining the influence of parent and peer interactions on other adolescent problem behaviors will now be discussed in order to further support this potential linkage.

In an investigation on substance use, Dishion et al. (2004) conducted a longitudinal study to investigate the relationship between negative peer influences and adolescents’ marijuana use and the moderating effect of parent management. The goal was to test the premature autonomy hypothesis described by Dishion, Poulin, and Medici Skaggs (2000) as the process by which parents decrease their involvement with parenting in the presence of deviant peer influences and problem behaviors from adolescents. In this particular study the researchers hypothesized that there would be a significant interaction between peer influences and parent management in predicting adolescent marijuana use. Participants were drawn from a larger longitudinal study of fourth-grade boys from schools in the Pacific Northwest recruited in 1983-1984. Assessments were conducted yearly and included interviews, observations of videotaped interaction tasks, and public court records. Negative peer influences were assessed from about 13 years old to about 18 years old through a peer interaction task in which the boys and a nominated close friend were to plan an activity together, and discuss and solve problems pertaining to parents and peers. Negative peer influences were identified by the duration of “rule-break” talk, drug talk, and
antisocial behavior (i.e., frequency of engagement in antisocial behavior of the participant and peer and frequency of encouragement from peer to engage in antisocial behavior). Videotaped family interactions occurred from approximately ages nine to 16 years and required the participant and their families to talk about a family activity, and solve child-identified and parent-identified family problems. Family management was assessed by observed parental monitoring, parent-child relationship quality (i.e., verbal parental affection towards the child, friendliness of the child to the parent), and positive parenting (e.g., did not use sarcasm). From ages 12 to 19 years, beyond the focal age group in the current study, adolescent marijuana use was measured by the frequency of use in the previous year. Results indicated their hypothesis was supported in that the interaction between negative peer influences and family management was significantly related to marijuana use. Adolescents who reported high levels of negative peer influences also reported high levels of marijuana use compared to those with low levels of negative peer influences. This relationship was more pronounced for those who reported low levels of family management versus those with high levels. Low family management complimented the negative effects of deviant peer influences in predicting adolescent marijuana use. Therefore, according to the premature autonomy hypothesis, it is likely that low levels of autonomy-granting, will provide adolescents with more opportunities to be influenced by deviant peers to engage in risky sexual behaviors.

In another study that examined outcomes of adolescent substance use, Clark, Belgrave, and Abell (2011) conducted a study examining the moderating influences of parents and peers on adolescents’ substance use. They hypothesized that parental monitoring will moderate the relationship between negative peer influences and adolescent substance use. Participants included 567 African American students from the southeast of the United States. The students
were between the ages of 9 and 21 years old and the mean age was 15.27 years, which is a larger age range than the sample in the current study and most of the participants were younger than adolescents in the current study. Students completed questionnaires, with measures including the participants’ perceptions of a parental monitoring (i.e., awareness of after school activities), negative peer influences (i.e., involved with peers who engage in problem behaviors), and adolescent substance use (i.e., frequency of cigarette, alcohol, and marijuana use in the past 30 days). Results demonstrated that the researchers’ hypothesis was supported in that parental monitoring moderated the relationship between negative peer influences and adolescent substance use in the past 30 days. When negative peer influences were high, those with high parental monitoring were less likely to use cigarettes in the past 30 days than those with medium or low levels of parental monitoring. The same was true for alcohol and marijuana use in the past 30 days. These finding are consistent with others (e.g., Dishion et al., 2004) that find that parental monitoring can serve as a compensatory factor in relation to the effects of negative peer influences on adolescent substance use. When adolescents are influenced by peers to engage in problem behaviors, parental management processes may limited adolescents’ opportunities to engage in those behaviors.

It is clear that interactions of parenting and peer influences and how they are related to adolescent sexual behavior has been understudied in the literature. Of the existing literature, parenting processes were examined as moderators or mediators. The general consensus is that high levels of parental control behaviors, such as parental monitoring, are protective of adolescent sexual risk behavior in light of negative peer influences (Clark et al., 2011). However, parenting processes in the form of hostile control in conjunction with negative peer influences in conducive to adolescent sexual risk taking (Oudekerk et al., 2014). Other aspects of parenting
related to sexual behavior, such as parent-child sex communication, serve as a compensatory factor in the presence of negative peer influences when predicting sexual behavior of adolescents (van de Bongardt et al., 2014). However, other forms of parental warmth, such as responsiveness, did not interact with peer behaviors to predict adolescent sexual risk taking (Beyers et al., 2015). Nonetheless, parental control behaviors are also known to compensate for negative peer influences in predicting other adolescent problem behaviors, such as substance use (Clark et al., 2011, Dishion et al., 2004). According to Jessor and Jessor (1977) adolescents that are centered in an environment with negative peer influences will be more likely to engage in problem behaviors. The literature supports the notion that despite being influenced by a negative peer group, parental control techniques can outshine those negative influences and provide adolescents with more support towards refraining from getting involved in problem behaviors. It is unclear whether parental warmth behaviors, such as supportiveness and responsiveness, interact with peer behaviors to predict risky sexual behavior among adolescents. Thus, the goal of the current study is further the existing literature by investigating how positive and negative peer behaviors moderate the relationship between parenting behaviors and adolescent sexual behavior.

**Demographic Controls**

Control variables within this study include age, sex, race, family composition, and poverty level. Previous research has demonstrated that sexual behavior outcomes vary significantly depending on these five factors. In regards to age, analyses of the NLSY-79 dataset has demonstrated that adolescents and young adults between the ages of 14-21 years are more likely to initiate sexual intercourse as they get older (Crockett et al., 2006). Furthermore, 16-18 year olds were more likely to have initiated sexual intercourse than are 11-15 year olds.
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

(Maxwell, 2002). Age of initiation has shown to be correlated with cumulative risky sexual behavior and number of casual sex partners, in that those who initiate sex earlier were more likely to have high levels of cumulative risky sexual behavior and more casual sex partners than those who initiated sex later (Chen et al., 2010). Regarding sex, males had more nonromantic sex partners than females (Chen et al., 2010); males have also reported earlier ages of sexual initiation than females (Moilanen, Leary, Watson, & Ottley, in press). Regarding race/ethnicity, Black adolescents were more likely to have initiated sexual intercourse than White and Hispanic adolescents (Maxwell, 2002) and initiate sex at younger ages than Whites and Hispanics (Moilanen et al., in press). In addition, White females were more likely to use contraception in the past month between 2006 and 2008, while Hispanic women used contraception the least (National Center for Health Statistics, 2016). Adolescents between the ages 14 and 17 living in two-parent homes are also less likely to have initiated sexual intercourse than those living in single parent homes or living with neither parent (Moilanen, 2015; Santelli, Lowry, Brener, & Robin, 2000). In terms of SES, findings are inconsistent across studies. In one, adolescents ages 15-17 who live in a neighborhood with a high concentration of poverty were more likely to initiate sexual intercourse than those who lived in a neighborhood with a lower concentration of poverty (Cubbin, Brindis, Jain, Santelli, & Braveman, 2010). In Moilanen (2015), poverty status was unrelated to initial status or growth in sexual risk-taking between middle adolescence and emerging adulthood. Overall, child demographics, such as age, sex, race, SES, and family structure, influence whether adolescents are more or less likely to engaged in sexual behavior and the level of sexual risk; therefore, these variables are controlled in the present study.
The Current Study

