

Addis Ababa University
College of Education and Behavioral Studies
School of Psychology

**Determinants of Sexual Behaviors among Adolescents in Addis
Ababa: The Role of Individual, Familial and Neighborhood
Characteristics**

By: Demeke Wolie Ambaye

Adviser: Professor Habtamu Wondimu

March, 2014
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**A Dissertation Submitted to School of Psychology in Partial Fulfillment of the
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Psychology**

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Abstract

Studies in the past have emphasized the relevance of individual and familial factors to adolescent sexuality in Ethiopia; however, few have examined the empirical connections among individual, familial, neighborhood level factors and adolescent sexual behaviors. The main purpose of this study was to examine which individual, familial and neighborhood factors predicted each sexual behavior of adolescents. The respondents of this study were randomly selected preparatory school adolescents in Addis Ababa. To get the required sample of adolescents, the study utilized a multistage clustering sampling technique. As a result, a sample of 1209 adolescents were assumed to get their responses, however, only 962 (525 female and 437 male) adolescents completed the questionnaires. Out of 962 adolescents, 725 reported that they were virgins and 237 were non-virgins. The study used individual factors, familial factors and neighborhood as predictor variables and first coital initiation, condom use, risky and protective sexual behaviors as criterion variables. The study employed univariate, bivariate, and multivariate analytical methods. The analyses were conducted for the whole sample and sexual active sample. In the multivariate analysis regarding protective sex, among individual factors; age, gender, religiosity, and substance use significantly predicted protective sex. Similarly, among family factors; family structure, parental monitoring and family cohesion significantly predicted protective sex. On the other hand, only substance use and religiosity predicted risky sexual behavior. Besides, the multivariate analysis showed that among individual factors; age, religiosity, self-esteem and substance use significantly predicted the odds of adolescent condom use, and among family factors; family structure, parental monitoring and family cohesion significantly predicted condom use. In this regard, mother education and family SES had suppressive effects on condom use. In relation to first coital intercourse, age, gender and

substance use significantly predicted first coital initiation and among neighborhood factors; only neighborhood collective efficacy significantly predicted first coital initiation. Substance use created links between parental factors (parental monitoring and family cohesion) and risky sexual behavior and first coital initiation. The study revealed that parental monitoring and family cohesion mediated in the relationship between neighborhood factors and risky sexual behavior. However, parental monitoring and family cohesion mediated in the linkages between neighborhood disorganization and first coital initiation but not for neighborhood collective efficacy. Moreover, parental monitoring mediated in the relationship between neighborhood disorganization and protective sexual behavior but not for neighborhood collective efficacy. On the other hand, only family cohesion mediated in the linkages between neighborhood factors and protective sexual behavior. In contrast, both parental monitoring and family cohesion mediated in the linkages between neighborhood factors and condom use. In relation to interaction effects, only neighborhood collective efficacy by parental monitoring significantly predicted protective sexual behavior. Finally, the study proposed future research to strengthen the findings of this study.

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Chapter One

1. Introduction

1.1 Background of the Study

Adolescence as posited by the World Health Organization (2006) is an evolutionary time in which young people are forced to confront choices with major implications for their status in late life. In line with this, Hyde & Delamater (2000) suggest that the period of adolescence is considered to be a time they find, explore, and experiment with many sexual issues. In this regard, they wonder whether they are sexually attractive, they think about and question how they should behave sexually, and even they contemplate what the future holds for their sexuality (Santrock, 2008). Besides, adolescents are concerned about how they introduce themselves to others and how others view them sexually (Santrock, 2008). Adolescence is a period of intensified participation in larger social contexts outside the home, such as neighborhoods and peer groups, and these contexts are thought to exert powerful influences upon adolescent development, including sexuality (Browning, Leventhal, & Brooks-Gunn, 2004).

Furman and Shaffer (2003) explain many developmental tasks encountered by adolescents which include a) identity development, b) the transformation of family relationships, c) the development of close relationships with peers, d) the development of sexuality and, e) scholastic achievement and career planning. These tasks involve not only the individual, but also the system in which the adolescent exists (i.e. family, peer group, school, and neighborhood). It is clear that the accomplishment of one of these tasks influences the others in both positive and negative ways. The major focus of this study is on the developmental task of sexual

development, when sexual behavior becomes problematic and healthier, and why this occurs, posed in the context of the “youths’ systems”. The importance of the influence of systems is a concept central to Bronfenbrenner’s (1979) ecological systems theory, which seems to be an appropriate guiding theoretical base for this study.

Although involvement in sexual activity could be an asset that promotes positive personal qualities such as autonomy, confidence, and connectedness, at the same time, it could be a risk. Unintended pregnancy, HIV/AIDS, and sexually transmitted infections (STIs) are major problems that follow unsafe sex (Vrangalova & Savin-Williams, 2011). In this regard, international studies have consistently shown a general trend of high sexual risk-taking behaviors in adolescent period (Canterbury et al., 1998). This includes a lack of willingness to use condoms, or using condoms ineffectively and inconsistently (Canterbury et al., 1998). A positive association was found between sexual risk taking and other risk behaviors, such as smoking, alcohol use, and drug use. It was also found that adolescents who engage in general risk taking behaviors, such as alcohol use, are much more likely to engage in unsafe sexual practices (Edwards, 1992).

Sexual behaviors of adolescents are worldwide issues. For instance, studies in the United States according to Center for Disease Control (CDC) (2008) report, the trends in adolescents’ sexual behaviors from 1991-2005 show that nearly 48% of high school students nationwide had ever had sex in their life time. Of those who had engaged in sex, 15% had had four or more partners since they had become sexually active. Besides, about one-third of all girls in the United States get pregnant before age 20, giving birth to 435,427 infants in 2006. Eighty percent of those births were unintended. And 26 percent of American girls, ages 14 – 19, have at least one sexually transmitted infection, according to Centers for Disease Control and Prevention (CDC,

2008) study. Similarly, in Canada, among all sexually active persons, adolescents have highest incidence of STIs (McKay, 2004). This situation is also evident in European countries such as England and Wales (Panchaud et al., 2000).

Many studies across African countries revealed that youth are highly engaged with unsafe sexual activities. Especially in Sub-Saharan African countries, more than 70 percent of young women begin sexual activity during adolescence period. Males engage in sexual activity younger than females and the age at first sexual intercourse in the region ranges from 16-17.6 years (UNICEF, USAID and WHO, 2002). Sexual activity among female adolescents has resulted in unwanted pregnancies and illegal abortions, which pose serious health and social problems. The consequences: social, educational and economic, besides medical complications are so grave for adolescent girls. Bankole and Haas (1999) confirmed that, school girls are sexually active at the same time they are getting pregnant and abortion rates are also absolutely high across the regions. For instance, the study conducted on high risk sexual behavior among youth in Tanzania revealed that 0.3% girls and 3.2% boys had their first sexual intercourse at the age of nine years. The largest group, 55% of girls and 45% of boys had their first sexual intercourse experience between the ages of 14 to 17 years (Ikamba & Ovedraogo, 2003).

Moreover, Sub-Saharan Africa had 67% of the Globe's 33 million HIV infected people in 2007 and has maintained its position as the world region most heavily affected by the AIDS pandemic (UNAIDS, 2008). For instance, the 2008 UNAIDS Report on the Global AIDS Epidemic, estimated that among 15-24 year olds in Kenya, 4.6-8.4% of women and 0.8-2.5% of men were infected with HIV, suggesting that infection, for many occurs during youth.

Similarly, quantitative and qualitative studies of the sexual knowledge and practices of adolescents reveal that a substantial number of boys and girls in many developing countries

engage in sexual intercourse before their 15th birthdays (Dixon-Mueller, 2009). Early and unprotected sexual initiation can trigger a succession of harmful physical, emotional, and social outcomes, especially for girls (Jejeebhoy, Shah, & Thapa, 2005). Moreover, compared with adults, adolescents are less likely to have the foresight, skills, cognitive maturity, information, and support they need to protect themselves from unwanted pregnancy, HIV, and sexually transmitted infections (Bankole, Biddlecom, Guilla, Singh, & Zulu, 2007). In addition, the rising number of new HIV infections among these young demographic signals were an urgent need to identify behavior and situations that contribute to sexual and reproductive health in adolescence (Dixon-Mueller, 2009).

In Ethiopia, plethora researches have been conducted by different investigators. The findings showed that the majority of adolescent sexual health problems can occur due to different environmental factors. For example, Kebede et al. concurred that the use of Khat and alcohol and other substances are significantly and independently associated with risky sexual behavior among Ethiopian youths. Over 1.4% of in-school Ethiopian youth had unprotected sex during the 12-month period prior to the interview. The odds of unprotected sex were slightly higher among males compared to females. Daily Khat intake was also associated with unprotected sex. There was a significant and linear association between alcohol intake and unprotected sex with those using alcohol daily having a threefold increased odds compared to those not using it (Kebede et al., 2005).

A Master thesis produced by Dessalegn indicated that 21.4% of high school students engaged in premarital sexual relation; sex, living arrangement, and khat chewing are

significantly associated with premarital sexual initiation. The median age of first sexual intercourse was 16.4 years (Dessaiegn, 2006).

Similarly, in Northwest Ethiopia, the seroprevalence of HIV infection among high school students was 1.9%. Over 21% of the students were sexually active, and the mean age of first sexual contact was 16.6 years. Sexual contact with a commercial sex worker or non-regular partner was reported by 16.5%. Only 33.2% of those who were sexually active used condoms; and 39.2% of these used a condom only sometimes. A history of STD was reported by 9.2% of the sexually active students (Astatke, Black, & Bernt, 2000).

In the second HIV/AIDS Behavioral Surveillance Survey (BSS) Ethiopia 2005, school adolescents were asked if they had ever had sexual intercourse with an individual of the opposite sex. Among these adolescents, 9.9% were found to have had sexual experience. Out of this 14.6% were males and 5.3% were females. The finding indicates that more boys than girls are involved in the activity. Amongst the regions, the percentage of in-school youth that had ever had sex was highest in the Gambela region (31.9%) and lowest in the Amhara (4.5%) region (Getnet et al., 2005). Of those that had ever had sex, 40.6% had had sex at or before the age of 15. Amongst those who had ever had sex, more males than females (44.5% vs. 30%) were sexually active at or before the age of 15. The median age of sexual debut (first sex) among those who were sexually active was 16 years for both sexes. The commonest reasons for starting sex were personal desire (67.1%) and peer pressure (19.3%). A considerable proportion of females (15.3%) reported that they were forced into first sex (Getnet et al., 2005).

In a study conducted in five urban schools (in Bahir Dar, Dessie, Hawassa, Jimma, and Dire Dawa) to examine the patterns and socio-demographic correlates of sexual initiation, subsequent risk behaviors, and condom use among secondary school youth across Ethiopia, one-

third of the youth reported having had sexual intercourse prior to the study. The mean age of sexual initiation was 15.3 years. Two-thirds of the sexual initiations were unprotected and some occur with higher risk groups, including much older (15.5%) or casual/commercial sex partners (9.1%). Multi-partner sex (52.7%) and sex with casual (30.4%) or commercial (25.3%) partners were the most commonly reported lifetime risk behaviors. Although 56.7% of the youth ever used condoms, less than half of these used them regularly. On the positive side, 83.4% of the youth expressed intentions to use condoms in the future. Socio-demographic characteristics, particularly gender, location, and age, were significantly correlated with sexual and preventive behaviors (Adamu, Mulatu & SI, 2003).

A study done in Dessie indicated that a substantial proportion of adolescents in preparatory school were sexually active. Parent-adolescent connectedness, parental monitoring and living arrangements (parental structure) were significant predictors of sexual activity. A greater sense of connectedness and monitoring by parents decreased the likelihood of sexual activity regardless of living arrangement, age, gender, peer influence, khat, alcohol consumption, and parental education. Students with better family connectedness were more likely to use condoms consistently (Solomon, 2004).

Similarly, Tesemma (2003) conducted a study on sexual behavior and its correlates, indicated that almost 47 percent of his respondents have already initiated premarital sexual activities. It is one of the highest sexual activities ever recorded among unmarried young people aged 15-24 years in Ethiopia. Approximately 42 percent of the sexually active young people had reported to have two and more sexual partners in their sexual lives. About 62 percent and 60.4 percent of the sexually active respondents used condom at their first and the current sexual practices respectively. Moreover, the ages at which sexual intercourse start and contraceptive use

have wider gap. In connection to this, Ambanesh (2007) has undertaken a study on 766 school youth aged 15-24 years in Bahir Dar town to examine sexual behavior of youth and she found that 38.8 percent of youth had sexual experience. Of these, 51.5 percent were females, 43.4 percent of them had multiple sexual partners. The mean age of sexual commencement was 16.3. Yet, only 32.7 percent of sexually experienced youth used condom in their last sexual experience.

Substantial morbidity among adolescents occurs from unintended pregnancy and sexually transmitted infections including HIV. Adolescents' engagement in certain risky behaviors, e.g. Binge drinking and drug use, is often correlated with increased risky sexual behavior (Small and Luster, 1994). Results from the Centers for Disease Control and Prevention's (2007) youth risk behavior surveillance survey indicated that 44.7% of adolescents (grades 9-12) in USA had at least one drink of alcohol on one occasion during the thirty days before the survey. In addition, 35% of students had sexual intercourse with at least one person during the three months prior to the survey and of those students, 61.5% used a condom during their last sexual intercourse (CDC, 2008).

Adolescent risk behavior can be understood best through a combination of physical, social and environmental factors (Cohn, Macfarlane, Yanez, and Imai, 1995). Often risk behavior begins around the same time with puberty, when hormonal surges result in physical maturation an increased ability to perform complex reasoning (Compas, Hinden, and Gerhardt, 1995). These biological factors along with social changes and environmental structure are key points for understanding adolescent risk taking behaviors such as risky sexual behavior (Compas, et al., 1995).

Adolescent risk behaviors often co-occur, which makes engaging in one risky behavior is a risk factor for engaging in another one. Many adolescents report engaging in two or more risk behaviors at a time such as using multiple substances, engaging in unprotected sex, driving while under the influence of alcohol or experiencing sometimes suicidal thoughts (Eaton, Kann, Kinchen, Ross, Hawkins, & Harris, 2006).

A pattern of risk-taking behavior established in adolescence often leads to a variety of short-and long-term negative consequences, including engagement in multiple risk taking behaviors, which are major contributors to adult health status(Resnick, Bearman, Blum, Bauman, Harris, & Jones, 1997). Short term consequences include neglecting responsibility; engaging in risky sexual behaviors; drunk driving; physical and psychological impairment (Miller, Levy, Spicer, & Taylor, 2006). Furthermore, adolescent substance use can lead to academic difficulties such as poor academic performance, interpersonal problems affecting social growth, and emotional problems (Timmermans, Van Lier, & Koot, 2008).

Research showed that adolescents learn various behaviors from their parents. For instance, direct positive associations support the notion that teens model their parents' cigarette smoking behavior (Peterson, Leroux, Bricker, Kaeley, Marek, Sarason et al., 2006). It has long been established that adolescent substance use is closely associated with psychological problems, and that both types of youth problems may share common familial risk factors (Ferguson and Horwood, 1997). Furthermore, children whose parents model risky behaviors are more likely to turn to deviant peer groups and engage in delinquent and violent behaviors (Patterson and Dishion, 1985).

According to the social learning theory (Bandura, 1977), parents are important role models for their children. Therefore, if children and adolescents are exposed to healthy parent role

models, they are expected to be less likely to engage in unhealthy or risky behaviors themselves. From a similar source, social control theory (Thornberry, 1987) asserts that the adolescent is inclined toward deviance unless there are positive social bonds to prevent this and encourage conventional behavior. This theory suggests that close relationships with parents is protective because it is a mechanism for the transmission and teaching of positive social values. These conventional social values exclude health risk behaviors, since this type of behavior commonly misaligns with that of mainstream norms for behavior (Hirschi, 1969). Both social learning theory and social control theory assert that parents have a strong influence on their children's propensity for risk as well as safe behaviors.

Studies revealed that sexual risk factors are shaped by the adolescent's environment. Sexual risk and protective factors are characteristics of a person or environment that results in increased negative developmental outcomes. Environmental risk factors are not biological in nature, but rather occur as a result of family structure, neighborhood characteristics, and other social circumstances. In addition to risk factors, protective factors reduce the probability of maladaptive development as a result of high risk factors. Parental monitoring and family cohesion are considered to be one of the most effective protective factors in reducing adolescent risky behavior (Compass, Hinden, and Gerhardt, 1995). Adolescent sexual behavior can also be dependent on family SES. Numerous researchers have demonstrated that low socioeconomic status is related to sexual risk behavior which will be followed by teen age pregnancy, STI and HIV/AIDS (Lanctot & Smith, 2001 as cited in Brooks, 2007). Some individual level factors may be regarded as protective. For instance, religiosity is one of the protective factors to decrease adolescent sexual activity. Most religious groups discourage involvement in risky behaviors, premarital sex and dating violence (Howard, Qiu, & Boekeloo, 2003 cited in Alemayehu, 2012).

Social Disorganization Theory informs how neighborhood factors influence health (Kawachi & Berkman, 2003). Specifically, the Social Disorganization Theory posits that neighborhoods with greater structural disadvantage will be subjected to greater neighborhood disorganization. As a result, individuals living in more disadvantaged neighborhoods will be more likely to manifest higher rates of problem behaviors than counterparts living in more advantaged neighborhoods.

Among the studies examining neighborhood characteristics and youth sexual behaviors, neighborhood disadvantage has been posited to limit the availability of social capital and HIV/STI prevention within these communities (Nation, 2008). Neighborhood disadvantage may also shape localized norms regarding sexuality and childbearing (Parker, 2009) including earlier sexual debut, greater sexual activity, and lower rates of consistent condom use. Burgard and Lee-Rife (2009), for example, found greater neighborhood disadvantage was associated with earlier sexual onset and inconsistent condom use among male and female adolescents and young adults in South Africa.

On the other hand, structural characteristics of neighborhoods may influence community-level mechanisms that have consequences for adolescent behavior specifically neighborhood cohesion and the capacity for informal social control. Sampson and colleagues describe these aspects of social organization as “collective efficacy” (Sampson et al., 1999). The concept of collective efficacy refers to the extent of mutual trust, solidarity, and shared values among community residents (i.e., social cohesion) combined with common expectations for pro-social action on behalf of collective goals (i.e., informal social control) (Sampson et al., 1997).

Communities that maintain high levels of collective efficacy may be better able to monitor and regulate the prevalence of both public behaviors such as street delinquency and more

typically private behaviors such as adolescent sexual activity. Understanding this process requires attention to multiple dimensions of collective efficacy. First, Coleman (1990) has described “intergenerational closure” as the set of social relationships linking parents with the parents of their children's friends. These ties may be specifically relevant to the management of adolescent behaviors particularly adolescent sexual behaviors. While individual parents cannot be everywhere at all times, the parents of children within a social network may work together to supervise their children's behavior, disseminating information, sharing supervision responsibilities, and reinforcing norms regarding acceptable behavior, with potential implications for the regulation of problem behaviors, including sexual activity, among neighborhood youth (Sampson et al. 1999).

Although family factors may affect an adolescent’s decision to participate in sex, the strength of that effect may be moderated by the neighborhood in which adolescent resides. That is, the effect of parental support and monitoring on subsequent adolescent problem behavior may vary across neighborhood type. Research posits that living in more disorganized neighborhoods diminish the effect of parents’ efforts to monitor and control their children from the dangers of the neighborhood (Coleman 1990). Living in neighborhoods characterized by higher levels of social disorganization means that parents may have fewer resources and more limited access to the kinds of social and economic capital needed to effectively support and monitor their children (Coleman 1990).

In general, this dissertation will hypothesize that sexual behavior of adolescents is not only the product of individual level factors but also affected by familial level factors and characteristics of neighborhoods wherein adolescents reside.

1.2 Statement of the Problem

Sixteen million women between the ages of fifteen and nineteen give birth every year with 95% of these births occurring in developing countries. This is eleven percent of all births worldwide (WHO, 2010).