It has been well established in the literature that parents are the primary source of sexual socialization for adolescents (Leftkowitz & Stoppa, 2006). However, peers have been known to have an even greater influence on adolescent sexual behavior (Spainer, 1976). As is evident in the preceding literature review, there is a great deal of information about how parents and peers independently impact adolescents’ sexual risk-taking behaviors. Yet, even in studies in which both parent and peer effects have been considered, few research studies have compared the interactive effects of parents and peers on adolescent sexual risk-taking. This study will provide insight on how various combinations of parent and peer behaviors can provide an environment that is protective or supportive of risky sexual behavior. Also, this study has the potential to highlight protective factors that may compensate for risk factors in predicting sexual behavior. For example, no known studies have examined the influence of peers’ engagement in positive, prosocial activities on adolescent sexual behavior. The implications from this study may inform researchers of intervention strategies that will enhance protective factors of positive peer behavior in light of negative parenting techniques that will help decrease the likelihood of adolescents’ involvement in risky sexual behavior. Also, no known studies have tried to examine how a composite of peer behaviors can influence adolescent sexual behavior. The influence of peers’ engagement in varies activities may be a better representation of overall positive and negative peer behavior on adolescent sexual behavior. Furthermore, a composite of sexual risk behaviors is also measured in this study because often analyses of individual behaviors do not capture the extent of risky sexual behavior in adolescence (Sieving et al., 1997). Overall, the purpose of this study is to examine the effect of parenting and peer behaviors on
adolescents’ sexual risk behavior and to determine whether peer behaviors will over-compensate for maternal parenting in predicting sexual risk behavior in adolescents.

**Hypothesized main effects.** The first goal in this study is to investigate associations between parenting processes (i.e., maternal warmth and control) and adolescent sexual behavior, as well as to examine the relationship between positive and negative peer behaviors and sexual behavior. It is hypothesized that high levels of maternal supportiveness will be associated with lower levels of sexual risk outcomes compared to low reports of maternal supportiveness. Alternately, maternal strictness is expected to be associated with less risky sexual behavior than maternal permissiveness. Furthermore, it is hypothesized that high positive peer behaviors will be associated with low sexual risk-taking in adolescents. Comparatively, high negative peer behaviors will be associated with high sexual risk behavior in adolescents.

**Hypothesized moderated effects.** The second goal is to investigate whether peer behaviors moderate associations between maternal parenting processes and risky sexual behavior in adolescences. The study aims to address whether associations between parenting processes and adolescent sexual behavior are different based on the degree of perceived positive or negative peer behaviors. This goal contributes to existing literature by providing information on whether peer behaviors modify the association between autonomy granting and adolescent sexual behavior. It is hypothesized that the association between maternal supportiveness and sexual-risk behaviors will be stronger for those with high positive peer behaviors than with low positive peer behaviors. Also, it is hypothesized that the relationship between maternal supportiveness and sexual-risk behaviors will be weaker for those with high negative peer behaviors compared to those with low negative peer behaviors. Additionally the relationship between maternal strictness and adolescent sexual-risk behavior is predicted to be more
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

pronounced when participants report high positive peer behaviors versus low positive peer behaviors. Finally, the relationship between maternal strictness and adolescent sexual-risk behavior is expected to be less pronounced when adolescents report high negative peer behaviors compared to those who report low negative peer behaviors.
Participants and Procedures

Data from the present study were drawn from the NLSY-97. The NLSY-97 is a nationally representative longitudinal study that initially involved a sample of 8,984 adolescents who were 12-18 year olds by December 31, 1996. The purpose of the broad NLSY-97 study is to examine adolescents’ transition from school to work as they enter adulthood. In addition to education and labor market experiences, the NLSY-97 also covers topic areas that examine problem behavior such as sexual activity, delinquency, and substance abuse. The original sample consisted of 51% males and 49% females. The sample also included 51.9% White, 26% Black, 21.2% Hispanic, and 0.9% Mixed race. Two subsamples were included in the NLSY-97 cohort. For the first subsample, 1,149 sample segments in 100 primary sampling units (PSUs) went through many screening interviews based on housing units in a geographic area to identify eligible participants (Moore, Pedlow, Krishnamurty, & Wolter, 2000). Of the 7,327 individuals that were eligible, 6,748 (92.1%) respondents participated in Round 1 of the study. The second subsample was an oversample of Black and Hispanic respondents designed to provide an adequate representation of Black and Hispanic youth. To achieve this, 599 sample segments in 100 PSUs were screened based on the number of Blacks and Hispanics living in a geographic area for eligibility. Areas with more Black and Hispanic residents had a greater chance of being selected for the oversample. In selected areas, housing units went through screening to guarantee that only Black and Hispanic respondents participated in Round 1. Of the 2,479 individuals that were eligible, 2,236 (90.2%) respondents participated in round one of the study. Starting in 1997, the qualifying youth and one parent participated in interviews and completed extensive
questionnaires. From there on, youth were interviewed annually. About 83% (7,423) of the original sample in 1997 has continued to participate in the study through 2012.

The current analysis used data that was collected in 1997 when adolescents were 14-16 years old (Time 1) and 1999 when adolescents were approximately 16-18 years old (Time 2). The initial sample meeting age criteria was \( N = 5454 \). For each household with multiple NLSY-97 participants, one eligible adolescent was identified at random to be included in the current sample. This procedure was necessary in order to preserve the independence of cases. Also, any cases that indicated they had initiated sex before age 10 years were dropped from the sample in order to avoid cases of possible sexual abuse. The final sample included 4,008 adolescents, 50.5% of which were males. This sample was ethnically diverse with 59.4% White, 26.5% African American, and 13.3% other race. In terms of family structure, 34.6% of participants lived in homes with two biological parents, 9.9% lived in stepfamilies, 24.3% lived in single-parent homes, and 22.1% lived in some other family structure. The average poverty level ratio was 295.92, which indicates middle class SES.

At Time 1, demographic controls (i.e., age, sex, race/ethnicity, family structure and SES), maternal supportiveness and strictness, and positive and negative peer behaviors were gathered through screener interview and self-administered questionnaires. Questionnaires were also used at Time 2 when participants reported their sexual behavior.

Measures

See Table 1 for descriptive statistics for each measure used in this study.

**Demographics.** At Time 1, in 1997, sex (1 = male, 2 = female) and race (1 = White, 2 = Black, 3 = American Indian, Eskimo, or Aleut, 4 = Asian Pacific Islander, 5 = Something else?) of the participant were collected from parents through screener interviews and verified by both
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

the parent and participant in parent and youth questionnaires. Sex was recoded so that 0 = *female* and 1 = *male*. Race was dummy coded into two separate variables with 1 = *Black* and 0 = *White and Other race* and the second variable was 1 = *Other race* and 0 = *White and Black*. Age in years was reported at Time 2 in 1999.

Parents also responded to questionnaires about his or her own income, the income of his or her spouse, and the income of everyone in the household that was 14 years or older for the prior year at Time 1. Income was assessed by the ratio of gross household income and the federal poverty level from the previous year, controlling for household size. The federal poverty threshold for 1996 for a single person was $7,740, increasing $2,620 for each additional person (United States Department of Health and Human Services, 1996).

Both parents and youth reported on the child’s household composition at Time 1 indicating the child’s family structure in terms of who takes care of them. The response items were coded as 1 = *both biological parents*, 2 = *two parents, biological mother*, 3 = *two parents, biological father*, 4 = *biological mother only*, 5 = *biological father only*, 6 = *adoptive parent(s)*, 7 = *foster parent(s)*, 8 = *no parents, grandparents*, 9 = *no parents, other relatives*, and 10 = *anything else*. This item was recoded into three separate variables using dummy codes. The stepfamily variable was coded as 1 = *two parent, either biological mother or father* and 0 = *both biological parents*. The single parent family variables was coded as 1 = *either biological mother only or biological father only* and 0 = *both biological parents*. Lastly, the other family structure variables was coded as 1 = *adoptive parent(s), foster parent(s), grandparents, or other relatives* and 0 = *both biological parents*. For a list of demographic survey items, see Appendix A.

**Maternal parenting behaviors.** At Time 1, adolescents reported on a two-item self-administered index on their mother’s or mother figure’s level of supportiveness and strictness
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

(see Appendix B). The question used to determine maternal supportiveness was “When you think about how she acts toward you, in general, would you say she is very supportive, somewhat supportive, or not very supportive?” The response category included 1 = Very Supportive, 2 = Somewhat Supportive, 3 = Not Very Supportive. The responses were recoded so that higher scores indicated more support (i.e., 1 = Not Very Supportive, 2 = Somewhat Supportive, 3 = Very Supportive). The question used to determine maternal strictness was “In general, would you say she is permissive or strict about making sure you did what you were supposed to do?” The response category for strictness included 1 = Permissive and 2 = Strict. Response categories were recoded such that 0 = Permissive and 1 = Strict. In terms of validity, participants who reported that their mother was “very supportive,” compared to those who reported “not very supportive” or “somewhat supportive,” also reported high scores on a parent-youth relationship scale, which measures close and supportive relationships (Child Trends, 1999).

Peer behavior. Participants responded to ten questions that asked about the percentage of their peers’ involved in various positive and negative activities at Time 1 (see Appendix C). Four items reflected positive peer behaviors, consisting of the percentage of peers involved in frequent church or religious service attendance, organized sports, clubs, and school activities, planning for college, and volunteer work. For example, one question about positive peer influences asked “What percentage of kids [in your grade /in your grade when you were last in school] [go /went] to church or religious services on a regular basis?” Six items assessed negative peer behaviors, including the percentage of peers involved in cigarette smoking, getting drunk at least once a month, belonging to a gang, using marijuana, inhalants or other drugs, skipping school, and sexual intercourse. For example, one question about negative peer behaviors asked “What percentage of kids [in your grade /in your grade when you were last in school] [get /got] drunk at
least once a month?” For all items, responses ranged from 1 (Almost none [less than 10%]) to 5 (Almost all [more than 90%]). Each scale score was calculated by the sum of all the items in each scale. In a previous study involving NLSY-97 data, factor analyses provided evidence for separate but correlated positive and negative peer factors ($r = -.25$; $p < .01$; Caputo, 2009). In that same investigation, the positive peer behaviors index had a Cronbach’s α of .83 and the negative peer behaviors index had a Cronbach’s α of .55 (Caputo, 2009). In the present sample, the positive peer behaviors subscale had a Cronbach’s α of .58 and negative peer behaviors had a Cronbach’s α of .84.

**Sexual behavior.** At Time 2, respondents reported on their sexual behavior which was analyzed as a composite score of five sexual behavior items, including whether they ever had sexual intercourse, their age at first sex, number of lifetime partners, frequency of condom use in the past 12 months, and birth control method used most often (see Appendix D). Following procedures of Raffaelli and Crockett (2003), a composite score of sexual risk behavior was created by recoding all of the items dichotomously to represent whether sexual risk was reported (0 = no, 1 = yes) and then summing the scores together. Scores ranged from 0 (no risk; i.e., never had sex) to 5 (high risk; sexually experienced, sexual initiation before age 15, two or more lifetime sexual partners, no condom use in the past 12 months, and no birth control use in the past 12 months). Analysis of another composite measure of sexual behavior found a Cronbach’s alpha between .60 and .89 (Chen et al., 2010). Reliability analyses determined that Cronbach’s α for this composite measure was .47.

**Analysis Plan**

First, using the Statistical Package for Social Sciences (SPSS), preliminary analyses consisted of descriptive statistics, Pearson bivariate correlations and one-way ANOVAs. The
PEARSON AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

Pearson correlations determined the strength of the linear relationship between the independent and dependent variables, as well as age and poverty ratio level. ANOVAs helped determine if there were significant differences in sexual risk between demographic groups and, thus which demographic variables needed to be controlled for in the final analyses. When significant group differences were revealed, Turkey’s HSD post hoc tests were used to examine pairwise differences. Next, hypotheses were tested using hierarchical regression. Two regression models were run to examine the main effects of parent and peer behaviors on adolescent sexual behavior and also interactions between parent and peer behaviors. One model included poverty level ratio as a demographic control and the other model did not. The poverty level ratio variable had over 1,000 missing cases, therefore, two models were ran in order to determine if findings differed based on poverty level. For both models, in the first step, all the demographic controls variables (i.e., age, sex, race and ethnicity, family structure, and poverty level ratio) were entered into each the regression model (as described above, poverty level ratio was omitted from this step in the second model). In the second step of each regression, all parent and peer behaviors (i.e., maternal supportiveness, maternal strictness, negative peer behaviors, and positive peer behaviors) along with the demographic controls were entered to test the first three hypotheses. In the third step, four two-way interaction terms were entered (supportiveness x positive peer behaviors, strictness x positive peer behaviors, supportiveness x negative peer behaviors, strictness x negative peer behaviors) to test the last four hypotheses. Interaction terms were calculated by first mean centering the parenting and peer behavior variables and then multiplying maternal supportiveness with positive peer behaviors, maternal strictness with positive peer behaviors, maternal supportiveness with negative peer behaviors, and maternal strictness with negative peer behaviors.
Chapter IV

Results

Preliminary Analyses

Preliminary analyses were conducted for each variable in the study including the parent behaviors (i.e., supportiveness and strictness), positive and negative peer behaviors and demographic control variables (i.e., age, sex, race and ethnicity, family structure and poverty level ratio). Descriptive statistics are presented in Table 1.

To explore demographic differences in sexual risk-taking, three one-way ANOVAs were computed with sex, race, and family composition as independent variables and adolescent sexual risk-taking scores as the dependent variable. No significant difference was found between males’ and females’ levels of sexual risk, $F(1, 4006) = 1.38, p = .24$. There were significant differences between the groups for race, $F(2, 3972) = 27.25, p < .001$, and for family composition, $F(9, 3633) = 25.64, p < .001$. Tukey’s HSD was then used to determine the nature of these differences. For race, this analysis revealed that African Americans reported higher levels of sexual risk ($M = 2.07, SD = 1.60$) than White adolescents ($M = 1.63, SD = 1.62$) and adolescents from other racial backgrounds ($M = 1.72, SD = 1.66$). In addition, adolescents living with their biological parents had lower levels of sexual risk ($M = 1.49, SD = 1.56$) than those living in stepfamilies ($M = 1.93, SD = 1.63$), single parent homes ($M = 2.03, SD = 1.66$) and any other family structure ($M = 2.07, SD = 1.69$).