The reproductive health of adolescents in developing countries urgently requires greater attention. Young people are particularly at risk of HIV and other sexually transmitted infections (STIs) as well as unintended pregnancy because of risky behavior, drug use, and lack of access to health information and services. Half of all new HIV infections are among people ages 15 to 24 and, about one-third of all people with HIV are among young people ages 15 to 24 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2003). In addition, worldwide, women aged 15 to 19 give birth to roughly 17 million of the 131 million children born each year. In an analysis of DHS data from 50 countries, an average of 23% of adolescent women, including both married and unmarried women, have given birth or are pregnant. Early childbearing can be especially risky in areas where anemia and malnutrition are common and where access to skilled obstetrical care is poor (Zlidar, Gardner, Rutstein, Morris, Goldberg, & Johnson, 2003 as cited in Upadhyay, 2006). Similarly in Sub-Saharan countries the prevalence of HIV/AIDS among the young population (ages 15-24) is estimated to be 4.7 million (UNAIDS, 2011). However, the majority of the existing knowledge of this transitional period is from developed countries. Few studies were done about the context in which young people in developing countries participate in sexual activity. Understanding those factors which influence on adolescent sexual behaviors is vital to prevent these harsh consequences and provide interventions of early and risky sexual activity.

Ethiopia is among the least developed countries with multifaceted reproductive and sexual health problems, especially among the youth. In Ethiopia, 60% of adolescent pregnancies are unwanted. These pregnancies are a result of unprotected sexual intercourse without the aid of birth control (MOH no date, cited in Mulatua, 2012). Among young women and men aged 15 to 24, 1.1% women are infected with HIV while 0.2 percent of the men are infected with HIV (Reproductive and Sexual Health among Ethiopia's Youth, no date cited in Mulatua, 2012).

Similarly, child bearing begins early in life, about 45% of total births in the country occur among adolescent girls and young women (Central Statistical Agency (CSA), 2005).

Commercial sex prevails in urban areas and sexual violence against women and young girls is a common experience. This situation is aggravated by the different environmental and individual factors such as poor socio-economic factors, biological, psychological, behavioral, familial, neighborhood characteristics and harmful traditional practices. Sexual initiation at early age and extremely low use of contraceptives are also the key behaviors that contribute to reproductive health problems in the country (Ministry of Health (MOH), 2002).

Moreover, unsafe sexual activity among Ethiopian youth particularly those residing in urban areas, has resulted in large number of unwanted pregnancies and unsafe abortions, which pose serious health and social problems. For instance, studies showed that unsafe abortions account for almost 55% of all recorded maternal deaths, of which 13% occur among women under the age of 20 years. The studies further concurred that the number of cases of sexually transmitted diseases including HIV/AIDS is also increasing (MOH, 1996; Antenane & Mesfin, 1997; MOH, 2006).

Adolescents commence to experiment with risky sexual behavior at younger ages, in part due to individual factors, peer pressure, and the lack of supervision by parents and other adults.

Not only are adolescents at-risk for disease or pregnancy, but they are also experimenting with drugs and alcohol, which may also lead to unplanned sexual intercourse. The disturbing reality is that this is happening with increasing frequency in our country in general and in Addis Ababa in particular.

With the rise in STD transmission rates, unwanted pregnancies and unsafe/induced abortions, the propensity toward early initiation of sexual behavior coupled with various environmental factors has generated concern about the well-being of our youth and later life outcomes associated with these social health problems. Of course, a number of studies have been conducted in Ethiopia in relation to youth sexual risk behavior. However, the majority of them have investigated only fairly limited number of factors to sexual risk behavior by ignoring the healthy sexual behavior (protective sexual behavior) at the same time. Hence the current study filled the gaps which were not studied in the previous studies by including protective sexual behavior in addition to risky sexual behavior among youth in Addis Ababa.

When we consider unsafe sexual intercourse, adolescents who begin sexual activity at younger ages are less likely to use contraceptive methods. Even those who use contraceptives at early age were reported to use a less reliable method such as withdrawal and rhythm. This might be because of awareness problems (Ministry of Labor and Social Affairs (MOLSA), 1991). A study conducted among adolescents in Addis Ababa by Eshetu, Zakus and Kebede (1997) revealed that 43.2% of sexually active adolescents knew about condom use on their first sexual intercourse, however, 82% of them did not use condoms. Only 28% of the same youth claimed that they had continuously used condoms. The study indicates that sexual risk behavior is seriously manifested among youth in Addis Ababa.

Similarly, previous studies have demonstrated that various sociodemographic characteristics including gender, age, living arrangement, parental monitoring and parent-child relationship in predicting youth sexual risky behavior (Solomon, 2004; Asmeret, 2008; Ambanesh, 2007; Tesemma, 2003; Fekadu, 2001), having more than one sexual partners (Adamu et al., 2003; UNAIDS, 2002; Girma et al., 2004; Girmay et al., 2007; Getnet et al., 2005), inconsistent condom use (Adamu et al., 2003; Astatke & Serpell, 2000; Taffa et al., 2003). Other studies emphasized about the prevalence and consequences of adolescent sexual behavior (Andargie et al., 2007; Getnet et al., 2005; Astatke et al., 2000; Adamu et al., 2003; Ethiopian Public Health Association, 2003). However, these studies only explain a portion of the variance associated with these factors since they did not incorporate salient individual and contextual variables. Moreover, these studies and other previous studies have never attempted to incorporate multi-level factors into an integrated model to examine the adolescent's risk and protective factors in a more holistic approach. The other problem of these studies and other studies elsewhere in the country is their method of data analyses. They tried to analyze different level variables simultaneously to predict youth sexual behavior using Ordinary Least Square (OLS) or log linear. I believe that this might create biased parametric estimations and inflate type I error. Thus, the need arises to correct this methodological flaw by the present study. As a result, the present dissertation will try to analyze variables at the individual, familial and neighborhood levels.

To avoid bias in the parameter estimates and help to estimate the impact of neighborhood characteristics on adolescent sexual behavior above and beyond individual and family level characteristics, a hierarchically entering block of variables were performed to see their net effect on adolescents' sexual behaviors. The study used multilevel strategy that deals with the problem

of clustering for the whole sample, however, the fixed effects were only reported because of non-significant between group variance on the baseline model. Thus, in this dissertation random effects were not reported since except the baseline model, all approached zero.

Almost no studies have been conducted about the relationship between individual, familial and neighborhood factors with youth sexual behavior in Addis Ababa. Few studies were conducted in Addis Ababa in relation to sexual activity of adolescents (Asmeret, 2008; Abate, 1999; Amsale & Yemane, 2012) using different factors. As compared to the complexity of the problems among youth in Addis Ababa; these studies touched only a small portion of the factors which predict youth sexual behavior. Thus, the present study tries to investigate those Individual factors (age, gender, self-esteem, religiosity, substance use), Familial factors (family structure, family socio-economic status, parent education, parental monitoring, and family cohesion), and Neighborhood level factors (neighborhood disorganization, and collective efficacy) which predict the likelihood of youth sexual behaviors.

In fact, previous studies investigated the effects of individual and family factors to predict adolescent sexual behaviors. Aside these factors, adolescents are embedded within broader contexts that are likely to influence their behavior. Neighborhood contexts in this study were considered among the most significant one. Examining engagement in sex within these contexts gives investigators a broader understanding of macro-level factors that may shape an adolescent's decision to engage either in protective or risky sexual activities, initiate first sex, and use condoms in their last sexual encounter beyond, and in combination with, the aforementioned individual or family level indicators. Thus, the need arises to investigate the combined effects of these factors on adolescent's sexual behavior. Besides, most of the previous studies in Ethiopia were too shallow and small scale studies. They lacked depth and focused

mainly on the assessment of the prevalence and debut of adolescent sexual activities. These studies emphasized only the risky part of youth sexual behavior by ignoring the healthy behavior of youth sexual activity. So the current study finds the gaps which were not discussed in the previous studies. Thus, it is quite important to discuss the factors at various levels that initiate youth to engage in risky sexual behavior. Moreover, this study also adds knowledge to the previous studies by considering the healthy behavior of youth sexual activity using various ecological factors.

The other limitation of the previous studies is that, almost all considered youth sexual activity only as dependent categorical variable rather than a continuous scale of activity which may have limited its ability to account for more variance in sexual activity. So by observing the gap, the current study considered sexual activity as categorical and continuous variables which make the present study different from other similar studies. In general, studies in Ethiopia let alone Addis Ababa, as shown above did not examine predictors of adolescent sexual risk and protective behaviors by considering multi-level factors.

In order to address existing shortcomings in the literature and shed light on adolescent sexual activity in Addis Ababa, the present investigator examined the salient individual, familial and neighborhood level variables which predict sexual risk and sexual protective behaviors among youth which will be assumed in a multilevel perspective. Thus, to address the problem, this study will use Bronfenbrenner's (1979) ecological theory as a framework for examining factors related to adolescent sexual activity and includes variables at the individual, familial, and neighborhood levels. By using the ecological framework, this study will integrate multilevel factors to further our understanding of the complexities of youth sexual behavior. In addition, the current study will examine sexual activity in three ways, using a dichotomous sexual activity,

sexual risk behavior and protective sexual behavior as continuous variables indicating whether or not the adolescent had engaged in sexual intercourse, using age at first sexual intercourse, and using a continuum of sexual behaviors ranging from abstinence to sexual intercourse. By examining sexual behaviors on a continuum, this study provides a more complex picture of youth sexual behavior. A deeper understanding of the multiple factors related to sexual activity among Addis Ababa youth holds important implications for research, practice, and policy.

One of the tasks children begin to face during their transition into adolescence is coping with increasing sexual arousal. Coping with sexual arousal is not the only task adolescents face because they also have to decide whether they will express this arousal, and how they will express it in a healthy and safe way (Paikoff, McCormick, & Sagrestano, 2000). Unfortunately, there is no clear view of how sexual development occurs and which factors underlie healthy sexual development; most of the literature has focused on problems within sexual development (Koch, 1993). That is, a large proportion of the literature examining adolescent sexuality is concerned with teenage pregnancy and sexually transmitted diseases (Koch, 1993). Although studies in the past have shed light on unhealthy outcomes of adolescent sexual activity, they did not show the underlying processes involved in the sexual development of youth who have expressed their sexual arousal in healthy ways, such as delaying intercourse or using condoms during coital initiation, and using other birth control methods (Koch, 1993).

Most theorists emphasize that adolescence is a sensitive and vulnerable population. Adolescence marks a particularly fragile and sensitive period as a child makes the passage to adulthood socially, physiologically, and psychologically (Agre, 2009). As a result, Ethiopian Government formulated policy document that deals with youth. One of the major policy of Ethiopian government is to create favorable conditions for youth to participate in efforts to

reduce and eventually eliminate the use of cigarettes, chat(khat), alcohol, narcotic drugs and the like that bring physical, mental and psychological damages in youth (FDRE Youth Policy, 2004). Moreover, youth are the back bone of the country's social, political and economic developments. They are also assumed to be the future of the country. The issues of adolescents/youth are the issues of political, economic and social aspects of the country. They are expected to build nations economy, participate in the political and social affairs of the country. However, these groups of individuals are observed to be vulnerable to different risk behaviors as various studies revealed. The problem calls the present researcher to conduct research among youth in relation to sexual behaviors.

Besides, it is of great importance for professionals and policy makers to be concerned with young people's sexuality because it can potentially bring threats to youth's health. There is a great body of literature that has discovered the characteristics of youth and their environments associated with early sexual activity and inconsistent condom use.

However, in order to have a complete picture of young people's sexual development, more research examining youth who postpone sexual activity and youth who consistently use protection in their sexual encounters is needed. Thus, conducting research regarding this issue is inevitable. Research needs to look at what constitutes sexual behaviors that provide optimal development.

Understanding the processes by which youth delay sex or use condoms and birth control can help professionals in the field create prevention programs that not only decrease risk but also strengthen processes that protect youth from any kind of risky behaviors. One aim of this dissertation was not only to study processes that are present in adolescents who are sexually active and neglect to consistently use condoms and birth controls, having multiple partners,

having sex after using substances (risky sexual behavior), but also to study processes associated with youth who postpone sexual involvement (virgin youth) and practice consistent condom use and birth control (protective sexual behavior).

Thus, the purpose of the present dissertation is to examine the individual, familial and neighborhood level predictors of adolescent sexual behaviors (categorical, risky and protective sexual behaviors) and prevalence among adolescents in Addis Ababa. More specifically, purpose of this study is to analyze the influence of several predictor variables in each level in a sequential way, such that the relative importance of a predictor may be judged on the basis of how much it adds to the prediction of a criterion, over and above that which can be accounted for by other important predictors

1.3 Research Questions

- 1) Do sexual behaviors of adolescents vary by the study variables (age, gender, self esteem, religiosity, substance use, family structure, parental education, family SES, parental monitoring, family cohesion, neighborhood disorganization and neighborhood collective efficacy)?
- 2) Are there any mean differences between sexually experienced (Non-virgin) and inexperienced (Virgin) youth on continuous predictor variables?
- 3) How are individual level factors related to adolescents' sexual behaviors?
 - a) To what extent are individual demographics related to adolescent's sexual behaviors?
 - b) To what extent are self-esteem, religiosity and substance use related to adolescents' each sexual behavior?

- 4) How are family level factors associated with adolescents' sexual behaviors?
 - a) To what extent are family level demographic factors related to adolescents' sexual behaviors?
 - b) To what extent are parental monitoring and family cohesion related to each adolescent sexual behavior?

- 5) How are neighborhood level characteristics associated with adolescent sexual behaviors?
 - a) To what extent are neighborhood disorganization and collective efficacy related to each adolescent sexual behavior?
 - b) To what extent do neighborhood characteristics interact with parental monitoring for a moderated relation with each sexual behavior?

6. Does substance use mediate in the linkages between parental monitoring and each sexual behavior?

7. Does substance use mediate in the linkages between family cohesion and each sexual behavior?

8. Do family factors (parental monitoring and family cohesion) mediate in the relationships between neighborhood factors and each sexual behavior?

NB: Research questions 3-8 were addressed using series of hierarchical linear regression models or hierarchical logistic regression models, which allow for a precise estimate of individual-level, familial-level and neighborhood-level effects on adolescent sexual behaviors. Separate analyses were conducted for first coital initiation, condom use, risky sexual behavior and protective sexual behavior.

1.4. Objectives of the Research

The objectives of this investigation were to examine what factors influence the sexual behaviors of adolescents in Addis Ababa. The specific objectives of this study were to:

1. Analyze the variation of each sexual behavior of adolescents with respect the study variables.
2. To examine mean differences between sexually experienced (non-virgin) and inexperienced adolescents (virgin) with respect to continuous predictors.
3. Examine how individual level factors are associated with adolescent sexual behaviors.
4. Investigate to what extent family and neighborhood level characteristics are related to adolescent sexual behaviors.
5. Examine the interaction effects of neighborhood characteristics with parental monitoring on adolescent sexual behaviors.
6. To examine the mediating effects of substance use in the relationship between parental factors and each adolescent sexual behavior
7. To investigate the mediating effects of parental factors (parental monitoring and family cohesion) in the relationships between neighborhood factors and each sexual behavior?

1.5. Scope of the Study

This study was delimited to the city of Addis Ababa. The reason why Addis Ababa was selected as the research site was that, it is the capital of the country which hosts various International and National Organizations, ethnic groups and foreign people. Thus, the researcher believed that there might be potential respondents in Addis Ababa as compared to adolescents

other than Addis Ababa in relation to sexual behaviors. Therefore; conducting research about adolescents' sexual behaviors in Addis Ababa in relation to the predictor variables is important to provide intervention strategies in the future.

Moreover, the study was delimited to only adolescents in governmental preparatory schools in Addis Ababa. The reason for the choice of these adolescent groups had manifolds. The first thing was these groups of adolescents might be one of the prospective University students in the near future and hence the intention was to know to what extent these adolescents were aware of their reproductive health and other risk factors. During the university staying, these adolescents might be far from their parents' or guardians' supervisions and the situation might lead them to involve in various risk behaviors. Thus, studying the status of these adolescents might be important for future research and stretch intervention strategies among universities in the country. The second reason was clearly to manage the sample size of the study. In other words, if this study considers adolescents from each grade level, that would make the population to be unmanageable to get the needed sample size. Besides, studying adolescents of all grade levels might request much time, financial, and large number of human power which could not be covered by this project.

1.6. Significance of the Study

Adolescent's reproductive health is threatened due to the influence of myriad factors operating at individual, familial and neighborhood level variables. Hence, the burdens of STDs including HIV/AIDS, unwanted youth pregnancy and unsafe abortion are much more prevalent among this group of individuals as different findings concurred. On the other hand, there are attempts to prevent risky sexual activities by adolescents as plethora of researches revealed.

The main purpose of this study was to identify which blocks of individual, familial, and neighborhood factors predicted adolescents' sexual behaviors such as first coital initiation, condom use, sexual risk and sexual protective behaviors. Moreover, the peculiar characteristic of this study which distinguished it from other studies in Addis Ababa in relation to youth sexual behavior was employing hierarchical linear modeling in the data analyses because of the nesting nature of the data. Thus, the findings of this study should be useful:

1. To provide prevention and intervention programs for the concerned bodies such as parents, practitioners, governmental bodies, policy makers, religious leaders, non-governmental organizations to minimize adolescent's sexual risk behavior and maximize protective sexual behavior, to use condoms consistently, and abstinence from any kind of sexual acts.
2. To maximize parent adolescent relationships by creating awareness to parents those parents should create conducive environment for their children to have open discussion with their children on risky sexual behavior and protective sexual behavior.
3. To eliminate/reduce unwanted pregnancy and sexually transmitted diseases by educating our youth the risk of unsafe sex and the importance of safe sex and abstinence.
4. To remind for governmental policy makers to include those risk and protective environmental factors for adolescents' sexual behaviors in their policy development to create further awareness about which factors correlate with adolescent sexual activity for the society at the national level.

5. Finally, this study is important for those researchers to extend research in relation to adolescent sexual activity by considering multiple level factors and give direction for further analysis.

1.7. Operational Definitions of Important Terms

Sexual activity is defined as youth engagement of voluntary sexual intercourse either risky or protective and abstinence from sexual intercourse (including virgin youth).

In this study, sexual activity is seen as categorically and continuously. Throughout the study, sexual activity and sexual behavior will be used interchangeably.

Individual level variables are demographic variables and/or personal characteristics or attributes that may predict sexual behaviors. Individual-level variables occur within the individual.

Familial level variables/factors or characteristics are defined as those family factors which are external to the individual youth, yet likely have an influence on the youth's sexual activity which include family demographics and substantial variables.

Sexual risk behavior is defined as engaging in unprotected sexual acts (vaginal) without using condom and/or having multiple sexual partners, and/or using alcohol and /or drugs before having sex.

Virgin youth in this study is defined as those adolescents who had not ever had vaginal sexual intercourse in their life time.

Safe youth is defined as adolescents who consistently use condoms and contraceptive pills before having sexual intercourse.

Unsafe youth is defined as adolescents who do not consistently use condom in their sexual encounter

Protective sexual behavior in this study is defined as youth engagement of safe sexual acts using condoms and contraceptive pills.

Parental monitoring is referred as to what extent parents know about their adolescents' activities, friends, and whereabouts.

Family cohesion is defined as the support, commitment, the quality of interpersonal relationships among the family members whenever needed.

Youth in this study refers to parts of the society whose age ranges from 15-29 according to FDRE Youth policy (2004). However, this study considers those youth/adolescents in the age range of 15-21. Thus, for the purpose of this study, adolescents and youth will be used interchangeably.

Religiosity refers to various aspects of religious activity, dedication, and belief and has been measured in various ways. In this study, religiosity is operationally defined as adolescent's church attendance and participation in religious activities.

Neighborhood refers to the physical place where adolescents/families of adolescents reside and the place around the schools where adolescents learn, which indicates the social connections between people and institutions, positive and negative interpersonal relations, and the overall solidarity in a community. For the purpose of this dissertation neighborhood was defined as the adolescents' residence (safars and localities) together with their corresponding Kebele. In this study, neighborhood and community may be used interchangeably.