Next, Pearson correlations were run to determine if there were any associations between poverty ratio level, age, parent and peer behaviors, and sexual risk (see Table 2). Most correlations were significant and in the expected directions. High poverty level ratio (i.e., high SES) was correlated with high levels of maternal supportiveness and positive peer behaviors, and
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

low levels of negative peer behaviors and sexual risk behavior. Maternal supportiveness and strictness were not correlated, however high levels of positive peer behaviors was correlated with low levels of negative peer behaviors. Furthermore, high levels of sexual risk-taking was correlated with low levels of all parenting and peer behaviors.

**Hypothesis Testing**

The purpose of this study was to examine the relationship between maternal parenting behaviors and adolescent sexual risk taking as well as whether positive and negative peer behaviors moderated those relationships. It was predicted that high levels of maternal supportiveness, strictness, and positive peer behaviors, along with low levels of negative peer behaviors would be directly related to low levels of adolescent sexual risk behavior. It was also expected that the relationships between maternal supportiveness and adolescents sexual risk-taking, as well as maternal strictness and sexual risk-taking, would be stronger for those who report high positive peer behaviors compared to low positive peer behaviors and weaker for those who report high negative peer behaviors versus low negative peer behaviors. Two three-step hierarchal regressions were conducted. As explained above, one included poverty level ratio in step one of the analyses as a control variable (see Table 3) and the other did not (see Table 4).

**Regression model controlling for poverty**. In this model, adolescent sexual risk-taking in 1999 was predicted using the parent and peer variables, as well as demographic controls in three steps. In the first step the demographic control variables were entered, including poverty level ratio, and this set of variables accounted for a significant portion of the variance, $F(8, 2539) = 24.10, p < .001, R^2 = .07$. Sexual risk taking was predicted by age, race, family structure, and poverty level ratio, while gender was not a significant predictor. Older youth reported more sexual risk than younger youth, and Black participants had higher levels of sexual risk than
White participants. Results for other race individuals did not significantly differ from Black or White participants. Also, adolescents living in stepfamilies and single parent families reported higher levels of sexual risk-taking than adolescents living in two-biological parent homes. Results for other family structures were not significant. Lastly, those with a lower poverty level ratio were more likely to report high risky sexual behaviors than those with a higher poverty level ratio.

In the second step, parenting and peer behaviors were entered to determine main effects with adolescents’ sexual risk-taking as the outcome. Results demonstrated that all of the parent and peer behaviors predicted and explained additional variance in adolescent sexual risk taking, \( \Delta F(12, 2535) = 50.78, p < .001, \Delta R^2 = .07 \). High levels of both maternal supportiveness and strictness at Time 1 predicted lower levels of sexual risk-taking at Time 2 compared to low reports of supportiveness and strictness. In addition, adolescents that reported high levels of positive peer behaviors at Time 1 reported lower sexual risk-taking behavior at Time 2 than those who reported low levels of positive peer behaviors. Comparatively, those who reported high levels of negative peer behaviors at Time 1 were more likely to report high levels of sexual risk behavior at Time 2 than adolescents who reported low levels of negative peer behaviors.

In the third step, interaction terms were entered to analyze whether positive and negative peer behaviors served as moderators for the relationship between parenting behaviors and adolescent sexual risk-taking. Interaction terms with mean-centered variables (supportiveness \( \times \) positive peer behaviors, strictness \( \times \) positive peer behaviors, supportiveness \( \times \) negative peer behaviors, strictness \( \times \) negative peer behaviors) were entered into the model. The addition of these interaction terms did not alter the total amount of the variance explained, \( \Delta F(16, 2535) = \).
PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

0.96, \( p > .05, \Delta R^2 = .00 \). Therefore, the interactions between parent and peer behaviors at Time 1 had no effects on adolescents’ Time 2 sexual risk behavior.

**Regression model without controlling for poverty.** A similar strategy was used for the regression model that excluded poverty level ratio due to over 1,000 cases with missing data. Demographic controls were entered in the first step, followed by parenting and peer behaviors in the second step to predict adolescent sexual risk behavior. In the third step, interactions between parent and peer behaviors were entered to predict adolescent sexual risk behavior. On the first step, the demographic controls accounted for a significant portion of the variance in Time 2 adolescent sexual risk behavior, \( F(7, 3394) = 34.43, p < .001, R^2 = .07 \). Similar effects occurred as in the previous model such that age, race, and family structure were all significant predictors. In addition, gender was also a significant covariate. Adolescents who were older, male, black, or not living in a two-parent household had higher levels of sexual risk behaviors at Time 2 than those who were younger, female, white, or living with two biological parents. In the second step, similar to the first model, all parenting and peer behaviors predicted adolescent sexual risk-taking at Time 2, \( \Delta F(11, 3390) = 63.77, p < .001, \Delta R^2 = .07 \). High levels of maternal supportiveness, strictness, positive peer behaviors, and low levels of negative peer behaviors each predicted low levels of adolescent sexual risk-taking. The third step also showed similar results as the previous model, such that the interactions between parent and peer behaviors demonstrated no significant relationship with sexual risk-taking at Time 2, \( \Delta F(15, 3386) = .68, p > .05, \Delta R^2 = .00 \).
Chapter V

Discussion

Adolescents in the United States are often engaged in sexual activity. Many of them do not consistently use safe sex practices, leading to high rates of unplanned pregnancy and STIs (CDC, 2013). It is well known that parents and peers each have an impact on adolescent sexual behavior (Crockett et al., 2006; Moilanen, 2015). According to Jessor and Jessor’s (1977) PBT, parents and peers influence the environment of an adolescent positively or negatively, such that the environment is either conducive or discouraging toward problem behavior, including sexual risk-taking. However, to date little is known about the positive influence of peers or how parenting and peer behaviors interact to predict adolescent sexual risk-taking. The purpose of this study was to examine the relationship between mothers’ supportiveness and strictness, as well as peers’ positive and negative behaviors have with adolescent sexual risk behavior. In addition, the moderating effect of positive and negative peer behaviors was investigated. This study provides more insight as to how adolescents develop sexual risk-taking behaviors by comparing the influence that both parenting and peer behaviors provide and how those two forces interact to predict sexual risk-taking behaviors. Furthermore, this is the first known exploration of the relationship between positive peer behaviors and sexual risk-taking among adolescents. Adolescents spend majority of their time with peers and peer influence on behavior becomes stronger during adolescence. Not only does this study inform researchers of the negative impact that peer behavior can have on adolescents’ sexual behavior, but it also helps to identify positive aspects of peer behavior that could be used to compensate for negative peer behaviors. This study provides more insight on how to implement peers into unplanned pregnancy and STI prevention. Overall, this study found that both parenting and peer behaviors directly impacted
adolescents’ sexual risk behavior, however, interactions between parenting and peer behaviors were not significant. Further discussion of hypotheses and interpretation of results is presented below.

**Maternal Parenting Behaviors and Adolescent Sexual Risk-Taking**

The first hypothesis of this study was that high levels of maternal supportiveness would be related to high sexual risk-taking. Results supported this hypothesis in that high levels of maternal supportiveness was related to low levels of adolescent sexual risk behavior. This finding coincides with other studies in which parental supportiveness is a protective factor against adolescent risk behavior (Cox et al., 2015; Parkes et al., 2011), however research examining the relationship between parents’ supportiveness and adolescent sexual behavior is scarce. This finding adds to the existing literature on this topic and provides further support for enhancing positive parent-child relationships in order to reduce risky sexual behavior among adolescents. According to PBT, adolescents exposed to more examples of positive parenting will more likely be discouraged from engaging in risky sexual behavior (Jessor & Jessor, 1977). Supportive parenting could enhance trustworthiness in parent-child relationships, which could make adolescents more susceptible to parents’ messages about sex (Jaccard et al., 2002). For example, parent-child closeness increases the likelihood that parents will talk to adolescents about sex and encourage them to abstain from risky sexual behavior (Raffaelli, Bogenschneider, & Flood, 1998). Adolescents with high supportiveness from parents and close parent-child relationships may be motivated to resist risky sexual activity so that they won't disappoint their parents (Kulbok et al., 2010). Therefore, parents could promote healthy sexual development by being supportive and fostering close parent-child relationships during adolescence when exposure to peer pressure increases. Future research should look further into the effects of
supportive parenting on adolescent sexual risk behavior and whether parents’ attitudes about their children having sex is translated to adolescents efficiently through supportiveness and other forms of positive parenting behaviors such as closeness or responsiveness.

Another hypothesis tested in this study was that maternal strictness would be related to higher levels of sexual risk-taking compared to maternal permissiveness. This hypothesis was supported in that adolescent who reported that their parents were strict had lower levels of sexual risk-taking than those who reported that their parents were permissive. This finding is consistent with prior literature on parental behavioral control that has shown that high levels of control (e.g., parental monitoring, autonomy-granting) are related to low levels of sexual risk-taking (Huang et al., 2012; Moilanen, 2015). A key component of the perceived environment in PBT is that both parents and peers contribute to adolescents’ environment (Jessor & Jessor, 1977).

While peer behaviors can have both positive and negative effects on adolescent sexual behavior, parental behavioral control techniques allow parents to alter how much time adolescents spend with peers and with whom they spend their free time, which is particularly beneficial in middle and late adolescence when adolescents are more likely to be engaged in risky sexual behavior and spend more of their free time with peers rather than parents (Barnes et al., 2007; Borawski et al., 2003). On the other hand, some behavioral control techniques, such as psychological control, increase the likelihood of adolescents’ engagement in risky sexual behavior, especially when coupled with peer acceptance of sexual activity in early adolescence (Oudekerk et al., 2014). Rather than responding to adolescent sexual risk behavior with increased levels of strictness and hostility, enhancing regular family activities (e.g., eating meals together) and monitoring adolescents' peers and activities outside the family context could lower adolescents' involvement in sexual risk-taking as demonstrated in Coley, Votruba-Drzal, and Schindler (2009). Future
research should compare various forms of parental control (e.g., parental monitoring, autonomy-granting, psychological control) and examine whether some forms are more protective for adolescent sexual risk-taking than others.

Peer Behaviors and Adolescent Sexual Risk-Taking

Another aspect of this study was to investigate if both positive and negative peer behaviors have an influence on adolescent sexual risk-taking. First, it was hypothesized that high levels of positive peer behaviors would be related to low levels of sexual risk-taking. Results demonstrated that adolescents who perceived peers to be engaged in high levels of positive behavior reported lower levels of sexual risk-taking compared to those adolescents who reported lower levels of positive peer behaviors. Prior research has linked adolescents’ own involvement in positive behaviors, such as extracurricular activities and religious involvement, as a protective factor of adolescent sexual-risk behavior consistently with the findings of this study (e.g., Barnes et al., 2007; Hardy & Raffaelli, 2001). Given that there is no current literature on the effects of positive peer behaviors on adolescent sexual behavior, this finding makes an important and novel contribution to the literature on positive peer influences and adolescent sexual behavior. According to PBT, adolescents are less likely to engage in risky sexual behavior when majority of the peers in their environment engage in conventional behaviors (Jessor & Jessor, 1977). Adolescents who are surrounded by a group of peers that are involved in positive, productive activities will more likely internalize the values of the larger peer group and conform to group standards of sexual behavior during adolescence (Van de Bongardt et al., 2014). They are also more likely to be drawn towards peers that hold the same values and interests as they do and receive more support for resisting risky sexual behaviors from peers that hold the same values (Bukowski, Catellanos, Vitaro, & Brendgen, 2015). Adolescents that engage in prosocial
activities have more motivation or incentive to restrain from risky sex. For example, adolescents that frequently attend religious services are motivated to abstain from sex based on religious beliefs (Moore, Berkley-Patton, Bohn, Hawes, & Bowe-Thompson, 2015). Adolescents that make plans for college are motivated to restrain from risky sexual behavior given that the consequence of risky sex (e.g., an unintended pregnancy) could make plans for college more difficult or less likely (Cheney et al., 2014). Researchers could use the findings from this study to promote engagement in conventional behaviors and positive peer relationships when designing intervention strategies targeted towards the prevention of risky sexual behavior among adolescents.

On the other hand, another hypothesis of this study was that high levels of negative peer behaviors would be related to high levels of sexual risk-taking. As predicted, adolescents who perceived peers to be engaged in a high level of negative behaviors (e.g., substance use, delinquency, sexual behavior) also reported high levels of sexual risk-taking. Results were consistent with the cross-sectional and longitudinal literature. Adolescents with high levels of sexually active peers in school or whose friends are sexually active are more likely to engage in a variety of risky sexual behavior, such as initiating sex at earlier ages and obtaining more sexual partners than those with less exposure to sexually active peers (Coley et al., 2013; Sieving et al., 2006). Furthermore, problem behaviors have a clustering effect in which engagement in one increases the likelihood of engagement in others (Jessor & Jessor, 1977). For example, involvement in substance use or delinquency is related to risky sexual behavior during adolescence (Chen et al., 2010; Thamotharan et al., 2015). Therefore, peer involvement in any problem behavior can enhance adolescents’ sexual risk-taking. Similar to how positive peer behaviors are helpful for developing healthy sexual behavior in adolescence, negative peer
behaviors could be destructive toward positive sexual development and encourage adolescents to participate in problem behavior rather than conventional behavior (Jessor & Jessor, 1977). For example, adolescents that receive high levels of peer pressure to engage in problem behavior are more likely to engage in risky sexual behavior (Crockett et al., 2006; Moilanen, 2015). Peer approval and gaining respect have also been related to high levels of adolescents’ participation in problem behavior (Coley et al., 2013; Sieving et al., 2006). Therefore, in environments with a high amount of peers engaging in problem behavior, there is an established norm in which peers are encouraged and expected to engage in risky sexual behavior in order to be accepted in that particular environment. Overall, the results support prevention strategies that are designed to teach adolescents to resist negative peer pressure and decrease adolescent involvement in problem behavior.