Neighborhood disorganization is operationally defined as activity or interaction among neighbors in their safars, berendas, localities where residents feel insecure especially adolescent girls, a place where alcohol, shisha, khat, and other drugs are sold, with vandalism acts; with a lot of old roofed houses, lack of mutual trust among neighbors, and in and out of many strange people and the likes.

Neighborhood collective efficacy is operationally defined as those activities or interactions among neighbors in their safars, localities or kebeles where residents feel secure, having mutual trust among neighbors, helping one another at times of need, with adult role models who supervise their neighbors' adolescents, having common interest to establish social associations such as iddir, ekub and the likes.

Chapter Two

2. Literature Review and Theoretical Framework

2.1. Introduction

Different theoretical perspectives for understanding first coital intercourse, condom use, risky sexual behavior, and protective sexual behavior among youth, as well as previous empirical studies supporting the theoretical framework, are discussed in depth in this chapter. Multiple level key predictors of sexual behaviors among youth identified by the current literature are also discussed.

2.2. Adolescent Sexual Behaviors from the Developmental Theoretical Perspectives

Findings within the research provide evidence that adolescents are at high risk of contracting and/or spreading sexually transmitted diseases and infections. To gain a broader perspective of the vulnerable position in which adolescents find themselves, the specific developmental tasks accompanying adolescence will be explained.

According to Louw *et al.* (1998), a developmental task is a task that arises in specific developmental stages within an individual's life, for example, infancy and early childhood, adolescence, adulthood and old age. Successful achievement of these tasks leads to healthy psychological functioning and to success with tasks that occur later during other developmental areas within the individual's life. Failure in achieving these tasks leads to difficulties in healthy psychological functioning as well as difficulties with tasks that occur later during other developmental stages.

In this chapter, the following developmental dimensions and a Theory of reproductive development will be discussed in relation to adolescent sexual behaviors.

1. Physical development
2. Psychosocial development
3. Cognitive development
4. Theory of reproductive development

2.2.1. Physical development

Adolescence is characterized by accelerated physical growth. Accompanying this growth process is the development of sexual maturity. Sexual maturation in girls is manifested by the development of sexual characteristics, one of which is menarche (first menstruation) followed by, or shortly thereafter, ovulation. Sexual maturation in boys, on the other hand, is characterized by the first seminal emission (Berger, 1994).

Sexual maturation in both sexes leads strong physical attraction between the sexes. Adolescents become familiar with their bodies and begin experimenting with interactions of physical intimacy in the search to find a sense of sexual identity (Dreyer, 1975). This phase of sexual exploration which is accompanied by a lack of awareness of the dangers of high-risk sexual behavior places adolescents in a vulnerable position regarding risky sexual behavior.

2.2.2. Psychosocial development

According to Erikson (1968), the psychosocial stage of development that characterizes adolescence, is identity versus role confusion. This stage implies that adolescents begin exploring who they are, what they value and what they will grow up to become. They are in the process of integrating physical, sexual, social, cognitive and moral tasks of development to form

a unified self-identity. As one's sexual identity forms an integral part of one's self, this developmental stage involves sexual experimentation and gratification that leads to healthy psychological development. Should these sexual needs not be satisfied in a socially accepted manner, biological problems such as the spreading of sexually transmitted diseases and infections occur. Socio-economic problems, such as unwanted pregnancies, may also have a negative impact on the development of a healthy psyche (Havighurst, 1953).

2.2.3. Cognitive development

Cognitive changes that take place in adolescence can be defined as a more comprehensive and advanced ability to reason logically about concrete as well as abstract concepts and to analyze situations (Inhelder & Piaget, 1958). Elkind (1967) on the other hand believes that although adolescents are cognitively able to take others' thoughts and feelings into account, when attempting to do so, they often fail as they end up believing that others share their thoughts and feelings surrounding specific concepts or situations. One way in which the above-mentioned cognitive error manifests, is in the form of the personal fable. Lapsley and Murphy (1985) on their part describe this concept as adolescents' perception of themselves as special and unique. They also tend to believe that they are invulnerable and indestructible. Research conducted by Arnett (1990) concurs that this theoretical belief as it was proven that adolescent girls with a high level of egocentrism believed that there was almost no possibility that they would fall pregnant if they were to have sexual intercourse without the use of contraceptives. Research conducted by Moore and Rosenthal (1991) indicates that adolescents are susceptible to the kind of thinking in which they believe that they are immune to the negative consequences of risky behavior. This belief system that they adopt, places them in a vulnerable position amongst the general

population regarding the contraction of HIV/AIDS. Although adolescents may be biologically prepared to engage in sexual behaviors, they are often not psychologically ready to make responsible decisions or to realize the negative consequences of this behavior (Louw *et al.*, 1998). It is evident from the literature provided that adolescents' physical, psychosocial and cognitive development places them in a vulnerable position regarding sexual behaviors either risky or protective sexual behavior.

2.2.4. Theory of Reproductive Development

The Theory of Reproductive Development (Belsky, Steinberg & Draper, 1991) postulates that involvement in sexual activity is a behavior emerging from human development. It suggests that the family environmental context (e.g., socioeconomic status), parent-child relationships, physical development, and child psychosocial adjustment will predict reproductive behaviors.

The main hypothesis is that stressful family living conditions will accelerate the onset of puberty in children and lower their age at first intercourse. According to Belsky *et al.* (1991), the Theory of Reproductive Development is presented in terms of two divergent development pathways considered to promote reproductive success in the contexts in which they have arisen. One pathway is characterized, in childhood, by a stressful rearing environment and the development of insecure attachments to parents and subsequent behavior problems; in adolescence by early pubertal development and precocious sexuality; and, in adulthood, by unstable pair bonds and limited investment in child rearing, whereas the other pathway is characterized by the opposite (Belsky *et al.*, 1991).

The Theory of Reproductive Development has been tested using different research designs and methods. Some previous findings support the hypothesis that there is an association between

environmental factors, puberty development and sexual initiation behaviors. In the general population, age of onset of puberty is significantly correlated to age of first intercourse (Deardorff, Gonzales, Christopher, Roosa & Millsap, 2005). Girls with early menarche tend to engage in early intercourse and early childbearing (Udry, 1979). Besides, a higher proportion of precocious sexual activity has been observed in populations living in poorer environments (Rwenge, 2000; Varghese, Maher, Peterman, Branson & Steketee, 2002). Different aspects of the shared social environment have an influence on age of first sexual intercourse (Dunne *et al.*, 2006).

2.3. Prevalence and consequences of sexual behaviors among adolescents in Ethiopia.

In the context of sexual activity, young people in Ethiopia are similar to other countries. For example, a study was conducted on the sexual behavior among out-of-school youth in Addis Ababa which showed that 52.2 % of boys and 47.8% of girls had had sexual experience. The study further concurred that their mean age of sexual commencement being 17.7 years (Abate, 1999). Another study by Family Guidance Association of Ethiopia on adolescent premarital sexual activity showed that 72% of boys and 71.4% girls have had their first sexual contact in the age range of 15-17 years (Ethiopian Public Health Association (EPHA), 2003).

Similarly, Adamu, Samuel and Ingdushet (2003) in their study among secondary school students in Ethiopia showed that 33.3% of youth reported to have had sexual intercourse and the mean age of sexual debut was 15.3 years. These investigators in their study indicated that the mean number of sexual partners within six months ranged from two to ten. In consolidating this idea, a study conducted by UNAIDS (2002) revealed that 5.8% of the young people (15-24) had more than one sexual partner in the country.

Sexual risk behavior is manifested by adolescents in Addis Ababa differently from the usual way. That is, it is changed from vaginal sex to oral and anal sex. In connection to this, a study conducted by Amsale and Yemane (2012) in school youth revealed that 5.3% (190) reported ever having oral sex out of which 13.2% (25) initiated oral sex before the age of six and 44.2% (84) had the first oral sex without their consent. The mean age at first oral sex among the study population was 14.6 years. Among ever had oral sex, 51.6% (98) of the participants had reported oral sex in the 12 months preceding the survey. Of these 61.2% (60) had more than one oral sex partners, 48.0% (47) received gift for exchange of oral sex, only 12.2% (12) of them used condoms every time they had oral sex, and 80.6% (79) of them had intention to continue having oral sex in the future.

The same study showed that 4.3% (154) of the participants reported ever having anal sex. Of these 19.5% (30) had their first anal sex before the age of ten and for the 44.2% (68), the first anal sex was not consensual. The mean age at first anal sex among the study population was 14.8 years. About 57.1% (87) of the participants reported having anal sex in the last 12 months. Of these only 26.1% (23) used condom consistently during anal sex and 51.1% (45) of the participants reported having more than one anal sex partners, 52.3% (46) had received gift for the exchange of anal sex and 82.9% (63) of the participants intend to continue having anal intercourse in the future.

Consistent condom use was reported by 12.2% of those practicing oral sex and 26.1% of anal sex. Reasons for oral and anal sex included prevention of pregnancy, preserving virginity, and reduction of HIV and STIs transmission. Oral sex practice was strongly and significantly associated with perception of best friends engagement in oral sex (Adjusted Odd Ratios (AOR) = 5.7; 95% CI 3.6–11.2) and having illiterate mothers (AOR = 11.5; 95% CI 6.4–18.5). Similarly,

anal sex practice was strongly and significantly associated with favorable attitude towards anal sex (AOR = 6.2; 95%CI 3.8–12.4), and perceived best friends engagement in anal sex (AOR = 9.7; 95%CI 5.4–17.7) (Amsale & Yemane, 2012).

The second Ethiopian BSS in 2005, among in school youth, 9.9% were found to have had sexual experience before marriage, 14.6% of males had had sex compared to 5.3% of females. Of those that had ever had sex, 40.6% had had sex at or before the age of 15 (HAPCO, MOH, CSA, 2005). A study in Gondar high school students showed that, 84 (14.9%) reported to have had sexual intercourse at least once in the past. The mean age of sexual commencement was 17 years for boys and 16.4 years for girls (Andargie, Kassu, Moges, Kebede, Gedefaw, Wale, et al., 2007). Similarly, in Debre Berhan, a study was conducted among youth. The findings showed that out of the 663 youth participants, 217 (32.7%) reported to have practiced sexual activity in the past, which include 87 (28.6%) of the boys and 130 (36.2%) of girls. The mean age at first sexual intercourse was 18.1 years (Federal HIV/AIDS Prevention and Control Office, 2010).

Among Agaro high school students, from the total study population, 90 (25%) of them had history of sexual intercourse prior to the study period. Among males, 70 (32.6%) and females 20 (13.8%) of them had sexual intercourse in the past 12 months (HAPCO, MOH, CSA, 2005). Besides, Girma, Assefa and Toshumie (2004) revealed that among in school youth in Agaro, 49 (54.4%) of them used condom at least once, of those 39 (55.7%) were males and 10 were females. Out of those who had used condom at least once, 23 (46.9%) of them reported that they were using condom always and 19 (38.8%) of them used occasionally. However, the same study indicated that 40 (44.4%) reported that they had multiple sexual partners and 32 (35.6%) had 2-5 partners and the remaining 8 students had more than five partners. Similarly, Girmay, G/Mariam

and Yazachew (2007) revealed in Assendabo among sexually experienced youth, 81 (21.8%) had sex with more than one sexual partner in their life time.

Studies were also conducted by different investigators about adolescents' sexual activities across different parts of the country. For instance, Seme and Wirtu (2008) in relation to initiation of sexual practice among students in Nekemte town showed that, the main reason of sexual intercourse were falling in love which accounted for 49 (33.8%), desire to practice sexual intercourse which accounted for 44 (30.3%) and peer pressure which includes 25 (17.2%).

According to various studies, in Ethiopia prevalence of HIV in the population in general in 2003 was 4.4% (UNAIDS, 2005), with estimates for urban populations varying from 7.0% to 11.7% (Abebe et al., 2003). This problem is more serious among adolescents. More specifically, a high percentage of adolescents is sexually active (Taffa et al., 2003), while about 50% of the adolescents reported not to use condoms or to use condoms inconsistently (Adamu et al., 2003; Taffa et al., 2002; Taffa et al., 2003). Adamu et al. (2003) found that about half of the respondents had engaged in multi-partnered sex and in a study by Alene et al. (2004) revealed that 46% of rural high school students admitted sexual contacts with casual partners.

In Ethiopia skills of protection against HIV infection are generally low (Yerdaw et al., 2002). Moreover, large number of adolescents have incorrect ideas about HIV/AIDS and the transmission of HIV/AIDS (Yerdaw et al., 2002), which may decrease HIV prevention behavior (Boer & Emons, 2004).

Besides, a study was conducted by the Family Guidance Association of Ethiopia on youth sexual behavior which showed that 71.9% of boys and 71.4 % of girls had had their first sexual debut in the age range of 15-17 years (EPHA, 2003). Other studies also corroborated the above idea. Thus, in Bahir Dar, Fantahun and Chala (1996) on their parts revealed that 53% of male

and 24% female out-of-school youth were sexually active and the mean age of sexual debut was 16.9 years. Another study by Taffa (1998) in relation to sexual activity out-of-school youth, and their knowledge and attitude about STDs and HIV/AIDS in Southern Ethiopia showed that 49% of the participants had had their first sexual intercourse within age range of 15-19 years.

A number of other studies also confirmed the above ideas. Eshetu, Zakus and Kebede (1997) conducted a study on the attitudes of students, parents and teachers towards the promotion and provision of condoms for adolescents in Addis Ababa. Their finding showed that the earliest reported mean age of onset of sexual commencements for girls and boys were 14 and 12 years respectively. A similar study was conducted by Eshetu et al., (1997) in Addis Ababa which revealed that only 43.2% of the sexually active in school youth knew about condoms on their first coital encounter. 82% of those youth did not use condoms on their first sexual encounter. As witnessed by a number of studies about youth sexual behaviors in Ethiopia, considerable number of youth have been actively practicing sexual activities. The majority of them have practiced unsafe sex and some of them have involved with safe sexual practices.

2.4. Factors associated with adolescent sexual activity

According to Varghese *et al.* (2002), the probability that an adolescent will become sexually active is increased by community risk factors (e.g., low rates of educational attainment, high unemployment rates, community poverty, high crime rate), family risk factors (e.g., having a single parent, changes in parental marital status, low level of parental education and income, poor parental support, lack of parental supervision, mother's early age at first sex and first birth, single mother's dating and cohabitation behaviors, permissive parental attitudes about premarital sex or teen sex, older sibling's early sexual behavior and age of first birth), and risk factors

related to peer attitudes and behavior (e.g., low grades among friends, sexually active peers). Individual risk factors related to the adolescents themselves include biological factors (e.g., older age and greater physical maturity, hormone levels), attachment to and success in school (e.g., poor school performance, lack of plans for the future), lack of attachment to religious institutions, alcohol or drug use, emotional distress (e.g., depression, suicide ideation), characteristics of relationship with partners (e.g., early and frequent dating), sexual abuse (e.g., history of being sexually abused), sexual beliefs and attitudes (more permissive attitudes toward premarital sex) (Varghese *et al.*, 2002).

However, in this dissertation factors associated with adolescent sexual activity can be categorized into three distinct categories: (1) individual (2) familial, and (3) neighborhood. Individual factors would include any child characteristics, biological, psychosocial associated with sexual activity. Familial characteristics are relationships and circumstances within the family that are directly or indirectly associated with adolescent's sexual activity.

Neighborhood level factors, on the other hand, are aspects of the environment which subsumes both individual and family level factors in which the adolescent is developing and they may/may not have direct effect on adolescents' sexual behavior outcomes.

2.5. The Roles of Individual level factors

2.5.1. Biological Factors

2.5.1.1. Age

As expected, studies show a positive relation between age and sexual activity. For example, Small and Luster (1994) found that sexually experienced youth were older than the

inexperienced youth across genders. Likewise, a study examining the factors associated with sexual activity in the teenage years in Latino, African-American, and European-American samples, found that sexually experienced youth tended to be older than the sexually inexperienced youth across gender and ethnicity (Perkins, Luster, Villaruel, & Small, 1998). However, a careful attention is needed because some studies have shown that age alone is not a good predictor of sexual activity, age can be confounded with pubertal onset (Kotchick, Shaffer, & Forehand, 2001).

Risky sex in this study is conceptualized in terms of degree of sexual experience. With increased age, more adolescents start engaging in sexual intercourse (Bersamin, Walker, Fisher, & Grube, 2006; Saewyc et al., 2008). The relationship between age and sexual initiation is directly proportional. For example, for both sex Asian-American adolescents, increased age was also associated with greater likelihood of sexual initiation (Hahm et al., 2006).

In Ethiopian situation, age of an adolescent is a significant predictor of adolescent sexual activity (Debebe, 2008). A study was conducted among adolescent in Dessie by Abdulhakim (2008) showed that age was a significant predictor of adolescent sexual activity. The study revealed that older adolescents engaged in sexual activity more likely than younger adolescents. The study further confirmed that age and adolescent condom use were significantly associated. An increase in age of adolescent increases the likelihood of using condoms consistently. The multivariate analysis showed that older adolescents used condoms consistently 2.493 times more likely than adolescents of their counter parts.

2.5.1.2. Gender

Gender is another important demographic factor associated with sexual behavior; however, the results were not consistent. A meta-analysis of seven national adolescent surveys in the US, Great Britain, and Australia reported that compared with girls, boys were more likely to have ever had sexual intercourse and have first intercourse at a younger age, although the gender differences were small (Petersen & Hyde, 2010). In Canada, the 1996/1997 cycle of the National Population Health Survey (Smylie, Medaglia, & Maticka-Tyndale, 2006) and the Canadian Youth, Sexual Health and HIV/AIDS Study, conducted in 2002-2003 (Boyce et al., 2006), showed that girls were more likely to report ever having intercourse. By contrast, past population-based studies have consistently shown that higher proportions of sexually active boys than sexually active girls reported multiple sexual partners (Boyce et al., 2006; Saewyc et al., 2008; Smylie et al., 2006), and condom use at last intercourse (Petersen & Hyde, 2010; Saewyc et al., 2008; Smylie et al., 2006).

Numerous researchers have examined the influence of gender on sexual behavior and it appears that gender does play a part. It appears that at older ages, 16 to 17 years, boys and girls are equally likely to engage in sex (Gillmore et al., 2002). However, boys are more likely than girls to have sex at an early age (Nahom et al., 2001).

It also appears that different factors affect the likelihood for activity in boys and girls (Small & Luster, 1994), and that boys have significantly more partners than girls, raising their risk for sexually transmitted diseases (Tubman, Windle, & Windle, 1996). Boys are also more likely to intend to have sex before marriage, or in high school, than females (Nahom et al., 2001).

In Ethiopia, Solomon (2004) in his study found that gender did not significantly predict the odds of adolescents' sexual behavior. The same study showed that consistent condom use in their last sexual encounter did not differ significantly across gender. Debebe (2008) on his part confirmed that gender and adolescents sexual activity were not correlated.

2.5.2. Psychosocial factors

2.5.2. 1. Self-esteem

Self-esteem has been investigated in numerous studies on teen risk behaviors. Despite its popularity in health and psychological researches, the relationship between self-esteem and adolescent sexual behavior is still inconclusive. Goodson and colleagues (Goodson, Buhi, & Dunsmore, 2006) conducted a systematic review to examine this relationship. Of 138 studies reviewed, more than half (62%) did not find a statistically significant association, and one-fourth indicated an inverse relationship. The negative association, however, suggests the possibility that engaging in sexual activity results in lower self-esteem.

Further, male and female adolescents who indicate self-esteem enhancing motivations for having sex were more likely to use condoms inconsistently (Robinson, Holmbeck, & Paikoff, 2007). Salazar, Crosby and DiClemente (2005) also found that African-American adolescent girls with higher self-esteem were more likely to hold more positive attitudes to condom use, feel more efficacious and less fearful in negotiating condom use, more frequently communicate with parents and partner, and perceive fewer barriers to condom use. Despite these findings, a systematic review of the relationship between self-esteem and sexual behavior, attitude and intention among adolescents found little significance in the relationship (Goodson, Buhi, & Dunsmore, 2006). While a gender analysis suggested a greater relationship between self-esteem

and sexual behavior among adolescent girls, it was not statistically different from the relationship found for adolescent boys (Goodson et al., 2006).

In Ethiopian situation, there was no study regarding the connection between adolescent self esteem and sexual behavior. Hence, the current study only draws conclusions based on other available studies outside Ethiopia.

2.5.2.2. Religiosity

Religious activity is defined as youths' overall involvement in organized religious activities (e.g., church suppers, bible study, and youth rallies). Most religious groups discourage involvement in risky behaviors, premarital sex and dating violence (Howard, Qiu, & Boekeloo, 2003 cited in Alemayehu, 2012). Similarly religious youth are more likely to refuse unsafe sexual intercourse (McCree, Wingood, DiClemente, Davies, & Harrington, 2003). Regular religious service attendance was also found as a protective factor against health compromising behaviors (Scott, Munson, McMillen, & Ollie, 2006) and young people who regularly attend religious services are less likely to perpetrate and experience dating violence than those who do not attend regularly (Cunrandi, Caietano, & Schafer, 2002). Data from a variety of surveys indicate that African Americans demonstrated a high degree of religious involvement (Taylor, Chatters, & Levin, 2004).

Youth who have no religious affiliation are most likely to initiate sex as teenagers (Forste & Heaton, 1988), and those who belong to churches that promote abstinence are least likely to have sex (Miller & Olson, 1988). Greater religiosity, as indexed by frequency of church attendance and perceived importance of religion, is associated with postponing intercourse (Whitbeck et al., 1999). In this dissertation, religiosity refers more specifically to strength of

religious faith rather than belief of a specific denomination or affiliation. Religion and religious institutions strongly influence individual behavior and social norms.

In Ethiopian situation, a study by Debebe (2008) about determinants of sexual behavior among adolescents in Bishoftu town revealed that religiosity has a profound effect on sexual behaviors of adolescents. The odds ratio showed that youth who did not attend religious services were 2.675 times more likely to involve in sexual activity than adolescents of their counter parts.

2.5.2.3. Substance use

Adolescents who use drugs and alcohol are more likely to engage in high-risk sexual behavior (Bachanas et al., 2002; Hockaday, Crase, Shelley, & Stockdale, 2000; Paul, Fitzjohn, Herbison, & Dickson, 2000 as cited in Brooks, 2007). Findings in developing countries reveal similar results for substance use. For example, in relation to alcohol use, eight out of nine studies in a meta-analysis found that using alcohol significantly increased the odds that an adolescent had already engaged in sex and four out of seven studies found that adolescents who use drugs were much more likely to be sexually experienced than adolescents who did not use drugs (Blum & Mmari, 2005). Substance use appears to play a critical role in teens' risky sexual practices because the use of substances often immediately precedes the onset of sexual activity (Rosenbaum & Kandel, 1990). This is especially concerning for young women whose increased risky sexual behaviors include greater susceptibility to some sexually transmitted diseases as well as the fact that female drinkers may have lower alcohol tolerance levels than males resulting in more immediate feelings of alcohol effects (i.e. drunkenness) (Rosenbaum & Kandel, 1990).

Boyer, Tschann, and Shafer (1999) used logistic regression to predict sexual experience and linear regression to predict risky sexual behaviors in ninth grade adolescents. Results

indicate that use of alcohol and drugs is associated significantly with sexual experience and sexual risk. Several studies found similar findings, indicating that teens that use marijuana and alcohol also tend to engage in more STD-related risk behaviors, including earlier initiation of sexual intercourse and inconsistent use of barrier contraceptives (Eng & Butler, 1997). Stueve and O'Donnell (2005) examined relations between early alcohol use and subsequent alcohol and sexual risk behaviors among urban adolescents (controlling for early sexual initiation) and found similar positive connections between substance use and risky sexual behaviors. Results indicate that by 10th grade, females who reported early alcohol use were about four times as likely as their alcohol-delaying counterparts to report being recently drunk or high and almost twice as likely to initiate sexual intercourse or engage in sexual intercourse (Stueve & O'Donnell, 2005).

In Ethiopia, alcohol and drugs like khat are commonly consumed in urban and rural areas. The effect of regular alcohol and khat use on sexual behavior amongst the youth who reported having had risky sex in the past 12 months was 44% used alcohol and khat regularly (BSS, 2002). Khat and alcohol has adverse effect on the health of youth as various findings suggested. For instance, a study conducted on casual sex debuts among female adolescents in Addis Ababa showed that alcohol and khat use have strong links with the incidence of rape as a factor contributing to early sex initiation (Fekadu, 2001).

According to Kebede et al., (2005), substance use in Ethiopia was also found to be linked with committing risky sexual behaviors among youth. In Ethiopia the most common substances used among young people are khat, shisha and alcohol (Kebede et al., 2005; Meressa, Mossie, & Gelaw, 2009). Khat (*Catha edulis*) is an evergreen leave mainly cultivated in the eastern and southwestern part of Ethiopia. It creates a mild level of stimulation and mood change (Kebede et al., 2005). It is used among the youth to enhance excitement and alertness (Meressa et al., 2009).

Similarly, Shisha, traditionally called “Gaya” in Ethiopia, is a sweetened and flavored substance (tobacco) smoked through a water pipe pot (Anjum, Ahmed, & Ashfaq, 2008). It is commonly smoked among older people. Currently, shisha has become a common accompaniment of khat chewing among young people (Maziak, 2008). Shisha is smoked for pleasure and relaxation (Salameh, Waked, & Aoun, 2008). The social setting and friendly atmosphere surrounding the use of shisha attracts more young people to get involved (Maziak, 2008). When regularly consumed, however, shisha results in addiction (Anjum et al., 2008; Maziak, 2008).

2.6. The Roles of Familial level variables

Family is a primary agent of socialization to help children and adolescents to become healthy sexual beings (Davis & Friel, 2001). Various family-related factors, ranging from family demographic backgrounds to parenting practice and family relationships, will be investigated with regard to their associations with adolescent sexual activity.

2.6.1. Family Structure

Family structure, that is, with whom the adolescent lives, appears to have an impact on adolescent sexual behavior as various studies show. Kirby (1999b) found that living in a “nontraditional” family structure was a risk factor for initiation of sex. Nontraditional structures include families with parents who are divorced, separated, or were never married. Kirby also found a change in marital status to be a risk as well. In another study of the timing of first sexual intercourse, Upchurch et al. (1998) found that adolescents living with both of their biological parents reported later median age of first intercourse than youth living in any other family situation, including stepfamilies with two parents in the home.

Family structure is consistently found to be an important predictor of teenagers' sexual debut and its timing. Adolescents living with single or remarried parents tend to initiate sex earlier than those living with both biological parents (Brewster 1994; Whitbeck et al. 1999). Besides, adolescents who live in two-parent households tend to delay sexual initiation (Ali & Dwyer, 2011).

Early research studies have found that youth who engage in protective sexual behavior, or remain abstinent for a longer period of time, are more likely to come from a two-parent household than youth who come from a single parent household (Oman, Vesely, Kegler, McLeroy, & Aspy, 2003).

In Ethiopia, a study was conducted by Dejene and Sileshi (2005) in Hawassa and Bahirdar showed that adolescents who live with both biological parents were less likely practicing risky sexual activity as compared to those adolescents who live only with one biological parent. Similarly, Debebe (2008) revealed that family structure was found to be significant predictor of adolescents' sexual behavior. Besides, a study in Hawassa town showed that adolescents who live with both biological parents were less likely to practice risky sex. In consolidating the above studies, Solomon (2004) concurred that adolescents who live with outside of their biological parent(s) were significantly more likely to report sexual activity as compared those who live with both biological parents. Ambanesh (2008) in her study confirmed that adolescents who live with biological parents less likely involved in sexual activity as compared to adolescents who live with single biological parents and other living arrangements. The findings of these studies were confirmed that adolescents from intact family were less likely involved in sexual activity which confirmed that the protective role of the presence of both biological parents from risk.

2.6.2. Family socioeconomic status

A family's socioeconomic status is strongly related to adolescents' participation in negative behaviors. Unfortunately, unsafe behaviors tend to compound the problems associated with low Socio-Economic Status (SES). Adolescents in welfare-dependent families exhibit the worst physical and mental health, and tend to engage in earlier onset of sexual activity and violent behavior than teens from other socioeconomic brackets (Bridgman & Phillips, 1998). Numerous researchers have demonstrated that low socioeconomic status is related to teenage pregnancy (Lanctot & Smith, 2001 as cited in Brooks, 2007). Conversely, a meta-analysis revealed a significant and positive relationship between contraception use and high SES in five of seven studies reviewed (Blum & Mmari, 2005). Although not discussed in the meta-analysis, the positive connection between high SES and contraception use may be due to health care access. More specifically, income was found to be an important factor in predicting sexual risk behaviors. Of interest is that risk takers, in general, are disproportionately likely to be economically disadvantaged (Harvey & Spigner, 1995). Thus, this study uses family SES as one familial factor as predictor of youth sexual behaviors.

Other studies have identified that youth from low-income families experience higher rates of poor physical and mental health, are more likely to engage in delinquent acts, have early and unprotected sexual intercourse, and are more likely to experience adolescent pregnancy, be arrested, and drop out of school (Duncan & Brooks-Gunn, 1997).

Socio-economic status has been measured in various ways. For example Miller, Farrell, Barnes, Melnick, & Sabo (2005) utilized the mean of three measures (family income, mother's highest level of educational attainment, and father's highest level of educational attainment) in

order to derive a comprehensive measure of family socioeconomic status. Therefore, the present study will use this idea to measure family SES.

In Ethiopian situation, family SES was not well studied. Previous studies in Ethiopia tried to associate monthly income of the household with adolescents' sexual behavior. For instance, Debebe (2008) showed that household monthly income had a strong association with youth sexual behavior. The finding revealed that adolescents who came from high monthly household income families were less likely involved in sexual activity than adolescents of their counterparts. The multivariate analysis also showed that household monthly income was a significant predictor of youth sexual activity. Similarly, Abdulhakim (2008) revealed that family household income was a significant predictor of adolescent sexual behavior.

2.6.3. Parental Monitoring

Another key variable associated with youth sexual behavior is parental monitoring. Parents monitor their adolescents' activities directly or indirectly. Direct monitoring includes not leaving adolescents unsupervised at home; indirect monitoring includes knowing adolescents' whereabouts and activities. Adolescents who perceive their parents as monitoring them or whose parents report a higher level of monitoring are less likely to initiate sexual intercourse or engage in risky sexual behavior (Donahue et al., 2007).

Moreover, parent monitoring includes parental knowledge of the child's whereabouts, as well as parent attention to the child's daily activities, free time, and interests. Across numerous studies, higher rates of parent monitoring are associated with fewer adolescent risk behaviors (Hoeve et al., 2009). Parent monitoring may also vary across other demographic and contextual factors, such as by the sex of the child. Though girls generally report that they are monitored

more closely by their parents (Bronte-Tinkew et al., 2006), research has demonstrated that boys appear to be more positively affected by parent monitoring (Borawski, Ievers-Landis, Lovegreen, & Trapl, 2003). For instance, Borawski and colleagues demonstrated that greater parent monitoring was associated with fewer male youth risk behaviors, including alcohol use and risky sexual behaviors, but that monitoring had no effect on female behavior. Also, levels of parent monitoring tend to decrease as the child grows older (as a result of increasing levels of independence that adolescents seek), though mothers tend to have higher rates of monitoring than fathers regardless of the child's age (Bronte-Tinkew et al., 2006). Results from other investigations by (Sim, Jordan-Green, & Wolfman, 2005) suggest that parent monitoring has a positive influence on preventing substance use among adolescents, much parental control is associated with fewer partners, and greater likelihood of using condoms (Miller, Forehand, and Kotchick, 1999).

In a study of 750 children aged 13 and older, adolescents who received more parental monitoring were more likely to delay sexual initiation one year later compared to peers who received less monitoring from their parents (Longmore, Manning and Giordano, 2001). In a study of young minority adolescent boys from low income areas of Chicago, Boston and San Antonio, those who reported greater levels of parental monitoring were less likely to initiate sexual activity before age 15 compared to peers who received less parental monitoring (Lohman and Billings, 2008).

Amongst all parental factors that offer strong protection against the onset of early sexual debuts, such as parent's disapproval of adolescent sex and an intact family structure, parental monitoring is the most influential one. Parental monitoring usually concerns with the extent to which parents know the whereabouts and activities of their children outside home and school.

Rather than being a one-way interpretation, parental monitoring provides a two-way interaction between parents and their children. In this, Stattin and Kerr (2000) argued that the success of parental monitoring for adolescents is not only dependent on parent's own efforts to find out what their children do but also rested on children's disclosure.

In Ethiopia there were dearth of studies regarding the relationship between parental monitoring and adolescent sexual activities. However, a study by Solomon (2004) showed that parental monitoring and adolescent sexual activity were negatively and significantly associated. Adolescents who received less parental monitoring were 1.70 times more likely initiated first coital intercourse as compared to adolescents of their counter parts. He also found that there was no significant association between parental monitoring and adolescent condom use.

2.6.4. Parental Education level

Familial level factors are likewise important to a full understanding of youth sexual behavior. Research on the effect of parent education on sexual behavior has produced mixed results. Some studies have shown no significant effect (Upchurch et al., 1998), while others have shown differing effects for boys and girls. Small and Luster (1994) found that sexually experienced females, but not males, were more likely to come from families with lower levels of education. In a review of sexual antecedents, Kirby (1999b) found that lower levels of parental education were a risk factor for initiation of sex in both males and females. Another study revealed that delay of sexual intercourse is also associated with higher levels of parental education (Ali & Dwyer, 2011).

Koss (1985) found that children whose parents had less than a 12th grade education were 5.7 times more likely to have initiated sexual intercourse and children whose parents had a high

school education or equivalent were 7.0 times more likely to have initiated sexual intercourse compared to those children whose parents had a college level education. The reasons for the connection between parent education level and teens' behaviors are unclear, but it is speculated that expectations for the child's future and parental modeling likely play a role. Moreover, it is also speculated that the income of the family for those highly educated ones are higher than that of their counter parts and thus youth sexual activity may go in reverse order.

In Ethiopia, a study by Sileshi (2005) revealed that adolescent sexual activity is reduced as the level of mother education improves from primary to secondary level. Similarly, Tesema (2003) conducted a research among adolescents in Adama revealed that mother education has strong association with youth sexual behavior. Besides, Solomon (2004) in his study confirmed that lower educational levels of either of the parents were significantly associated with youth sexual behavior. On the other hand, a study was conducted by Debebe (2008) about factors associated with adolescent sexual activity showed that parent education did not have a significant association with the sexual behavior of adolescents. From these studies, the relationship between parent educations (mother education) and adolescent sexual behavior showed mixed findings.

2.6.5. Family Cohesion

Protective factors like healthy parenting or other prosocial contextual influences are critical to reducing the risk for future maladjustment. One such factor is the degree of family cohesion: the support and commitment provided by family members and the quality of interpersonal relationships within and among members of the family (Moos, 1990). Parents in families with high levels of cohesion show interest and accountability with their children, are actively involved and supportive of each other, and encourage warmth and open communication. Research in the

past has demonstrated the importance of family cohesion in preventing youth risk. For instance, close family bonding has been identified as a protective factor for youth sexual risk taking behavior (Lonczak, Abbot, Hawkins, Kosterman, & Catalano, 2002 cited in Grayson, 2010), and family connectedness is also related to less frequent cigarette use in teens (Resnick, Bearman, Blum, Bauman, Harris, Jones, et al., 1997).

Herring (1985) found that as perception of family cohesion increased, positive increases were noted in more conservative sexual values and attitudes. Similarly, Miller, Norton, Fan, and Christopherson (1998) found a strong and consistent relationship with family cohesion and adolescent reports of less frequent sexual activity, fewer sex partners, and later age of sexual debut. Relationship quality has been repeatedly found to be positively associated with postponement of sexual behavior (Maguen & Armistead, 2006).

In similar manner, perceptions of familial support and connectedness have been found to be negatively related with risky sexual behavior, such as multiple partners and failure to use contraceptive methods (Small & Luster, 1994). Additionally, youth who perceive their families to be supportive are more likely to use protection and communicate with their partners about sexual risks (Crosby et al., 2001) and postpone sexual activity (Lammers et al., 2000) compared to adolescents who report risky sexual behaviors and early debut of sexual activity.

High quality parent-adolescent relationships might protect adolescents from engaging in risky sexual behavior in that these relationships provide space for communication regarding sexual related issues. In turn, these types of communication skills are applied in relationships with partners when negotiating sexual behaviors. Additionally, high quality, supportive parent-adolescent relationships might also emotionally prepare adolescents to assert themselves and not be swayed by the opinions and behaviors of peers (Caal, 2008).

In Ethiopia, Solomon (2004) confirmed that adolescents who live in families with high connectedness were .97 times less likely involved in sexual activity as compared to those adolescents who live in families with low connectedness. Solomon further revealed that sexually active adolescents and those who reported using condoms inconsistently had a significantly lower level of perceived family connectedness. He also revealed that adolescents who have better connectedness to their parents were more likely to postpone sexual intercourse until marriage and use protective mechanisms more consistently in their sexual encounter.

2.7. The Roles of Neighborhood Characteristics

Neighborhoods are important contexts in which adolescent risk behaviors develop. Studies in the past find that sexual activity, teenage pregnancy, substance use, delinquency, and violence vary significantly across neighborhoods (South & Baumer, 2000). Neighborhoods are particularly important during adolescence, given youths' limited geographic mobility during this stage of development. Furthermore, individuals and their micro-level relationships (e.g., family, friends, peer networks) exist within a larger macro-level contexts (Bronfenbrenner, 1979), and these relationships and contexts interact over time (Bronfenbrenner, 2005).

Several mechanisms are believed to explain neighborhood effects on adolescent sexual behaviors. Neighborhoods are thought to shape the knowledge, attitudes and opportunity structures available to adolescents thereby influencing their sexual and reproductive decisions. For example, neighborhood characteristics can shape adolescents' perceptions of the costs and benefits associated with sexual activity or teenage parenting. According to Brooks-Gunn (Brooks-Gunn, et al., 1993, p. 388), "the nature and availability of paths for future social mobility...may influence the perceived opportunity costs of premarital sexual activity...poor

economic conditions may suggest to adolescents that legitimate pathways to social mobility are closed to them, lowering the costs attached to the potential consequences of sexual activity relative to its immediate benefits. Community features such as poverty and unemployment may create a climate in which adolescents see few role models of economic or social success to justify the types of long term planning, such as obtaining higher education that may encourage delayed sexual onset or contraceptive use.

2.7.1. Conceptualization of Neighborhoods

Neighborhood context is recognized as an important predictor of individual level behaviors and health outcomes (Sampson, 2003 cited in Wilkenfeld, 2009). Neighborhoods, however, are difficult to define both in theory and in practice and are often drawn to follow existing administrative boundaries or sampling schemes or must be set arbitrarily due to a lack of sufficient data. One interest in neighborhood focused scholarships has been on defining or measuring neighborhood, although there has been no easy consensus other than to agree that neighborhoods contain residences or at least are the site of social interaction (Forrest & Kearns, 2001 as cited in Martin, 2003). As Galster (2001) pointed out, neighborhood is a term that is hard to define precisely, but everyone knows it when they see it.

When defining neighborhoods, one can describe structural characteristics or processes. Neighborhood structural characteristics pertain to easily quantifiable characteristics that are often obtained through census data, such as demographic characteristics of community members, poverty rates and unemployment. Conversely, neighborhood experiential characteristics, or processes, refer to social connections between people and institutions, positive and negative interpersonal relations and the overall solidarity in a community (Wilkenfeld, 2009). For the

purpose of this study, I took from Pampalon & Villeneuve (2007) the conceptual definition of neighborhood: “A Neighborhood is considered to be a living area as well as a place of work and a family environment. One will find people interacting for utility (Grocery stores, medical clinics, schools, recreational parks, etc), support or mutual aid (exchange of services), or for pure socialization (the need to create bonds between individuals). It is a space we learn to recognize by moving throughout it while carrying social and economic activities such as visiting friends and shopping” (p. 2).