**Interactions Between Parents and Peers**

The main focus of this study was examine whether parenting and peer behaviors would interact to predict adolescent sexual risk-taking, however analyses did not find significant interactions between parents and peers, regardless of whether poverty level ratio was added in the model or not. Though research on parent and peer interactions is limited, results demonstrated in this study are not consistent with existing literature, which mostly suggests that forms of parental control (e.g., parental monitoring), would have a buffering affect against negative peer influences when predicting adolescent problem behavior including sexual behavior and substance use (Clark et al., 2011; Dishion, et al., 2004; Oudekerk et al., 2014). The findings in this study are consistent, however, with only one known investigation, which found no significant interactions for both parental warmth and parental control variables (i.e., responsiveness and discipline strategies) when coupled with peer sexual behavior in their
relationship with adolescent sexual risk-taking (Beyers et al., 2015). However, the same study did find significant interactions for other parental control behaviors (i.e., psychological control and autonomy support), which are consistent with the existing literature (e.g., Oudekerk et al., 2014). It is possible that some parenting behaviors interact differently with peer behaviors in terms of adolescent sexual behavior. According to PBT, the type of environments that parents and peers provide based on their attitudes and behaviors, work together to either encourage or discourage an adolescent’s involvement in problem behaviors (Jessor & Jessor, 1977). When parents’ and peers’ attitudes and behaviors are consistent with each other, adolescents may be more inclined to internalize common messages from parents and peers. Given that adolescence is characterized with desire for more autonomy and more free time spent with peers (Barnes et al., 2007), the parenting behaviors that are more likely to interact with peer behaviors may be those that are related to adolescents’ bid for more autonomy and their relationships with peers such autonomy-granting, strictness, and discipline tactics. For example, autonomy-granting involves allowing children the freedom to make their own decisions in regards to friends, clothing, etc. while simultaneously setting limits (Turner et al., 1993). Adolescents with more autonomy have more opportunities to engage in problem behaviors, especially if they are associated with peers involved in problem behavior (Clark et al., 2001). Thus far, there are very few studies that examine parental warmth behaviors in this context and that demonstrate significant interactions between parental warmth behavior and peer behavior when the outcome is sexual risk-taking (e.g., Henrich, Brookmeyer, Shrier, & Shahar, 2006). More research is needed in order to understand the differences between parental warmth and control and their relationships with peer behavior and adolescent sexual risk behavior.
Another reason why the parent and peer interactions in this study were not significant may be because the two are less likely to interact and parents are more likely to mediate the relationship between peer influences and adolescent sexual risk-taking. In one relevant inquiry, Barman-Adhikari, Cederbaum, Sathoff, and Toro (2014) investigated how parental monitoring is related to perceptions peer attitudes about sex in predicting female adolescents’ intentions to have sex. The researchers found that high parental monitoring was related to fewer intentions to have sex indirectly through perceptions of peer influence. Adolescents with high maternal monitoring reported low levels of negative peer influence, which in turn predicted low sexual intentions. Although it is known that both parents and peers contribute to the likelihood of adolescents’ involvement in problem behavior (Jessor & Jessor, 1977), parents control the level influence of that peers have on adolescent sexual behavior based on parenting behaviors. As stated previously, parenting behaviors that are more likely to be related to peer behavior may be parental control variables, such as monitoring or autonomy-granting (e.g., Clark et al., 2001). Parents are also likely to influence the type of peers that adolescents are associated with, therefore, adolescents’ relationships with peers are heavily influenced by parents (Schofield, Conger, & Richard, 2015). Rather than investigating adolescent sexual risk behavior through parent and peer interactions, it may be more plausible to examine these relationships through a mediation lens such that parenting behaviors help explain the relationship between peer influences on adolescent sexual risk-taking. Research in both areas is limited. In order to understand more about the dynamics between how parents and peers influence adolescent sexual behavior, more research on moderation, mediation, and perhaps a comparison of both would add important knowledge to the existing literature on this topic.
Demographics and Sexual Risk-Taking

Age, sex, race, family composition, and poverty all had influences on adolescent sexual behavior, hence why they were entered into analyses as controls. Adolescents who were older, black, and lower income demonstrated more sexual risk behaviors than those who were younger, white, and of higher income. Family composition was also significant in predicting sexual-risk behavior such that adolescents in stepfamily households and single parent households engaged in more sexual risk-taking than adolescents in a two-parent household. When poverty level ratio was taken out of the model for overtly missing data, sex became a significant predictor of adolescent sexual risk-behavior. Other family compositions such as living with a grandparent, other relatives, or foster parents, also became significant once poverty was taken out of the model in that adolescents living in these family structures were also more likely to have high levels of sexual risk-taking compared to adolescents living in two-parent homes. These findings are consistent with previous literature on the associations between adolescents’ demographic characteristics and their sexual risk-taking behavior such that adolescents who are younger, female, white, living in a two-parent home, or have a higher SES are less likely to be involved in sexual risk-taking compared to adolescents who are older, male, minority race, living in a non-nuclear household, or has a lower SES (Chen et al., 2010; Cubbin et al., 2010; Maxwell, 2002; Santelli et al., 2000).

Limitations and Future Directions

This study provides important contributions to the literature on positive and negative peer influences and the interaction between parent and peer behaviors, however study limitations and future directions should be noted. First, reliance on only self-report data limits the accuracy of participants’ responses, whereas adding observations or survey data from other sources such as
parents, peers, or teachers would provide stronger evidence of observed associations. This would be helpful particularly for specific measures such as positive and negative peer behaviors. The perspective of teachers and school officials could provide more accurate information on the amount of students who are involved in positive or negative behaviors. In addition, adolescents are influenced to engage in problem or conventional behaviors based on the combined influences in their environment and their own personality (Jessor & Jessor, 1977). This study could benefit from the addition of behaviors from other socializing agents, such as fathers’ parenting practices and positive or negative sibling influences in predicting adolescents’ sexual risk taking. Future researchers could also include variables of the child’s personality such as, motivational incentives (e.g., peer acceptance), attitudes about premarital sex, and birth control efficacy in order to gain insight on how adolescents’ own attitudes beliefs, and behaviors influence their sexual risk-taking. Other variables that could be added to the current study as controls include parents’ education level and mother’s age at first birth.

Subsequently, non-significant interaction findings in this study could be attributed to the limited strength of the parenting measures. One item was used for each of the parenting variables (i.e., maternal supportiveness and strictness) with limited variability in response scales, which would make significant interactions difficult to detect. These two items on parenting behaviors were originally created to be analyzed together to determine parenting style, meaning that the two variables interact so that maternal strictness, for example, has different effects on adolescent behavior when coupled with various levels of maternal supportiveness (e.g., Child Trends, 1999). In addition, the terms, supportive and strict were not defined for the participants. Interpretations could vary between researchers and participants and could also depend on the adolescents’ feelings about the parent at the time of the interview. Even though the individual
items were correlated with similar parenting variables such as parent-child relationship quality, separating these two items for analyses is likely the cause for insignificant interactions. Future researchers should use other parenting variables provided by the NLSY-97 or collect separate data using stronger measures for maternal supportiveness and strictness. For example, a five-item scale mentioned in Ream and Savin-Willimas (2005) with an \( \alpha \) ranging from .83-.87 measuring the quality of parent-child relationships has more variability and multiple items that are fairly consistent in measuring the same construct. This provides more accurate classifications of the variable being measured. A sample item is “How close do you feel to your mom?” A stronger measure of maternal supportiveness and strictness could provide more insight on the parent and adolescents’ relationship overall rather than measuring broad terms that could vary depending on the context of the parenting behavior.

Despite prior literature that mainly focuses on the negative impact of peers on adolescents’ behavior, more research should examine the impact of positive peer behaviors on adolescent sexual risk-taking. As previously discussed, adolescents that are involved with peers engaging in positive behaviors are more likely to adopt those same behaviors (Jessor & Jessor, 1977). Also, adolescents are drawn towards peers that share similar interests (Bukowski et al., 2015). Therefore, adolescents likely receive more motivation or incentive to refrain from engaging in problem behaviors when they are engaged in positive behaviors and they have friends who are also involved in those behaviors (Van de Bongardt et al., 2014). This body of work could help researchers understand how positive peer behaviors could be beneficial for adolescent sexual development. Research has started to look at the positive effects of peers on adolescent prosocial behavior. For example, Choukas-Bradley, Giletta, Cohen, and Prinstein (2015) conducted an experiment that showed how peer influence could have positive effects on
adolescents’ intentions to volunteer, revealing that peers, particularly those of high status, can socialize positive behaviors among adolescents despite the vast amount of research that focuses on the negative influence of peer behavior. Hardly any research has been done on how positive peer influence or involvement in productive and prosocial activities is related to adolescent problem behaviors, such as sexual-risk taking. The findings from this study could be used to support intervention work that not only endorses productive, prosocial behavior among adolescents, but also teaches them how to be leaders and influence other peers to be involved in positive activities. More research on this topic would contribute to the literature by providing more support for intervention strategists that focus on enhancing adolescents’ engagement in conventional behaviors by associating with peers engaged in positive behaviors.

A key aspect of this study was that positive and negative peer behaviors, as well as sexual risk behaviors were analyzed in a composite score of each measure rather than examining individual behaviors. Few studies mentioned in the current study have grouped similar behaviors together for analyses (e.g., Oudekerk et al., 2014). Perhaps a composite score of these particular measures are too broad to be analyzed as constructs. This could also be a reason why interactions in this study were not significant. It’s possible that significant interactions are present for one or more separated variables, but is masked by the composite. For example, Raffaelli and Crockett (2003) found that self-regulation predicted overall sexual risk behavior for adolescents. However, when outcome behaviors were analyzed separately self-regulation predicted number of sex partners but not the likelihood of being sexually active or the age of sexual initiation. Therefore, researchers gained a better understanding of how self-regulation influences adolescent sexual risk-taking by assessing examining behaviors individually. This
strategy within the context of the current study could provide a clearer picture of which specific parent peer behaviors are more likely to influence specific adolescent sexual-risk behaviors.

**Conclusion**

Overall, the findings from this study support PBT in that both parent and peer behaviors can help support or discourage adolescents from engaging in risky sexual behavior (Jessor & Jessor, 1977). Based on the results of this study, we can infer that parents and peers influence adolescent behavior by establishing a standard of what behavior is acceptable within their environment. Adolescents that are exposed to environments in which conventional behavior is the norm will be less likely to engage in problem behavior, while on the other hand, environments with more exposure to problem behavior invoke more participation in problem behavior (Jessor & Jessor, 1977). Therefore, the process in which adolescents’ internalize the values of the larger group within their environment is the same whether those values support or discourage problem behaviors. Parental warmth behaviors, such as supportiveness, help foster a warm, loving environment for the child in which parental messages are more likely to be received positively (Jaccard et al., 2002). In addition, high amounts of some parental control techniques, strictness in this case, may limit the amount of exposure adolescents have to negative peers. The findings from this study provide evidence that supports intervention programs targeted towards enhancing parent-child relationship quality and parents’ behavioral control to reduce the likelihood of adolescents' engagement in risky sexual behavior. The results of this study also demonstrated that not only is adolescent sexual risk behavior influenced by negative peer behaviors but that it can also be influenced by positive peer behaviors in the same way. That being said, the results of this study indicate the value in promoting positive parent-child relationships and conventional behaviors among adolescents, as well as teaching adolescents to
resist negative peer pressure, especially in areas and populations where adolescents’ involvement in problem behavior is high such as low income neighborhoods and minority adolescents.
Appendix A: Demographics

Screener Interview – Parent

1. What is [(PARTICIPANT NAME)’s] age?
   a. Enter Number: _______

2. What is [(PARTICIPANT NAME)’s] sex?
   a. 1 = Male
   b. 2 = Female
   c. 0 = No information

3. Which one of the following is [PARTICIPANT NAME]?
   a. 1 = White
   b. 2 = Black or African American
   c. 3 = American Indian, Eskimo, or Aleut
   d. 4 = Asian or Pacific Islander
   e. 5 = Something else? (SPECIFY)
   f. 0 = No information

4. Relationship of the parent figure in the household to the youth as of December 31, 1996.
   1 = Both biological parents
   2 = Two parents, biological mother
   3 = Two parents, biological father
   4 = Biological mother only
   5 = Biological father only
   6 = Adoptive parent(s)
   7 = Foster parent(s)
   8 = No parents, grandparents
   9 = No parents, other relatives
   10 = Anything else
Appendix B: Maternal Behavior

Now we are going to list some things that might describe your mother or mother figure. Please tell us how often she does these things.

1. When you think about how she acts toward you, in general, would you say she is very supportive, somewhat supportive, or not very supportive?
   a. 1 = Very Supportive
   b. 2 = Somewhat Supportive
   c. 3 = Not Very Supportive

2. In general, would you say she is permissive or strict about making sure you did what you were supposed to do?
   a. 1 = Permissive
   b. 2 = Strict
Appendix C: Peer Behavior

Now I’m going to ask you some questions about all the kids [in your grade/in your grade when you were last in school]. Please think about the PERCENTAGE of kids who do the following.

<table>
<thead>
<tr>
<th>What percentage of kids [in your grade / in your grade when you were last in school] ...</th>
<th>1 = Almost none (less than 10%)</th>
<th>2 = About 25%</th>
<th>3 = About half (50%)</th>
<th>4 = About 75%</th>
<th>5 = Almost all (more than 90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ... [go / went] to church or religious services on a regular basis?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ... [smoke / smoked] cigarettes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ... [get / got] drunk at least once a month?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ... [participate / participated] in organized sports, clubs, or school activities?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ... [belong / belonged] to a gang that does illegal activities?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. ... [plan / planned] to go to college?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ... [do / did] volunteer work?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. ... [have / ever] used marijuana, inhalants, or other drugs?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. ... cut classes or skip school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. ... ever had sexual intercourse?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: Sexual Behavior

1. (YSAQ-299) Have you ever had sexual intercourse, that is, made love, had sex, or gone all the way with a person of the opposite sex?
   a. 1 = Yes
   b. 0 = No

2. (YSAQ-300) Thinking about the very first time in your life that you had sexual intercourse with a person of the opposite sex, how old were you?
   Enter Number: 

3. (YSAQ-304 or 305) How many partners have you EVER had intercourse with? This includes any person you had intercourse with, even if it was only once, or if you did not know him or her well?
   Enter Number: 

4. (YSAQ-311) Thinking about all the times that you have had sexual intercourse in the last 12 months, about what percent of the time from 0 to 100, have you or your sexual partner or partners used a condom?
   Enter Number: 

5. YSAQ-311) Thinking about all the times that you have had sexual intercourse in the last 12 months, about what percent of the time from 0 to 100, have you or your sexual partner or partners used a method of birth control?
   Enter Number: 

References


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR

matters/public-cost.