Just as there are multiple ways of conceptualizing neighborhoods, there are multiple ways of operationalizing neighborhoods. For instance, there are objective and subjective measures of neighborhoods. Objective measures include according to Wilkenfeld (2009), which were taken from U.S. census data, include proportions of residents living below the poverty line, female headed homes, and males who are unemployed, median income or education levels: distribution of demographic characteristics of community members; and crime rates. In comparison to objective measures, subjective neighborhood measures typically involve the experience of the neighborhood environment, through youth, parent, community members, or researcher perceptions of neighborhood boundaries, features and processes (Pratt, Turner, & Piquero, 2004).

When we come to Ethiopian situations particularly to Addis Ababa, defining neighborhood is a challenge; however, some documents well stated that neighborhood conceptions exist in Addis Ababa. For instance, as Baharu (1994) noticed that in the past there are various settlement patterns of the followers and subjects of Menelik II and his nobles. The lesser nobles were each granted land on one of the hilltops of Addis Ababa as rewards for their loyalty. The servants and dependents of each noble settled on the flanks of his hill, surrounding his hilltop, Gebbi, and forming clustered neighborhoods called Safars. These Safars eventually became the distinct

sectors known today as Ras Berru Safar, Ras Tessemma Safar, and Fitawrari Habte-Giyorgis Safar.

The servants settlements on the great hill of Menelik's Gebbi gave rise to neighborhoods differentiated by occupation: Serategna Safar (Worker's quarters), Zabagna Safar (Guards' quarters), and Weha Senqu Safar (the "quarter of the unprovisioned", an imperial army camp with no amenities but water (Baharu, 1994). According to Giorghis & Gerard (2007 cited in Smith, 2011), Safar is the Amharic term for these clusters, which are referred to by Urban historians as neighborhoods in English.

In pre-modern cities, one or more social parameters tend to be specialized at the neighborhood level. The most common of these parameters are ethnicity, place of origin, occupation, and social class (York et al, 2011). This is another way of saying that neighborhood residents often share one or more social attributes and these attributes often distinguish the residents of one urban neighborhood from those of another. York and his colleagues added also that in many pre-modern and modern cities, neighborhoods are created by rural to urban chain migration. This is the case in various areas of Addis Ababa. For instance, Gojjam Berenda, Wellega Berenda, Sidamo Tera, are important places which can be considered as areas formed due to migration from rural to Urban and treated in this study as neighborhoods. Neighborhoods can also be created when commoners build their houses in the immediate vicinity of the residence of a noble or other important individual as stated above and Addis Ababa is an example of this scenario (York et al, 2011).

Defining neighborhood operationally based on CSA's enumeration area is problematic because of the instability of the city administrative demarcation of the exact boundaries. However, this study used CSA's enumeration areas besides localities and conventional names

like safars, berendas and the likes. For instance, CSA used Kebeles for their target enumeration areas and these Kebele boundaries changed from time to time which is difficult to indicate the exact boundaries. Officials from CSA told me that these administrative boundaries are difficult to consider at this time because they are dynamic and changes from time to time. This in fact is a correct idea that defining neighborhood based on administrative boundaries does not represent real neighborhoods and thus constitute imperfect operational definitions of neighborhoods for research and policy. This use of administrative boundaries as operational units typically has little theoretical foundation and subjects the analysis to the modifiable areal unit problem (MAUP) (Openshaw, 1984 cited in Guo & Bhat, 2006), leading to potentially inaccurate analytic outcomes and erroneous recommendations for urban study.

Martin (2003) in his review suggests that neighborhoods are defined and created through social interactions and particular events and the ideal of neighborhood asserts a role for the “local” in a world increasingly characterized by extra-local interactions and exchanges. Suttle (1972 cited in Keans & Parkinson, 2001) argued that neighborhood can mean the immediate home area, the locality of a few blocks, and /or the entire urban region. Galster (2001) defined neighborhood as “a bundle of spatially based attributes associated with clusters of residences, sometimes in conjunction with other land uses. In Galster’s discussion neighborhoods can be measured and identified by demographic, institutions, topographic and social attributes.

For the purpose of this study, neighborhood is operationalized as the different safars, berendas and localities together with their corresponding Kebeles where adolescents and families of adolescents reside.

2.7.2. Neighborhood Level Factors

Neighborhood level factors which are included in this dissertation are Neighborhood Disorganization and Neighborhood Collective Efficacy.

2.7.2.1. Neighborhood disorganization

Sampson and Groves (1989) have defined social disorganization as the “inability of a community structure to realize the common values of its residents and maintain effective social control” (Sampson and Groves, 1989, p.777) and defined as such it is referred to as neighborhood disorganization. There is no gold standard for the measurement of neighborhood disorganization and the measures of neighborhood disorganization are at times inconsistent. In the work of Crum et al. (1996) measures of neighborhood disorganization included subjects' perceptions of areas to walk or play, safety outdoors, crime, prejudice, litter, vandalism, publicly visible alcohol or drug use, abandoned buildings, poverty, church attendance, and sense of community. Other neighborhood characteristics that are indicators of neighborhood disorganization include: teenagers loitering, homeless persons, burglary, drug selling, robbery, and prostitution (Latkin and Curry, 2003). Ennett et al. (1997) also included population density and high residential mobility, which are thought to erode social control and social integration within neighborhoods.

Youth who grow up in disadvantaged neighborhoods fare substantially worse than those who grow up with more affluent neighbors on a wide variety of health and socioeconomic outcomes. There are a variety of theoretical views about the potential effects of neighborhoods on youth. Ecological models of human development suggest that the neighborhood environment is an important context for development (Bronfenbrenner, 1979). Correspondingly, studies have

repeatedly found a link between neighborhood disadvantage and a number of risky adolescent sexual outcomes, such as inconsistent contraceptive use and teenage childbearing (Baumer & South, 2001). In contrast, studies investigating the link between neighborhood disadvantage and the timing of sexual initiation have produced mixed results. Some found independent effects of neighborhood structural characteristics (i.e., poverty) over and above other important determinants (e.g., Browning, Leventhal, & Brooks-Gunn, 2004), while another did not (e.g., Baumer & South, 2001).

Neighborhood socioeconomic disadvantage has been linked with early sexual activity and related outcomes in a number of studies (Baumer and South, 2001). Evidence also suggests that neighborhood socioeconomic status accounts, in part, for racial differences in the prevalence of early sexual activity and childbearing (Baumer and South, 2001).

Current research on neighborhoods and child and youth outcomes shows a strong correlation between concentrated poverty and range of negative outcomes. As noted above, adolescents growing up in neighborhoods marked by concentrated poverty are at risk for a range of negative outcomes, including poor physical and mental health, risky sexual behavior, and delinquency (Leventhal and Brooks-Gunn, 2000).

In Ethiopian situation, a study was conducted by Erulker, Tekle-Ab, Negussie & Tsehai (2004) about adolescent life in low income and slum areas in Addis Ababa about their support in the community, their feelings of safety, and experience of crime and violence in the neighborhood. Their finding showed that boys reported far greater social support mechanisms in their neighborhoods whereas girls were significantly more likely to feel insecure in their neighborhood and to have experienced harassment. The authors revealed that two-thirds of girls reported that they are scared of someone in their neighborhood and over half are scared of being

raped. The same study showed that boys insult, beat and hassle girls on the streets and people do not try to intervene when girls got beaten up on the streets.

Similarly, boys on their part reported that there are gang fights and sometimes they can get hurt in the middle of them. They also said that there are many khat and shisha houses and there is too much dirt in their residence. The study confirmed that the neighborhood on which adolescents reside is not a safe place to live.

2.7.2.2. Neighborhood Collective Efficacy

The effects of structural deficits on local institutions, neighborhood attachments, and network ties may impede the ability of community residents to achieve common goals, including the informal social control of neighborhood youth (Sampson et al., 1997).

The effective regulation of adolescent behavior is facilitated when extra-familial, intergenerational social relationships combine with expectations for adult action on behalf of local youth. These shared expectations may lead both to more effective supervision of local adolescents and to the development of community-level programs directed at involvement in conventional activities (such as after-school programs or youth recreation centers), thereby discouraging delinquent alternatives, including risky sexual behaviors. These mechanisms have been found to discourage early sexual debut under some conditions; however, they may be particularly relevant in the control of multiple sexual partnering. Intergenerational ties rooted in shared expectations for adolescent behavior, for example, will be overtly challenged when more adolescents are involved in sexual activities. Although some parents may not expressly disapprove of an adolescent's involvement in a single, more committed sexual relationship, few parents are likely to endorse multiple, short-term, or predatory sexual partnering due to the risks

involved and the apparent lack of emotional investment. Thus, parents are more likely to share expectations regarding adolescent sexual behavior when the behavior in question is multiple partnering. Moreover, parents of children in a social network are more likely to become aware of their children's activities in the event of multiple partnering (Browning et al., 2005).

The application of the regulatory capacity of neighborhood residents to adolescent sexual activity may also vary by age (Elliott et al., 1996). The rare participation of the youngest adolescents in sexual risk behavior may be attributable to potentially abusive relationships or individual characteristics, such as low self-control (Gottfredson & Hirschi, 1990), that operate independently of neighborhood-level social processes. As most adolescents enter middle adolescence, however, their activities may increasingly take place within the purview of neighborhood residents. Increased freedom from the restraints of home life and more frequent informal social interactions with other neighborhood teens may increase their potential exposure to the regulatory effects of the neighborhood environment (Browning et al., 2005).

In Ethiopia, there was paucity of studies in the past in relation to neighborhood collective efficacy and adolescent sexual behaviors. This study is the first attempt that showed the link between neighborhood collective efficacy and adolescent sexual behaviors. Despite the dearth of research in relation to the issue, it is important to say something about the social network of Ethiopia communities. Social network in rural Ethiopia depends on the extended family members and friends for mutual support, money lending, cereal and grain borrowing, crop harvesting and housing construction. In times of social or financial problems, individuals depend on their neighbors, friends and relatives through traditional systems known as iddir, mahber, senbete, debo, wonfel and iqqub (Wassie & Butterfield, 2009). Iddir, iqqub and mahber are also common in urban areas as rural networks expand to town and cities where extended family

members live. For example, a study conducted by Wassie and Butterfield (2009) in one of poor neighborhoods in Addis Ababa, Gedam safar about the ways social networks contribute to the common good for women-headed households. Their analysis informs that women in that community were organized and formed networks based on religion, trust, mutual understanding, and cultural traits. In their study, the basis for interaction among them is not purely economic similarity, but in relation to commonly held socio-cultural values. The choice of the network membership is determined by a common understanding and sense of belonging, reflected by emotional, social and psychological support given to every member without discrimination. May be this study tells us that the strength of social cohesiveness among the members of Addis Ababa. From a problem based perspective, understanding social network is useful in preventing the transmission of HIV/AIDS and other communicable diseases (Wassie & Butterfield, 2009).

2.8. The Interrelationships among Individual, Familial, Neighborhood factors, and Adolescent Sexual Behaviors.

In an ecological approach to child development, neighborhood is one of the primary contexts for development. In addition to neighborhoods, development is most directly influenced by families. Families are frequently nested within neighborhoods and are influenced by neighborhoods in which they reside.

Similarly, an adolescent's family ecology influences who they are as individuals. Each individual's family ecology can influence cognitive, emotional, and social development directly or indirectly. Moreover, ecological theories maintain that the characteristics of the neighborhood in which a family reside can alter the impact that family factors and parenting have on behavioral outcomes (Bronfenbrenner, 1986).

Bronfenbrenner (1986) originally posited that the neighborhood was a distal environment that only had an effect through proximal people and institutions. Therefore, the neighborhood is placed in the exosystem and deemed to influence the adolescent primarily through the influence on the family. Moreover, Bronfenbrenner (1979) contends that neighborhood characteristics would be considered the exosystem which is a setting in which the individual does not directly interact but which has influence. On the other hand, in his review Wilkenfeld (2007) suggests that neighborhood effects on adolescent development indicate, neighborhood directly influences development in multiple domains. Just as characteristics of parents and family processes influence development, characteristics of neighborhoods and patterns of activity influence adolescents. Consistent with the current study, neighborhood will be examined as exosystem if it has indirect effect on adolescent sexual behaviors and considered as proximal component if it has a direct effect in the adolescent's ecological environment. Whether this assumption is correct or not will be revealed by the findings of direct and indirect effects (direct effect indicating a microsystem setting, indirect effects indicating exosystems).

It is important to see the mediating effects of family in the relationship between neighborhood characteristics and adolescent sexual behaviors. Social disorganization theory posits that in community characterized by higher levels of residential mobility, it is more difficult for residents to develop close ties with one another. If so, the neighborhood characteristics should also have indirect effects on adolescent sexual activity through parental factors. That is, parents living in areas with a great deal of disorganization may not develop close ties with neighborhood residents and therefore, may not have access to much needed social capital by which to effectively support and monitor the child (Coleman, 1990).

Research has shown that parents who reside in socially disorganized neighborhoods may not have the needed time and/or energy to supervise and monitor their children well (Sampson, Morenoff, and Earls 1999). For example, Hogan and Kitagawa (1985 as cited in Matisa, 2005) test the notion that African-American females who are residents of “ghetto” neighborhoods are less likely to be supervised and monitored by parents, have lower aspirations toward academic achievement, and are more exposed to non-normative behavior which, in turn, increases their likelihood of initiating in sexual activity earlier and having higher rates of pregnancy after this initiation. Their findings reinforce the assertion that parental supervision may be a link between neighborhood characteristics and adolescent sexual initiation, and specifically, this effect is mediated by parental control on early dating practices.

Brewster, Billy, and Grady’s (1993 cited in Matisa, 2005) research on the impact of communities’ social and economic conditions on timing of first intercourse and contraceptive use indicate that high population turnover (a factor leading to social disorganization) and single parent households may lead to feelings of anonymity and of not being closely watched or supervised among youth. If so, this is another indication that social disadvantage and residential instability may affect parental supervision (or perceptions of such supervision) in a way that could produce a variety of forms of deviance among youth, perhaps including engagement in sexual activity.

In addition to examining whether parental variables mediate the relationship between neighborhood characteristics and adolescent sexual behaviors, there is a need to investigate the chance that these individual level factors (family factors) interact with the neighborhood context to affect adolescent sexual behaviors.

Though parental factors may affect an adolescent's decision to participate in sexual activity, the strength and direction of that effect may be moderated by the neighborhood in which he/she resides. That is, the effect of parental variables on subsequent adolescent sexual behaviors may vary across neighborhood type. Coleman (1990) suggests that living in more disorganized communities diminish the effects of parents' effort to monitor and control their children from the dangers of the neighborhood. Specifically, parental support and monitoring may have less of an impact on youthful behavior in socially disorganized communities where these efforts are not reinforced by community informal social control, or where the prevalence of deviant opportunity structures that provide alternative sources of respect for youth are widespread.

For example, a study by Roche et al. (2005), investigated whether neighborhood socioeconomic advantage modifies the relationship between parenting practices and sexual debut among middle school adolescents. Their findings showed that greater parental involvement decreases the likelihood of an adolescent's initiation in sex, but only in socially advantaged neighborhoods.

Another study by Matisa (2005) revealed that the effect of parents on adolescent engagement in sexual activity varies across levels of neighborhood disadvantage for the full sample. At low to moderate levels of disadvantage, when parents interact with more of their child's friends' parents, youth are less likely to transition to first sexual activity. In more highly disadvantaged neighborhoods, however, interacting with more parents of one's child's friends is associated with higher odds of youth will engage in early coitus.

Similarly, Browning, Leventhal and Brooks-Gunn (2005) examined the extent to which parental and neighborhood controls differed in their impact on first sexual intercourse experiences by gender. Their finding evinced that neighborhood collective efficacy delays sexual

onset only for adolescents who experience lower levels of parental monitoring, although, parental monitoring exerts significantly greater influence on girls' timing of first intercourse.

According to the electronic document (no author and date) entitled, "Neighborhood Matters" website (http://www.macfound.org/media/article_pdfs/INFO_CHICAGO_NEIGHBORHOODS.PDF) explained by considering neighborhood collective efficacy in relation to age and adolescent sexual initiation, a high level of neighborhood collective efficacy delays the age at which adolescents in that neighborhood have their first sexual intercourse. In contrast, in neighborhoods with low levels of collective efficacy, many adolescents are sexually active by age 16. This showed that neighborhood collective efficacy delays adolescents' sexual debut and also delays other problem behaviors and outcomes associated with early sexual initiation. Similar document shows that the protective effect of collective efficacy is very strong for boys, and for girls it is more complex, involving an interaction of neighborhood context and parental monitoring. With girls family controls are far more influential; the effect of collective efficacy emerges only for girls who have low levels of parental supervision which is contrary to Browning and his colleagues' finding.

(http://www.macfound.org/media/article_pdfs/INFO_CHICAGO_NEIGHBORHOODS.PDF).

2.9. Gaps in the current literature

To help better understanding adolescent sexual behaviors, it is crucial to examine the role of individual, familial and neighborhood characteristics; which individual, familial and neighborhood characteristics are associated with adolescent sexual behaviors. The current study reveals gaps in the Ethiopian situation in the factors associated with adolescent sexual behaviors. For instance, previous studies did not examine the influence of individual, familial and

neighborhood level factors on adolescent sexual behaviors. Moreover, the previous studies focused on only sexual activity of adolescents categorically by ignoring the continuous sexual behaviors of adolescents. The studies also did not examine factors in each level rather they examined by mixing one level factors with another which might not have shown the roles of the factors in each level and simultaneously. As a result, the role of blocks of individual, familial and neighborhood factors were not shown which indicated most findings difficult for intervention and policy development. The current study tried to address the gaps by incorporating the above factors to investigate their association with adolescent sexual behaviors. In fact, the gaps in the current literature were discussed in Chapter 1 section 1.2 (Statement of the Problem). Thus, this section is only to remind the readers of this document that gaps in the existing literature were identified. The intention of this study is to fill these gaps and add some knowledge in the existing literature.

In Ethiopia, there were no studies in relation to the issue raised. The weaknesses of most of the literature in the previous studies were not considering interactions between contexts such as family contexts and neighborhood contexts. Besides, previous studies did not examine the indirect effects of neighborhood and family variables on adolescents' sexual behaviors. Thus, the findings suffer from an omitted variable bias. Such bias occurs when these contexts were overlooked to have important influence on adolescent sexual behaviors. While previous studies worldwide infrequently focus on multiple contexts, it is not common to examine interactions between family and neighborhood contexts. In fact, many studies suggest that adolescent sexual behaviors can be influenced by interactions of these contexts. Therefore, the current study tried to examine the effects of the interactions of multiple contexts on adolescent sexual behavior and

this study found that it is a weakness to exclude interaction and indirect effect of adolescent sexual behaviors.

The other weaknesses of the previous studies were both the conceptualization and operationalization of neighborhoods were not known in Ethiopia. Studies in the past did not mention the concept of neighborhood and operationalizing of neighborhood in our country in general and in Addis Ababa in particular. The non-existences of these ideas are problematic for research and policy. However, the present study tried to conceptualize and operationalize neighborhood as convenient to the city of Addis Ababa.

Besides, to the best of the present researcher's knowledge, there have been no studies involving clustered data that examined the separate and independent association of individual, familial and neighborhood characteristics associated with adolescent sexual behaviors. Based on this shortage of data, the current study used clustered data to examine the effects of blocks of the study variables on adolescent sexual activity.

2.10. Theoretical Framework

2.10.1. Bronfenbrenner's Ecological theory

The idea human development is dynamic and influenced by processes and mechanisms in multiple contexts is consistent with many theoretical positions. In particular, ecological systems theory suggests that individuals learn and grow as a result of multiple interacting systems of influence (Bronfenbrenner, 1979). Interactions between persons and institutions occur in the individual's proximal and distal environments.

The influence of various environmental factors on the developing adolescent impacts whether that youth engage in risky or protective sexual behavior. Urie Bronfenbrenner's (1979)

ecological systems theory changed the way researchers view interactions between individuals and systems and is an appropriate theoretical guide for the present study.

The rationale to use Bronfenbrenner's theoretical systems theory (Bronfenbrenner, 1979) in my dissertation as a theoretical framework in the analyses of individual, familial and neighborhood influences on adolescent sexual behaviors, in particular because of the theory's focus on multiple systems of influence on development. According to this theoretical framework, it is the interactions between multiple systems of influence, in proximal (individual and familial level variables) and distal environments (neighborhood level characteristics), that affect adolescent development outcomes in this case sexual behaviors. Not only do these systems or contexts interact with each other but the individual has a bidirectional relationship with these systems, that is, individuals play a significant role in the effect their environment has on them. These relationships are going to be precisely examined in the present study.

Thus, a theoretical framework that is particularly relevant to the study of adolescent sexual behavior is the ecological model (Bronfenbrenner, 1979). This model examines how the individual and environments interrelate and how multiple settings and contexts influence behavior and development. According to this model, any given behavior, such as adolescent sexual activity, is influenced by multiple variables from multiple levels of influence such as individual, familial, and neighborhood levels.

The ecological theory emphasizes the reciprocal relationship among multiple systems of influence on one's behavior. For example, a familial factor such as family cohesion can affect an individual level factor such as self-esteem or an individual level factor such as a child's self-esteem could affect a familial factor such as parenting style. Moreover, a neighborhood factor such as the poverty status of one's neighborhood can affect familial factors such as parental

monitoring. In return, all of these factors can affect an adolescent's decision to engage in sexual activity (risky sexual behavior or protective sexual behavior). In this way, factors at all levels or ecologies are interrelated and likely affect one another.

According to this perspective, an accurate and complete understanding of adolescent sexual behavior must include information of individual, familial and neighborhood factors, which may contribute to youth's decision to become sexually active.

In Bronfenbrenner's seminal work *The Ecology of Human Development* (1979), he states various definitions which explain the main principles of an ecosystem as directly taken from his textbook.

Definition 1: The Ecology of Human Development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger context in which the settings are embedded.

Definition 2: A Microsystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics.

Definition 3: A Mesosystem comprises the interrelations among two or more settings in which the developing person actively participates (such as, for a child, the relations among home, school and neighborhood peer group; for an adult, among family, work and social life).

Definition 4: An Exosystem refers to one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person.

Definition 5: The Macrosystem refers to consistencies, in the form and content of lower order systems (micro-, meso-, and exo-) that exist, or could exist at the level of the subculture as a whole, along with any belief systems or ideology underlying such consistencies.

Definition 6: An Ecological transition occurs whenever a person's position in the ecological environment is altered as a result of a change in role, setting or both.

The interaction, then, between the person and the environment—depending upon personality—dictates how different persons respond to the environment or what would constitute a genetic-environmental exchange (Crockett and Crouter, 1995).

Definition 7: Chronosystem includes the dimension of time in adolescent development. That is, the context and the developing person are considered to be dynamic in that they constantly change through time. This constant change is linked with the relationships and interactions that the developing person has with her/his environment.

Thus, the Bronfenbrenner's model views the individual as both the decision maker and the operator, neither placing the blame on the self, nor viewing another as blameworthy. Rather, the change in behavior is dependent upon the fluid process of one environment influencing another with the individual at the center of this total milieu, functioning in relation to the total dynamic of these systems. An ecosystem, then, is defined as interacting environments, i.e. individual (micro), peers, family, relatives (meso), school system, the community (exo), and the social welfare/criminal system (macro) (Ginther, Haveman, & Wolfe, 2000). The Bronfenbrenner's ecological model encompasses for this particular study the individual, family, and Neighborhood characteristics which include assessments at the individual level, family, and neighborhood levels.

Bronfenbrenner's (1979, 1986) ecological system theory is credited for stimulating interest in the study of multiple settings when determining the causes of behavioral outcomes and for providing a framework for conducting these studies (Kirk, 2009). The main tenet of Bronfenbrenner's theory is that behavioral outcomes are a function of the social settings that individuals participate in and interactions that take place within and between settings (Bronfenbrenner, 1979). Further, he proposed that the impact of major developmental influences, such as family functioning are dependent on the sociological characteristics of the communities in which youth and family reside.

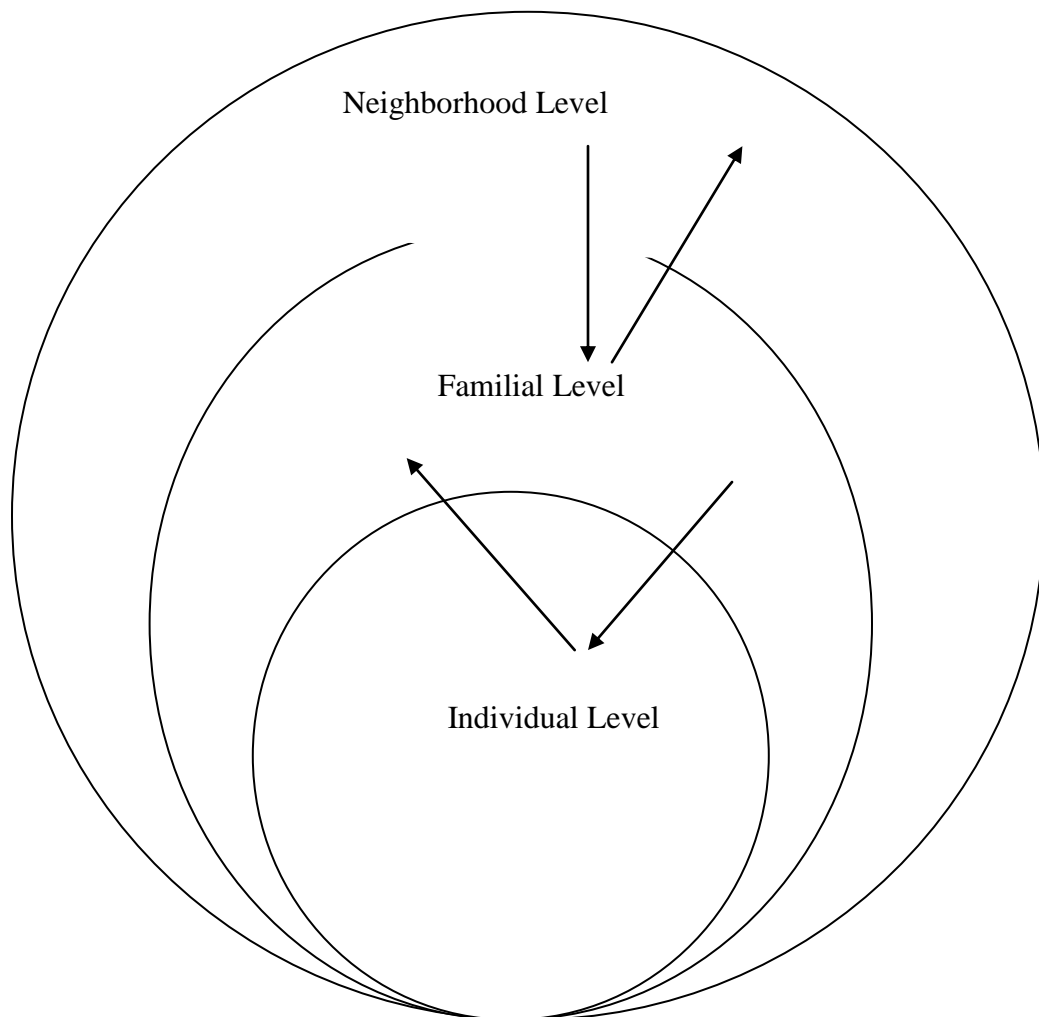


Fig. 2.1: Ecological Model of the Study Variables Based on Bronfenbrenner's 1979 Ecological Model

2.10.2. Conceptual Framework

The framework conceptualizes sexual behaviors of adolescents as multifaceted phenomena based on the interplay of individual, familial and neighborhood factors. Using ecological systems theory as the basis for this study, I also draw concepts from related theories and literature to inform how variables in each level are related and how these variables influence adolescent's engagement in sexual activity. As shown by the conceptual model (fig. 2), the demographic characteristics of adolescents are expected to be directly related to adolescent sexual behaviors and never be influenced by other level variables. Family level variables are hypothesized to be related directly and indirectly to adolescent sexual behaviors. The indirect relationship occurs by influencing adolescent characteristics. Similarly, neighborhood characteristics are expected to be related directly and indirectly to adolescent sexual behaviors. The indirect relationship occurs via family factors. All direct and indirect effects are indicated by solid paths. It is also expected that neighborhood and family environments interact with each other, and to interact with characteristics of adolescents to influence adolescent sexual behaviors. The interaction effects are indicated by dashed lines.

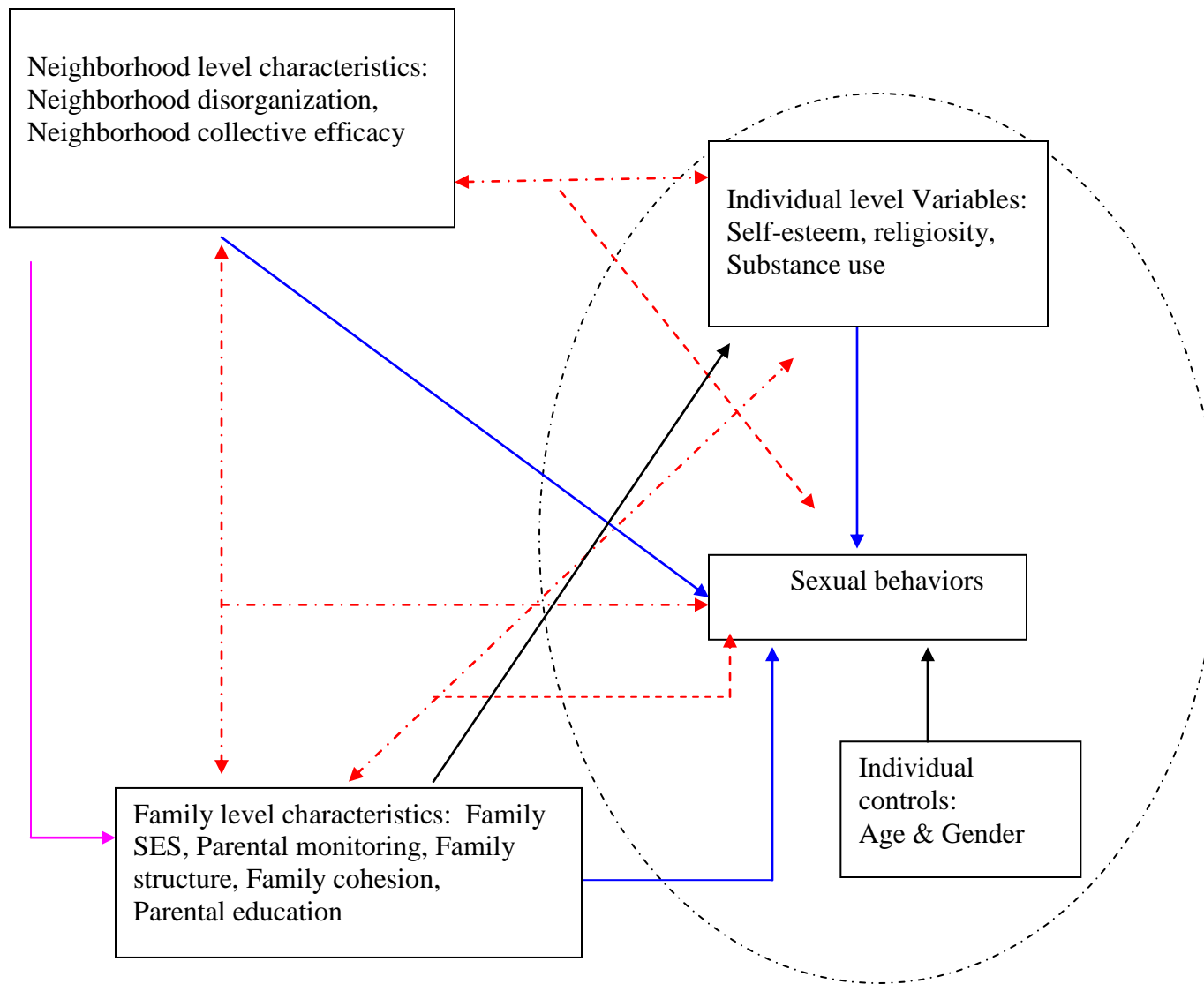


Fig: 2.2. Conceptual Model for individual, familial and Neighborhood effects on adolescent sexual behaviors

NB: Direct & indirect effects are indicated by solid paths and Interactive effects are indicated by dashed paths.

Chapter Three

3. Methodology

3. 1. Introduction

This chapter served as a background to the research process of the study; it aims to orientate the reader to how the research was conducted. The focus of this chapter falls on the research procedures that were followed in conducting this study. The description of the type of design, population and sampling technique, instruments, variable classifications, data collecting procedures, and method of data analysis are discussed.

3.2. Research Design

Although considerations surrounding convenience, timing and cost may influence the decision regarding the choice of methodology, a quantitative survey research was deemed appropriate to this study, primarily because of the descriptive and quantitative nature of the study. Moreover, the advantage of using quantitative (survey research) approach is to draw generalization from a sample to a population so that inferences can be made about some characteristics, attitude, or behavior of this population which is not the case in qualitative research (Babbie, 1990 cited in Creswell, 2009). This is one of the reasons to use quantitative methodological approach in this study. According to Polit and Hungler (1992), quantitative research involves the systematic collection of information under considerable control, and analyzing that information using statistical techniques. The quantitative methodological approach was used in the present study because it enables the researcher to systematically analyze large amounts of information that will be gathered with the scales and questionnaires.

The design according to Coolican (2004) is the overall structure and strategy of the research study. The design of the present study was cross-sectional and correlational. This exploratory descriptive design was used where data was gathered once-off by means of self report questionnaires and scales. Since the present study was of cross-sectional design, in which participants were assessed at the same instant time, it was not plausible to interpret and discuss the findings in terms of cause and effect. However, as Sutton and French (2004) argue, the cross-sectional studies can be more informative in terms of causal relationship when one of the variables of interest has fixed values (the value of the variable does not change over time, e.g., gender). The advantage of cross-sectional design as we know is conducting a study at a relatively low cost and within reasonable time (Coolican, 2004).

3.3. Study Population and Sampling Procedures

3.3.1. Study Site

The population of this study constituted governmental preparatory high schools in Addis Ababa. Addis Ababa has an estimated 2,738,248 population out of which the youth population (15-24 year) constitute 791,497 (CSA, 2008). The inclusion criterion is age of adolescents ranging from 15-21. This study does not include governmental general secondary schools and TVETs, Non-Governmental general, preparatory secondary schools and Technical and Vocational schools. Thus, only government preparatory high school students were considered as respondents of the current study.

3.3. 2. Sampling Design

The present study employed a proportionate cluster sampling method. Basically Multi-stage cluster sampling was employed to guarantee proportional representation of participants. This study involved a three-stage, clustered sample (described by Schulz & Sibberns, 2004 as cited in Wilkenfeld, 2009). In fact, stratified and clustered sampling procedures lose some of the precision associated with true random sampling. However, both procedures are probability-based and therefore are subject to less sampling error than theoretical, purposive, or convenience sampling (Mertens, 2005).

To get the target adolescent groups, first, three Sub-cities were selected out of the ten Sub-cities using simple random sampling that is the lottery method. These sub cities were Gulele sub city, Arada sub city, and Akaki-Kaliti sub city. In Gulele sub city, there were two preparatory schools namely Yekatit 12 preparatory school and Medhanealem preparatory school. In Arada sub city, there were two preparatory schools namely W/o Kelemework and Menelik II preparatory schools and in Akaki-Kaliti sub city, there were two preparatory schools namely Derartu Tulu and Fitawrari Belayneh preparatory schools. Since the numbers of preparatory schools per Sub city are not more than two, all schools were considered to get the target population. Once the schools were determined, students were clustered into grade levels. Following this, simple random sampling technique was used to get one grade level per school. Following this, random samples of sections were selected using lottery method. Within the randomly selected sections, all students were taken. Approximately equal number of boys and girls were taken since the number of boys and girls were almost equal per-class.

3.3.3. Sample Size

To determine the sample size for this study, the sample size formula for prevalence studies was employed (Naing, Winn & Rusli, 2006).

$$n = z^2 p(1-p)/d^2$$

Where n = sample size

Z = z statistic for the level of confidence

P= expected prevalence or proportion (in proportion of one),

And d= precision (in proportion of one).

Here the confidence interval was set at a 95% which gives a corresponding z-value of 1.96. The values for the expected proportion (p) and precision (d) were set at 0.5 and 0.05 respectively (Naing, Winn & Rusli, 2006). Let the value of the sample size computed is n. The above sample size formula is valid only for simple random or systematic sampling method; but the sampling technique that was used for this study is cluster sampling. Therefore, the calculated sample size was multiplied by D which is the design effect resulting with $N = Dn$ where N is the sample size for cluster sample, n is the sample size obtained from the calculation and D is the design effect. The design effect (D) provides a correction for the loss of sampling efficiency resulting from the use of cluster sampling instead of simple random sampling. In order to respond to non-responses, the sample size was increased by a non-response insurance factor. That is, because of the nature of the topic concerning questions that are highly personal and potentially sensitive, I expected non-responses by some respondents either to a part of the questions or even to all of the questions. Thus, an allowance of 5% was made (Naing, Winn, & Rusli, 2006).

That is, using the above formula, the sample size was 384.16 after rounding off, it was 384. But this sample size is for simple random sampling method. As explained above, this study used

cluster sampling method, the obtained sample size was multiplied by $D = 3$. In selection of the sample adolescents, the present researcher employed three stage sampling. In the first stage, Sub cities were randomly selected, secondly, one grade level was randomly selected out of the two grade levels and finally classes were selected randomly and all students were considered.

Thus, $3 \times 384 = 1152.48$ this is rounded to 1152. A 5% of allowance insurance gives us 1208.6, this is rounded to 1209. Therefore, the study used 1209 adolescents as respondents suggested by Naing, Winn & Rusli (2006) and Alemayehu (2012).

3.4. Measuring Instruments

3.4.1. Translation and Transcultural Adaptation of Instruments

This process followed a standard procedure known as “steps”, according to the established guideline for self-assessment instruments (Leplege & Verdier, 1998 as cited in Beaton, Guillemin, & Ferraz, 2000). This procedure is internationally recognized and has been well documented in numerous applications.

There are phases to adapt and find out the psychometric properties of these scales.

Phase I

Phase one was a try out to find out the relevance of the scales. A sample of educationalists was selected from the School of Psychology at AAU. They were asked to examine all the statements carefully and rate which items are relevant to our culture. They were also asked what they have understood in each item. For better understanding of items and more reliable results, it was also translated into Amharic.

Phase II

The second phase was designed to translate the original scale. For the purpose of translation, it was decided to adopt back translation method. This process of translation was completed in four steps.

Step1: Initial Translation

The focus of this step was the translation of the English version scales into Amharic language. For more authentic results bilinguals were requested to provide as much accurate translation as possible. Two bilinguals were selected. Their educational qualifications were at least a Masters degree with the first translator having master's degree in English with good understanding of Amharic language and the second translator was with a master's degree in Amharic with a good command in English.

Procedure

The two experts were approached individually. They were requested to translate the scale into Amharic independently. They were asked to translate the items of English as accurately as possible. The objectives of this translation were to convey the meaning of the items of the original version of English in the best possible way keeping the contextual meanings intact.

On the basis of responses, the closest translation with highest frequency was selected. This translation was then evaluated by three judges who are psychologists (one PhD, one MA and the present researcher). On the basis of their translation, the best possible translation that could convey the meanings closest to the original was retained.

Step 2: Back translation

To check the authenticity of Amharic version translation, it was back translated into English. Back translation technique was used as a method of reducing errors and biases in

translation, of identifying points of equivalence and discrepancy between the two versions, and of producing a more equivalent final product (Beaton et al., 2000).