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR


PARENT AND PEER BEHAVIORS ON SEXUAL BEHAVIOR


### Table 1
*Predictor Variables and Descriptive Statistics*

<table>
<thead>
<tr>
<th>Variables</th>
<th>$n$</th>
<th>%</th>
<th>$M$</th>
<th>$SD$</th>
<th>Range</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s Age in 1999</td>
<td>3,688</td>
<td></td>
<td>17.58</td>
<td>.95</td>
<td>15-20</td>
<td>-.05</td>
<td>-.81</td>
</tr>
<tr>
<td>Child’s sex</td>
<td>4,008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1,982</td>
<td>50.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2,026</td>
<td>49.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child’s Ethnicity/Race</td>
<td>4,008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2,913</td>
<td>59.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1,062</td>
<td>26.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>534</td>
<td>13.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure</td>
<td>3,643</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both biological parents</td>
<td>1,385</td>
<td>34.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stepfamilies</td>
<td>396</td>
<td>9.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single parents</td>
<td>974</td>
<td>24.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>888</td>
<td>22.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poverty Level Ratio</td>
<td>2,946</td>
<td></td>
<td>295.92</td>
<td>280.33</td>
<td>0-1627</td>
<td>2.65</td>
<td>9.56</td>
</tr>
<tr>
<td>Maternal Supportiveness</td>
<td>3,822</td>
<td></td>
<td>2.74</td>
<td>.48</td>
<td>1 – 3</td>
<td>-1.66</td>
<td>1.86</td>
</tr>
<tr>
<td>Maternal Strictness</td>
<td>3,814</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strict</td>
<td>2,033</td>
<td>50.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissive</td>
<td>1,781</td>
<td>44.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Peer Behavior</td>
<td>3,966</td>
<td></td>
<td>2.95</td>
<td>.70</td>
<td>1 – 5</td>
<td>.05</td>
<td>-.18</td>
</tr>
<tr>
<td>Negative Peer Behavior</td>
<td>3,944</td>
<td></td>
<td>2.52</td>
<td>.93</td>
<td>1 – 5</td>
<td>.26</td>
<td>-.66</td>
</tr>
<tr>
<td>Sexual-Risk Behavior</td>
<td>4,008</td>
<td></td>
<td>1.76</td>
<td>1.63</td>
<td>0 – 5</td>
<td>.43</td>
<td>-1.06</td>
</tr>
</tbody>
</table>
Table 2

*Variable Correlations*

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poverty Level Ratio</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Child’s Age in 1999</td>
<td>.04</td>
<td>.07**</td>
<td>.09**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Maternal Supportiveness</td>
<td>.04</td>
<td>-.05**</td>
<td>-.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Maternal Strictness</td>
<td>.17**</td>
<td>-.10**</td>
<td>.08**</td>
<td>.06**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Positive Peer Behavior</td>
<td>-.12**</td>
<td>.29**</td>
<td>-.09**</td>
<td>-.05**</td>
<td>-.24**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Negative Peer Behavior</td>
<td>-.11**</td>
<td>.18**</td>
<td>-.08**</td>
<td>-.06**</td>
<td>-.14**</td>
<td>-.28**</td>
<td></td>
</tr>
<tr>
<td>7. Sexual-Risk Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* *p < .05.* **p < .01 (two-tailed).*
Table 3

Summary of Longitudinal Models Predicting Sexual-Risk Behaviors at Time 2 with Poverty Level Ratio Included

<table>
<thead>
<tr>
<th>Variable</th>
<th>Demographics</th>
<th>Parenting and Peer Behaviors</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at Time 2</td>
<td>.16***</td>
<td>.09***</td>
<td>.09***</td>
</tr>
<tr>
<td>Male</td>
<td>.03</td>
<td>.06**</td>
<td>.06**</td>
</tr>
<tr>
<td>Black</td>
<td>.09***</td>
<td>.08***</td>
<td>.08***</td>
</tr>
<tr>
<td>Other Race</td>
<td>.04</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Stepfamilies</td>
<td>.10***</td>
<td>.03**</td>
<td>.06**</td>
</tr>
<tr>
<td>Single parent families</td>
<td>.14***</td>
<td>.09**</td>
<td>.09***</td>
</tr>
<tr>
<td>Other family structure</td>
<td>.04</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Poverty level ratio</td>
<td>-.06**</td>
<td>-.03</td>
<td>-.03</td>
</tr>
<tr>
<td>Maternal Supportiveness</td>
<td>-.07***</td>
<td>-.07***</td>
<td>-.07***</td>
</tr>
<tr>
<td>Maternal Strictness</td>
<td>-.05**</td>
<td>-.05**</td>
<td>-.10**</td>
</tr>
<tr>
<td>Positive Peer Behaviors</td>
<td>-.07***</td>
<td>-.10**</td>
<td></td>
</tr>
<tr>
<td>Negative Peer Behaviors</td>
<td>.23***</td>
<td>.22**</td>
<td></td>
</tr>
<tr>
<td>Maternal Supportiveness x Positive Peer Behaviors</td>
<td>-.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Supportiveness x Negative Peer Behaviors</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Strictness x Positive Peer Behaviors</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Strictness x Negative Peer Behaviors</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2$ | .07*** | .14*** | .14  |
Δ$R^2$ | .07*** | .00   |

Note. *$p < .05$; **$p < .01$; ***$p < .001$. 
Table 4  
*Summary of Longitudinal Models Predicting Sexual-Risk Behaviors at Time 2 Without Poverty Level Ratio*  

**Included**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Demographics</th>
<th>Parenting and Peer Behaviors</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at Time 2</td>
<td>.31***</td>
<td>.11***</td>
<td>.11***</td>
</tr>
<tr>
<td>Male</td>
<td>.03*</td>
<td>.07***</td>
<td>.07***</td>
</tr>
<tr>
<td>Black</td>
<td>.10***</td>
<td>.08***</td>
<td>.08***</td>
</tr>
<tr>
<td>Other Race</td>
<td>.02</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Stepfamilies</td>
<td>.10***</td>
<td>.06***</td>
<td>.06***</td>
</tr>
<tr>
<td>Single parent families</td>
<td>.13***</td>
<td>.08***</td>
<td>.08***</td>
</tr>
<tr>
<td>Other family structure</td>
<td>.06**</td>
<td>.04*</td>
<td>.04*</td>
</tr>
<tr>
<td>Maternal Supportiveness</td>
<td>-.07***</td>
<td>-.07***</td>
<td>-.06***</td>
</tr>
<tr>
<td>Maternal Strictness</td>
<td>-.04**</td>
<td>-.04**</td>
<td>-.04**</td>
</tr>
<tr>
<td>Positive Peer Behaviors</td>
<td>-.07***</td>
<td>-.07**</td>
<td>-.09***</td>
</tr>
<tr>
<td>Negative Peer Behaviors</td>
<td>.23***</td>
<td>.23***</td>
<td></td>
</tr>
<tr>
<td>Maternal Supportiveness x Positive Peer Behaviors</td>
<td></td>
<td></td>
<td>-.01</td>
</tr>
<tr>
<td>Maternal Supportiveness x Negative Peer Behaviors</td>
<td></td>
<td></td>
<td>.01</td>
</tr>
<tr>
<td>Maternal Strictness x Positive Peer Behaviors</td>
<td></td>
<td></td>
<td>.04</td>
</tr>
<tr>
<td>Maternal Strictness x Negative Peer Behaviors</td>
<td></td>
<td></td>
<td>.00</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.07***</td>
<td>.13***</td>
<td>.13</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td></td>
<td></td>
<td>.07***</td>
</tr>
</tbody>
</table>

*Note. *p < .05. **p < .01. ***p < .001.*
Figure 1. Theoretical Model, adapted from Jessor and Jessor (1977).