Procedure

Experts of two bilinguals having good command of English were selected. Their Educational qualification was Masters in English having good command in English. These experts were not familiar with the original English version scales.

The scale translated into Amharic was given to the experts. They were requested to translate the Amharic version of scales into English. They were asked to write as much as accurate translation as possible conveying the maximum similar meanings. Two psychologists evaluated translation and back translation. All the items were conveying similar meanings in both versions of the scales. So the Amharic translation was accepted and the scale was finalized.

Step 3: Expert Committee

According to Beaton et al. (2000), it is important to compose the committee to the achievement of cross-cultural equivalence. In this step, the Amharic version was given to experts for the purpose of determination of face validity and content validity of the scales. The objectives were to evaluate whether these items are relevant to the culture of the participants.

Step 4: Test of the Pre-final Version

The final stage of adaptation process was the pretest. This field test of the new questionnaire used the pre-final version on subjects from the target setting. Ideally, between 30 and 40 persons should be tested, however, in this pilot study I used 50 adolescents. Additional testing for the retention of the psychometric properties of the questionnaire is highly recommended and was presented briefly as follows (Beaton et al., 2000, P. 3189).

Psychometric properties

Determination of reliability and validity

For the determination of reliability and validity of the Amharic version of the scales, the following statistical analyses were carried out. These are: Cronbach's alpha Coefficient, Inter-correlations, Intercorrelation among subscales and item total correlations.

3.5. Variables

3.5.1. Criterion Variables

3.5.1.1. Sexual Behavior

Adolescents' sexual behavior was measured using the scales which were adapted from Youth Health Risk Behavior Instrument (YHRBI) (Stanton et al., 1995 cited in Caal, 2008). The original version of the YHRBI was developed to obtain a culturally and developmentally appropriate instrument to collect health related information from urban minority samples participating in a prevention program-the Focus on Kids Prevention Program (Stanton et al., 1995 cited in Caal, 2008). The YHRBI incorporates questions that assess demographics, past experience regarding risk and protective sexual behaviors and perceptions regarding those behaviors.

In this dissertation, youth were asked to report if they ever had sexual intercourse, and if they had sex within the 90 days prior to assessment. Besides, youth was asked to report the number of people with whom they had sex within the previous 90 days and in their life. Frequency of condom use within the 90 days prior to the assessment was also assessed and condom use during last sexual intercourse.

3.5.1.1.1. Sexual Behaviors as Categorical Dependent Measure

In this dissertation categorical sexual behavior was categorized into two major groups.

The first groups are “Virgin youth” and “sexually active youth”

- (1) “Virgin youth” who never had vaginal sex, and
- (2) “Sexually active youth” who reported engaging in vaginal sex at least once in their life time. The item was rated using “yes” (1) and “no” (0). E.g. “Have you ever had vaginal sex”?

The other categorization placed sexually active youth into two groups, that is, condom use and non-condom use in their vaginal sexual intercourse:

- (1) “Safe youth” who reported sexual activity, but used a condom at their last sexual intercourse, and
- (2) “Unsafe youth” who reported sexual activity, but did not use a condom at their last sexual intercourse. The condom use vs non-condom use group was assessed using one item.

The response options are “yes” (1) and “no” (0). E.g. “The last time you had sex, did you use a condom”?

3.5.1.1.2. Risky Sexual Behavior as a Continuous Dependent Measure

The “risky sexual behavior” scale included a number of items. Out of these items those which fulfilled the criteria were used. The greater the number the adolescent received in this scale, the greater the risky sexual behavior the adolescent was assumed to have. The adolescent received a predetermined score denoting risky behavior if she/he were engaged in behaviors that brought a potential harm to her/his health. A sample item is “Did you drink alcohol or use drugs before you had sexual intercourse the last time”. The values given to each answer was based on

the severity of risk that the adolescent displayed when engaging in such behavior (e.g. vaginal). The reliability analysis of this scale in the previous study was a standardized alpha of 0.75 (Caal, 2008). In this dissertation, the response rate in this measure varies from item to item since the items come from different scales that may have different variance. Therefore, the standardized alpha was used to report its reliability. Using Z- score instead of raw score is advantageous because the standardized alpha gives equal weight to the items.

3.5.1.1.3. Protective Sexual Behavior as a Continuous Dependent Measure

The second sexual behavior was “protective sexual behavior.” This scale consisted of many items and those items which fulfilled the validation process were employed. These items of course assess sexual behaviors that reflect adolescents’ efforts to protect the self from sexual risk when engaging in sexual activity. A sample item is “Did you ask your most recent sexual partner how many people he/she had sex with?”

This instrument was used in similar study for the same age group population (Caal, 2008). Reliability analysis for the internal consistency of this protective scale for the past study yielded a satisfactory standardized alpha ($\alpha = .69$, Caal, 2008). Virgin youth were excluded in this measure since they are not sexually active youth.

3.5.2. Predictor Variables

3.5.2.1. Individual level Variables

Age: Age of the respondents at the time of data collection was used to examine to what extent adolescent sexual behaviors varied across age.

Gender: Participants were asked to self-report gender, on which Females were coded as “0”, and males were coded as “1”.

Self Esteem

Self Reported Self Esteem was measured by the Rosenberg Self Esteem Scale (RSES) (Rosenberg, 1965) which is a 4-point Likert scale ranging from “strongly disagree” to “strongly agree”. Similarly those items which fulfilled the try out criteria were selected out of the items. Seven items were used for collecting the data. The response choices range from 1= strongly agree, 2= agree, 3= disagree, and 4= strongly disagree for negative items and the rating were reversed for positive items. A sample item is “On the whole, I am satisfied with myself“. The Rosenberg Self Esteem Scale has been widely used among different ethnic populations (Robins, Hendin, & Trzesniewski, 2001), in adults and adolescents (Whiteside-Mansell & Corwyn, 2003) and in college students (Greenberger, Chen, et al., 2003) for evaluating individual self esteem. Whiteside-Mansell et al. (2003) found a reliability coefficient of 0.81 among adolescents. This scale was a highly valid and reliable scale, recognized by social science researchers as a valid measure of this construct. In the present pilot study, the Cronbach’s alpha was .63 for the ten items; however, items 6.2, 6.3, and 6.5 were weak items and deleting these items increased Cronbach’s alpha to .71. Larger scores on this scale indicated higher self esteem.

Religiosity

The Santa Clara Strength of Religious Faith Questionnaire (SCSORFQ)

The Santa Clara Strength of Religious Faith Questionnaire was used to assess strength of religious beliefs. It was developed by Thomas Plante which was a ten item measure. It was scored on a 4-point scale ranging from 1= strongly Disagree to 4= strongly Agree, and assesses strength of religious faith regardless of religious affiliation or denomination (Plante &

Boccaccini, 1997). A sample item is “My religious faith is extremely important to me “. As Plante and his colleague (1997) revealed, SCSORF has high internal reliability (alpha = 0.94 to 0.95) when assessed under graduate students from several different populations and has no consistent gender disparity identified. In the present study, the Cronbach’s alpha was .87. Since all of the items were correlated with each other sufficiently, no item was deleted. Thus, all items were used for the main study.

Substance use: Reports of substance use was measured with the questionnaires which were modified and developed by the investigator appropriate to the culture and rated on a 5-point Likert type scale ranging from Never (0) to always (4) for each of the followings: tobacco (cigarette), alcohol, chat (khat), shisha and other drugs such as cannabis and the likes. For each substance, participants were asked on how many days out of the past three months and once in their life time they had used that substance. The items on khat chewing, shisha smoking, alcohol drinking, using cannabis, and cigarette smoking were summed to get score on substance use. In this study, the Cronbach’s alpha was .89 which is an excellent as George and Mallery (2003) revealed.

3.5.2.2. Familial Level Variables

Family structure

Family structure was assessed by asking, “Which of the following best describes your living arrangements?” Six choices were given including; 1= I live with both biological parents, 2= I live with my biological mother and step father, 3= I live with my biological father and step mother, 4= I live with my mother only, 5= I live with my father only and 6= I have other living arrangements. But for the purpose of analysis of MANOVA, the choices were collapsed into 1=

both biological parents, 2= single biological parents, 3= other living arrangements. For the multivariate analysis, this variable was dummy coded such that 1= living with both biological parents and 0= else.

Family Socio-Economic Status

The information on perceived family socioeconomic status of the respondents was collected by utilizing the mean of three measures (family income, mother's highest level of educational attainment, and father's highest level of educational attainment) in order to derive a comprehensive measure of family SES (Miller, et al., 2005). The family income item is stated as; "which one of the following best approximates your family's average monthly income?" Respondents will be provided as; 1 = below 500 Br, 2 = 500-1000 Br, 3 = 1001-1500 Br, 4 = 1501-2000Br, 5 = 2001-3000Br, 6= above 3000 Birr.

Parental Monitoring

The scale of perception of parental monitoring were adapted from Flannery, Vazsonyi, & Rowe (1996) to measure youths' assessment of their parents' perceptions for monitoring their child's well-being. Responses were provided with a four-point Likert scale indicating the frequency that parents comply with the item. The scale showed very good internal reliability in past studies (Cronbach's Alpha = 0.70, Flannery et al., 1996) and in another similar study to the present study that used this scale with Cronbach's Alpha 0.80 (Grayson, 2010). In this study, this scale had with a Cronbach's Alpha of .78.

Parent Education

Parent educational level was provided through two questions asking, "Which of the following best describes your mother's (father's) highest level of education?" Responses were arranged as 1= less than 9th grade, 2= high school incomplete, 3= high school complete, 4 =

college/vocational student, 5 = college/vocational diploma, 6 = university degree and above. But for the multivariate analysis of this study, the choices were collapsed into two categories; 1= university degree and above and 0 = else.

Family Cohesion

Family cohesion was measured using a subscale which was adapted from different sources like Cross-site Study Youth Questionnaire (Caal, 2008) and items developed by Moos & Moos (1987 cited in Grayson, 2010). Some of the items were taken to measure adolescents' perceptions of family members' behavior that show closeness. The other items were taken to measure adolescents' perceptions of their ability and willingness to listen a family member and the remaining items were taken from Moos and Moos (1987 cited in Grayson, 2010) which measures support and commitment provided by family members and the quality of interpersonal relationships . So youth was asked to answer to what extent the family related words/ phrases were true of their family. The options were ranged from 1 = “not true”, 2 = “sometimes true”, 3 = “usually true”, and 4 = “always true”. A sample item is “I’m available when others in my family want to talk to me”. To obtain a total score, the items were summed which give family cohesion aggregate score. Higher scores indicate higher levels of family cohesion (Caal, 2008; Grayson, 2010). In this study, the Cronbach’s Alpha was .82.

3.5.2.3. Neighborhood Level Variables

Neighborhood disorganization measure

Neighborhood disorganization measures were adapted from Kim and Mueller (1978) which were combined to create a composite measure of neighborhood disorganization. Originally ten items were adapted and after refining in the pilot study, eight items were used for the main study.

The items contain a four point Likert scale ranged from “strongly disagree” (1) to (4) “strongly agree” with the statements regarding the neighborhood in which the respondent currently lives. A sample item is “There is a lot of crime in your neighborhood.” The scale demonstrated good internal consistency in past studies (Cronbach's alpha = 0.73, Kim and Mueller, 1978). Eight items were employed for the purpose of this study with a Cronbach’s Alpha of .72.

Neighborhood Collective Efficacy Scale

Neighborhood Collective efficacy scale consisted of two scales administered as part of the community survey (Browning et al., 2008). Browning and his colleagues combined a social cohesion scale, and informal social control scale to measure participants’ neighborhood collective efficacy. The two scales were correlated ($r = .65$) and were combined into a single measure of youth related intergenerational-oriented collective efficacy. The reliability of this scale combined scale was (Cronbach’s alpha = .81, Browning et al., 2008). In the present study, the interscale correlation of the Social Cohesion subscale and Informal Social Control scale was $r = .582$, $p < .01$. Moreover, the Cronbach’s Alpha for combined scale was .80.

3.6. Pilot Study

Prior to the main study, a pilot test study was conducted using 50 adolescents in the study area who were not included in the main study. These adolescents were characteristically similar to the participants in the main study. The pilot test was deemed important for identifying any problems and omissions as well as checking time spent in responding. Pilot test of instruments were also intended to improve the precision, reliability, and cross-cultural validity of data. Following this, the sample characteristics were employed to see the proportions of adolescents with regard to the variables. Moreover, this pilot study tried to find out the relationship between

the variables. Following the analysis of the pilot study data, ambiguous or unclear items were either rephrased or removed.

3.7. Data Collection Procedures

In the process of conducting this study the construction of data gathering tools came first. Then, pilot testing of the instruments proceeded. After the pilot testing, amendments were done based upon the initial feedback.

The administration of the questionnaire for the main study was performed after getting approval from respective education bureaus' and schools' officials. Following this, informed verbal consent was obtained from all participants before the administration of the questionnaire. The participants were also informed to skip item/s or totally decline from filling the questionnaire if they do feel uncomfortable. Assistant data collectors together with the investigator briefed the students as to the nature and purpose of the instruments and attempted to make participants feel at ease.

Administration of questionnaires and scales did not interfere with classroom sessions. In schools, where it was convenient, participants were requested to sit down in their classrooms and were guided by the investigator together with the assistant data collectors on how to fill in the questionnaires. During collecting the data, the students were in separate rooms and sitting arrangements in every school and the time was at their free time. It took 20-25 minutes to complete the questionnaire in the pilot study. For the main study, time of filling in the questionnaires was approximately ranged as similar to the time spent in the pilot study.

3.8. Methods of Data Analysis

So as to assess the relationships among the individual level variables, familial level variables, Neighborhood level variables and youth sexual activity, Univariate, Bivariate, and Multivariate analyses were employed.

Based on the above test-statistics, the aforementioned research questions (Chapter one) were addressed by employing the appropriate test-statistics. The analyses for this dissertation were completed in three major steps: 1) data screening; 2) univariate and bivariate analyses 3. Multivariate analysis

Data screening

Before performing the main data analyses, the data were screened for missing or invalid data, outliers, and other assumptions for both univariate and multivariate analyses (i.e., normality, linearity, and homoscedasticity) with frequencies, and scatter plots. Frequency distributions, skewness and kurtosis of the data, and normal probability plots were inspected to examine normality of variables. These assumptions held as desired. In order to examine linearity, bivariate correlation analysis and scatter plot matrix were utilized.

Finally, the tests of homoscedasticity assumption were performed for dependent variables with the examinations of box plots and Levene's tests. These were also as desired. Outliers can contribute to both univariate and multivariate non-normality; outliers were identified by assessing cases which differed from the estimates of the other cases or multivariate outliers were identified by calculating Mahalanobis distances in a preliminary regression procedure. The Mahalanobis distance D^2 measures the multivariate "distance" between each case and the group multivariate mean known as a centroid. Each case is evaluated using the chi-square distribution

using stringent alpha level of .001 (Tabachnick & Fidell, 2007). However, this study did not get any extreme scores and hence no outliers were registered.

Missing Data Analysis

Missing data analysis was one of the preliminary analyses on which this study employed. As presented above, there were 150 cases registered as missing data. So, it is imperative to determine what percentage of adolescents had missing scores on some of the specific variables, and whether the adolescents' missing data differed in their demographic and other key variables from adolescents who completed the data. Taken on average, the individual demographic measures were missing data of 3.74% of cases, substance use measure was missing data of 4.37% and family demographic measures were missing data of 2.59% and the remaining 4.88% were a combination of continuous sexual behaviors. However, none of the data were registered for family cohesion, parental monitoring and neighborhood factors. In any cases, none of the predictors' and criterion's missing data exceeded 10%, a number that is recommended as cut-off for necessary imputation or deletion (Hair, Black, Barbin, Aderson, & Tatham, 2006). As recommended, this data did not pose a serious threat to the external validity of the findings; I determined to employ case wise deletion because the extent of missing data was not high enough to demand modifications. This idea got support from Hair et al. (2006) who argued that when the amount of missing data was below 10 percent, the adjustment of scores is not required because the extent of missing data is not likely to affect the results. Thus, this study used case wise deletion and finally 962 adolescents remained as those who completed the data. Since the amount of missing data per variable or group of variables were small and the sample was relatively large, case wise deletion did not affect the results (Hair et al., 2006).

Univariate and Bivariate Analyses

To address research questions raised, analyses of frequencies (Chi-square test) was utilized to determine the frequency of occurrence between the categorical sexual behaviors. Similarly, correlation analysis was used to determine the relationship among the predictors and dependent variables. Correlation analysis is also helpful to see the strength and direction of the relationship; however, correlations should not be interpreted as causality between two variables (Tabachnick & Fidell, 2007). For the whole sample, the bivariate correlations were done by combining individual and familial level variables whereas neighborhood level variables were done separately because of the conceptual distinctions, it is not fair to combine these measures with individual and familial level variables similar to analysis of sexually active sub sample. Independent Samples t-test was used for the simultaneous evaluation of the significance of mean differences on continuous dependent variables when comparing two groups.

A bivariate logistic regression analyses were performed for each independent variables on first coital initiation and condom use. This step was performed as it is important to first screen predictors for significance (Tabachnick & Fidell, 2007) and considered as the baseline for multivariate analyses.

Multivariate Analyses

In this analysis, separate MANOVAs were done to examine the mean differences of composite continuous sexual behavior across gender, family structure, and parental educational levels for sexually active adolescents.

Besides, for sexually active adolescents, I employed hierarchical linear regression for risky and protective sexual behaviors. However, for binary outcome variables or condom use and first coital intercourse, hierarchical logistic regression models were created. Logistic regression

analysis was conducted to describe the relationship between the set of independent variables and dichotomous outcome variables. Logistic regression analysis also permits the use of both continuous and categorical independent variables, similar to multiple linear regression analysis. However, unlike multiple regressions, the dependent variable has to be dichotomous or it may be polytomous, which means that more than two response levels are available (Yarandi & Gary, 2004).

Hierarchical multiple regression was important to see the relative importance of the predictor variables. In testing theoretical assumptions and examining the influence of several predictor variables in a sequential way, such that the relative importance of a predictor may be judged on the basis of how much it adds to the prediction of a criterion, over and above that which can be accounted for by other important predictors. In hierarchical regression, the focus is on the change in predictability associated with predictor variables entered later in the analysis over and above that contributed by predictor variables entered earlier in the analysis (Cohen, 2001). Basically as stated above, the analyses were undertaken for sexually active youth and the whole sample.

For the whole sample, the design calls for the use of a multilevel model. A statistical issue that often noted when doing multilevel analysis is the potential for correlated regression residuals within macro-level units. This violates the assumption of standard regression, and must therefore, be correlated. One solution for this problem is the use of special statistical software such as Hierarchical Generalized Linear Modeling (HGLM) that corrects for correlated regression residuals. The neighborhood, however, in this analysis contains fewer than five adolescents, where the average number of adolescents per neighborhood is not more than three. Maas and Hox (2005) suggested that the number of Level-1 unit per Level-2 unit ranged from 5-

50. Therefore, this is a minimum risk for neighborhood level nesting where observed results would be correlated. Adolescents, however, were nested within schools, which nesting must be accounted for in statistical analyses. Failure to account this for this nesting may result in correlated errors across cases. For instance, students within the same school likely have unmeasured common variables that have an impact on the sexual behaviors of adolescents. Unaccounted for, the analyses will likely result in incorrect significance tests due to biased estimates of the standard errors (Harris, 1999 cited in Matisa, 2005). As suggested by Chantala and Tabor (1999) to correct for the possibility of biased estimates, it is recommended that to use certain statistical analysis software like SUDAAN, STATA, MLwiN, etc. which implements the correct formulas for estimating variances by taking into account survey weights when analyzing complex survey data and, therefore, adjusts for clustering within schools (Chantal & Tabor, 1999). SPSS version 20 was used to conduct the data screening, univariate and bivariate analyses. For the analyses of multivariate data MLwiN 2.02 and SPSS version 20 were utilized within an alpha level of .05. However, with this limitation, the analysis was undertaken to examine the between group variance, the result in null or baseline model showed that the between neighborhoods variance was not statistically significant. Therefore, I was compelled to only report the fixed effects. Studies in the past consistently showed little to no bias in the estimates of the fixed effects and hence fixed effects were more encouraged if the sample per Level-2 unit is below 5 (Maas & Hox, 2005; Clarke & Wheaton, 2007).

In every analysis, the variables were entered on blocks. This was for several reasons. First, it allowed me to control for demographic factors by entering age and gender together in the first block.

Second, I was able to measure relative importance of the blocks of variables. The blocks of variables were entered in order based on ecological theory, which indicates the influence of these systems descends in this way (Bronfenbrenner, 1979). Studies in the past, however, did not examine that much the relative importance of each block of variables but only the absolute influence. This study breaks new ground especially in Ethiopian context by demonstrating the necessity of the comparison of contexts when assessing risk factors for several behaviors.

Chapter Four

4. Results

4.1 Introduction

The purpose of this dissertation was to examine which blocks of individual, familial and neighborhood level variables predicted adolescents' sexual behaviors. The analyses were done starting from explaining sample characteristics of the respondents, Data Screening, Univariate analysis, Bivariate analysis, and Multivariate analyses. The results are presented as follows.

4.2. Sample Characteristics of the Respondents

Descriptive statistical analyses were conducted on the demographic variables in relation to adolescent sexual behaviors. Originally, this study was designed to conduct on 1209 preparatory school adolescents in Addis Ababa. Out of the study participants, 97 adolescents never returned the questionnaires and 150 adolescents did not complete the questionnaires either the whole of the scale or some part of items of the scale. In this case, 150 adolescents were registered under missed data. Thus, a total of 247 adolescents were excluded from the study. Hence, the final study was undertaken using 962 adolescents. Among 962 adolescents, 437 were males and 525 were females. In this study, it was planned to recruit almost equal number of males and females since the number of male and female adolescents per class were almost equal. However, because of missing data and unreturned cases, equal numbers of male and female adolescents were not maintained.

Among the respondents of the study, 237 adolescents had sex in their life time and 725 of them did not have sex in their life time. The analyses of the study were undertaken for the

whole sample and for sexually active sample. To avoid confusion, those adolescents who ever had sex in their life time were called sexually active or non-virgin adolescents as reported by them while those who ever not had sex in their life time were called sexually inactive or virgins as endorsed by them. Among non-virgin adolescents, 167 (70.5%) were males and 70 (29.5%) were females. The average age of these adolescents were 18.33 for males and 18.01 years for females. Among these groups of sexually active youth, 134(56.54%) used condoms in their last sexual intercourse and 103(43.46%) never used condom in their last sexual encounter.

Disaggregating by sex, 93 (39.24%) males and 41 (17.29%) females reported to be safe (used condoms) in their last sexual encounter while 74 (31.22%) males and 29 (12.24%) females endorsed that they never used condoms in their last sexual encounter. The mean age of coital initiation for males was 15.48 and the mean age of coital initiation for females was 15.57. The minimum age of sexual initiation for males was 6 and for females 12. The maximum age of sexual initiation for males was 21 and the maximum age for coital initiation for females was 20.

The study examined that the reasons why adolescents did not do sexual intercourse in their life time by choosing one or more options from the given alternatives from the questionnaire as follows. Among 725 virgin adolescents, about 31% reported that they are not ready for sex; 38% responded that someone in their family would disapprove; 12% responded that some of their friends would disapprove; about 22.3% reported their friends do not have sexual intercourse; 54.4% responded because of their religious/spiritual beliefs; 39% responded that they do not want to get sexually transmitted infections; about 27.3% reported that they do not want to get pregnant/cause a pregnancy; about 12.5% reported that no one has asked them to/haven't had the chance; 20% endorsed that they are waiting until they meet the right person

and about 75.2% reported that they are waiting until they get married. In this analysis, a single adolescent has the chance to choose more than once from the given alternatives

Table 4.1: Family Structure across Virgin and Non-virgin Adolescents

	Both biological parents	Biological mother and step father	Biological father and step mother	Biological mother only	Biological father only	Other living arrangements
Virgin	397(54.8%)	8(1.1%)	19(2.6%)	100(13.8%)	27(3.7%)	174(24.0%)
Non-virgin	107(45.1%)	10(4.2%)	4(1.7%)	31(13.1%)	4(1.7%)	81(34.2%)
Total	504(52.4%)	18(1.9%)	23(2.4%)	131(13.6%)	31(3.2%)	255(26.5%)

Among the study participants, 504(52.4%) live with their biological parents. Out of 504 adolescents, 397 were virgins (ever not had sex) and 107 were non virgins (ever had sex); 18 live with their biological mother and step father of which 8 were virgins and 10 were non-virgins. Similarity, 23(2.4%) of adolescents live with their biological father and step mother. Out of 23 adolescents, 19 were virgins and 4 were non-virgins. Moreover, 131 (13.6%) adolescents live with their biological mother only and out of these adolescents, 100 were virgins and 31 were non-virgins, 31(3.71%) adolescents live with their biological father only. Out of 31 adolescents, 27 were virgins and 4 were non-virgins. Finally, 255 (26.5%) adolescents live with other living arrangements and out of these, 174 were virgins and 81 were non-virgins.

Table 4.2: Parental Educational Levels across Virgin and Non-virgin Adolescents

		Less than grade nine	High school incomplete	High school complete	Collage/ technical student	Collage /technical diploma	University degree and above
Fathers' Education	Virgin	245(33.8%)	98(13.5%)	143(19.7%)	22(3.0%)	74(10.2%)	143(19.7%)
	Non-virgin	84(35.4%)	31(13.1%)	48(20.3%)	8(3.4%)	26(11.0%)	40(16.9%)
	Total	329(34.2%)	129(13.4%)	191(19.9%)	30(3.1%)	100(10.4%)	183(19.0%)
Mothers' Education	Virgin	342(47.2%)	83(11.4%)	149(20.6%)	26(3.6%)	66(9.1%)	59(8.1%)
	Non-virgin	111(46.8%)	26(11%)	45(19%)	14(5.9%)	17(7.2%)	24(10.1%)
	Total	453(47.1%)	109(11.3%)	194(20.2%)	40(4.2%)	83(8.6%)	83(8.6%)

With regard to parental education, out of the total respondents of the study, 329 (34.2%) and 453 (47.1%) of the adolescents' fathers and mothers were less than 9th grade; 129 (13.4%) and 109(11.3%) of the adolescents' fathers and mothers were high school incomplete; 191(19.9%) and 194(20.2%) of the adolescents' fathers and mothers were high school complete; 30(3.1%) and 40 (4.2%) of adolescents' fathers and mothers were College /Technical and Vocational students; 100 (10.4%) and 83 (8.6%) adolescents' fathers and mothers had College /Technical and Vocational diploma and 183 (19%) and 83(86%) adolescents' fathers and mothers received University degree or above respectively.

The study identified virgin and non-virgin adolescents with respect to paternal and maternal educational levels. That is, among adolescents whose fathers' educational levels were less than grade nine, 245 were virgins and 84 were non-virgins. As indicated in Table 4.2, large number of adolescents whose fathers' educational levels were less than grade nine was virgins as compared to the non-virgins. Besides, among adolescents whose fathers' educational levels were high school incomplete, 98 were virgins and 31 were non-virgins. In this category also, there were more virgin adolescents than non-virgins. Among adolescents whose fathers' educational levels were high school complete, 143 were virgins and 48 were non-virgins. Similarity, among adolescents whose fathers' educational levels were College /Technical and Vocational students, 22 were virgins and 8 were non-virgins, adolescents whose fathers' educational levels were College / Technical and Vocational diploma, 74 were virgins and 26 were non-virgins. Finally, among adolescents whose fathers' educational levels were University and above, 143 were virgins and 40 were non-virgins. In each category of fathers' educational levels, there were more virgin adolescents reported than non-virgin adolescents.

In relation to mothers' educational levels, among adolescents whose mothers' educational statuses were less than grade nine, 342 were virgins and 111 were non-virgins; whose mothers' educational levels were high school incomplete, 83 were virgins and 26 were non-virgins; whose mothers' educational levels were high school complete, 149 were virgins and 45 were non-virgins; whose mothers' educational levels were College /Technical and Vocational students, 26 reported that they were virgins and 14 were non-virgins; whose mothers had College /Technical and Vocational diploma, 66 endorsed that they were virgins and 17 were non-virgins and whose mothers received University degree and above, 59 reported that they were virgins and

24 were non-virgins. The figures indicated that for each category of mothers' educational levels, there were more virgins than non-virgins.

Regarding family incomes, 67(3.9%) of adolescents reported that their families monthly incomes were below 500 Birr; 171(10.5%) of adolescents endorsed that their families' monthly incomes were 500-1000 Birr; 122(7.2%) adolescents reported that their families' monthly incomes were 1001-1500 Birr; 147(8.6%) adolescents reported that their families' monthly incomes were 1501-2000 Birr, 171(10.1%) of adolescents reported that their families' monthly incomes were 2001-3000 Birr and 284(16.7%) of adolescents reported that their families' monthly incomes were above 3000 Birr.

4.2. Bivariate and Univariate Analyses

A 2x2 Chi-square analysis was conducted to assess the association between sexual activity (virginity vs non-virginity) status and gender (table not indicated). The result shows that there was a statistically significant association between sexual activity status and gender, $\chi^2(1, N=962) = 79.523, p < .05$. More specifically, while 62.5% females reported that they were virgins, 37.2% males so reported. On the other hand, 29.5% of females endorsed that they were non-virgins and 70.5% males reported they were non-virgins. The phi coefficient ($\phi = .288$) indicates that males engaged more likely in sexual activity than females which confirms that more females were virgins than males.

Besides, a Kx2 Chi-square test was conducted to examine the relationships between parental educational levels and adolescents' coital initiation, the Chi-square test shows that there were no statistically significant associations between each parental educational levels and adolescent sexual activity (that is, $\chi^2(5, 962) = 4.161, p > .526$ for mothers' educational levels and

$\chi^2(5, 962) = 1.120, p > .520$ for fathers' educational levels). Hence, there is no real evidence that sexual activity of adolescent varies from one parental educational level to the other levels.

Similarly, a Kx2, Chi-square test was conducted to check the association between family structure and adolescents' coital initiation, the result indicates that there was a statistically significant association between family structure and adolescents' first coital intercourse. This indicates that adolescent sexual activity varied from one family structure category to another. (That is, $\chi^2(5, 962) = 22.412, p < .05$).

Research Q-2: Are there any significant mean differences between virgin and non-virgin adolescents on continuous predictors? Table 4.3 answers this research question.

Table 4.3: Independent Samples t-test for Continuous Individual and Familial Level Variables by Virginity and Non-virginity Status (N = 962)

Variables	Sexual activity status	N	Mean	S.dev.	T	P
Self- Esteem	Virgin	725	31.93	4.44	-2.83	.005
	Non-virgin	237	30.91	4.95		
Religiosity	Virgin	725	34.31	5.13	-3.51	.001
	Non-virgin	237	32.83	5.80		
Substance use	Virgin	725	.70	2.03	10.8	.000
	Non-virgin	237	5.68	7.01		
Age	Virgin	725	17.58	1.23	6.74	.000
	Non-virgin	237	18.31	1.49		
Parental monitoring	Virgin	725	21.92	4.08	-8.24	.000
	Non-virgin	237	18.94	5.05		
Family cohesion	Virgin	725	27.96		-5.03	.000
	Non-virgin	237	25.70			
Family SES	Virgin	725	3.17	1.39	-.22	.826
	Non-virgin	237	3.14	1.40		

Independent Samples t-test was conducted on individual and familial level continuous predictor variables to examine mean differences across virgin and non-virgin adolescents. The results as indicated above show that, there were statistically significant mean differences on all of the individual level continuous predictors except family SES (That is, virgin (Mean = 3.17) and non-virgin (Mean = 3.14) $t(960) = -.22, p > .05$) across virgin and non-virgin groups. In other words, there was a statistically significant mean difference on self esteem across the groups, $t(960) = -2.83, p < .05$ which indicates that non-virgin adolescents manifested lower self esteem than their counter parts (virgin adolescents). Similarly, there was a statistically significant mean difference on religiosity across virgin and non-virgin groups ($t(960) = -3.51, p < .05$). This also indicates that virgin adolescents were more religious than non-virgin adolescents. Besides, the study got significant mean difference on substance use across the two groups. That is, $t(960) = 10.8, p < .05$. The result indicates that non-virgin youth consumed more substances than virgin youth. Similarly, there was a statistically significant mean difference on the age of adolescents across virgin and non-virgin adolescents ($t(960) = 6.74, p < .05$). This shows that virgin adolescents were younger than non-virgin adolescents.

Regarding family level continuous variables, the results indicate that there was statistically significant parental monitoring mean difference with respect to virgin and non-virgin youth. Thus, virgin youth demonstrated more parental monitoring than non-virgin youth. That is, virgin (Mean = 21.92) and non-virgin (Mean = 18.94), $t(960) = -8.24, p < .05$. Similarly, there was a statistically significant family cohesion mean difference across the two groups which show adolescents from more cohesive family settings were virgins as compared to those adolescents from less cohesive family members. That is, virgin (Mean = 27.96) and non-virgin (Mean = 25.70), $t(960) = -5.03, p < .05$.

Table 4.4: Independent Samples t-test for Continuous Neighborhood Level Variables by Virginitly and Non-virginitly Status (N= 962)

Variables	Sexual activity status	N	Mean	S.dev.	t	P
Neighborhood disorganization	Non-virgin	237	19.29	4.76	3.20	.001
	Virgin	725	18.18	4.59		
Neighborhood collective efficacy	Non-virgin	237	27.04	5.02	-4.74	.000
	Virgin	725	28.70	4.59		

Regarding neighborhood level variables, Independent Samples t- test was conducted to examine whether or not there appeared mean differences with respect to neighborhood disorganization and neighborhood collective efficacy across virgin and non-virgin adolescents. The result indicates that there was a statistically significant neighborhood disorganization mean difference across the two groups as evidenced by virgin (Mean = 18.18) and non-virgin (Mean = 19.29) $t(960) = 3.20, p < .05$. This indicates that sexually active adolescents (non-virgin) live in more disorganized neighborhoods than their counter parts. On other hand, the finding showed the existence of significant mean difference on neighborhood collective efficacy across virgin and non-virgin youth. That is, virgin (Mean = 28.70) and non-virgin (Mean = 27.04), $t(960) = - 4.74, p < .05$. The finding indicates that virgin youth live in neighborhoods which were characterized by high collective efficacy among the members as compared to non-virgin youth.

Table 4.5: Independent Samples t-test for Continuous Individual Level Variables by Gender (N= 962)

Variables	Gender	N	Mean	St.dev	T	P
Self-esteem	Male	437	31.83	4.65	.945	.345
	Female	525	31.55	4.53		
Religiosity	Male	437	33.49	5.53	-2.44	.015
	Female	525	34.33	5.14		
Substances use	Male	437	3.03	5.48	6.89	.000
	Female	525	1.01	3.07		
Age	Male	437	17.89	1.23	4.15	.000
	Female	525	17.58	1.08		

Table 4.6: Independent Samples t-test for Continuous Familial Level Variables by Gender**(N= 962)**

Variables	Gender	N	Mean	St.dev	T	P
Parental Monitoring	Male	437	19.65	4.67	-9.97	.000
	Female	525	22.48	3.97		
Family cohesion	Male	437	26.94	5.60	-2.28	.023
	Female	525	27.79	5.86		
FSES	Male	437	3.14	1.39	-.348	.727
	Female	525	3.18	1.40		

Independent Samples t-test was conducted to examine gender differences on continuous individual and familial level variables (refer to Table 4.5 and Table 4.6). The finding indicates that there was a statistically significant gender difference with respect to age of adolescents. Thus, male adolescents were older than female adolescents. That is, Male (Mean age = 17.89) and Female (Mean age = 17.58) $t(960) = 4.15$ $p < .05$. Similarly, gender differences were observed on substance use and religiosity. That is, there was a statistically significant gender difference with respect to substance use, Male (Mean = 3.03) and Female (Mean = 1.01) $t(960) = 6.89$, $p = .000$. The finding revealed that male adolescents consumed more substances than their counter parts. Besides, there was a statistically significant gender difference on adolescent religiosity; Male (Mean = 33.49) and Female (Mean = 34.33) $t(960) = -2.44$ $P < .015$. The result concurred that male adolescents were more religious than female adolescents. In contrast, there was no a statistically significant gender difference observed pertaining to Self esteem, Male

(Mean = 31.83) and Female, (Mean = 31.55) $t(960) = 945$ $P > .345$. Thus, both males and females have possessed the same level of self esteem.

Similarly, gender differences were conducted using Independent Samples t-test on familial level continuous variables. The results as depicted above indicate that gender differences were observed on parental monitoring and family cohesion, however, gender differences was not seen on Family Socio- Economic Status (FSES). According to the data, there was a statistically significant gender difference with respect to parental monitoring, Male (Mean = 19.65) and Female (Mean = 22.48) $t(960) = -9.97$ $p < .05$ showing that females demonstrated more parental monitoring than males. There was a statistically significant gender difference on family cohesion, male (Mean = 26.94) and female (Mean = 27.79) $t(960) = -2.28$, $p < .023$. This shows that female adolescents live in more cohesive families than male adolescents.

Table 4.7: Pearson Product Moment Correlation between Continuous Individual Level Variables and Familial Level Variables (N = 962)

Level 1

		1	2	3	4	5	6
1	Self-esteem						
2	Religiosity	.347**					
3	Substances use	-.139**	-.187**				
4	Age	-.049	.004	.179**			
5	Parental monitoring	.166**	.187**	-.351**	-.154**		
6	Family cohesion	.263**	.211**	.205**	-.160**	.460**	
7	Family SES	.081*	.002	.108**	-.155**	.077**	.192**

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

As indicated in Table 4.7, the bivariate analysis was conducted to examine the association between continuous individual level variables. The result indicated that there was positive statistically significant correlation between adolescent self esteem and religiosity ($r = .347$, $p < .01$) which shows adolescents with high religiosity showed higher self-esteem. On the contrary, there was a statistically significant negative correlation between substance use and self-esteem ($r = .139$, $p < .05$). The result reveals that adolescents with higher self esteem were less substance users.

Besides, there was significant negative correlation between substance use and religiosity ($r = -.187$, $p < .01$). The result informed that more religious adolescents used substances less likely than less religious adolescents. Contrary to the immediate above results, there was a statistically significant positive association between age of adolescents and substance use ($r = .174$, $p < .01$) which confirmed that older adolescents consumed more substances than younger adolescents. As indicated above, there was a statistically significant positive correlation between parental monitoring and family cohesion ($r = .460$, $p < .01$). This tells that adolescents who came from more cohesive families received more parental monitoring than their counter parts. Similarly, there was a statistically significant but weak positive correlation between parental monitoring and Family SES ($r = .087$, $p < .05$). The result tells that adolescents who came from high family SES demonstrated more parental monitoring than their counter parts. Finally, the analysis showed statistically significant positive correlation between family cohesion and family SES ($r = .192$, $p < .01$) which might reveal that adolescents who were from higher family SES came from more cohesive families as compared to their counter parts. Interestingly, the correlations between each pair of familial level variables go in the same direction. That is, an increase in one variable was accompanied by an increase in another variable.

Regarding parental monitoring and self-esteem, there was a significant positive correlation between these variables ($r = .166, p < .01$). This value indicates adolescents who received high parental monitoring manifested high self esteem as compared to their counterparts. Similarly, there was a statistically significant positive association between parental monitoring and religiosity ($r = .187, p < .01$). This also informs that religious adolescents received more parental monitoring than those adolescents who were less religious. On the contrary, there existed statistically significant negative correlation between parental monitoring and substance use ($r = -.351, p < .01$). The relationship is consistent with the literature which shows adolescents who received more parental monitoring were less substance users than their counterparts. In relation to age of adolescents and parental monitoring variables, there is a significant negative relationship between these variables ($r = -.154, p < .01$). This in fact, confirms that older adolescents received less parental monitoring than younger adolescents.

Regarding family cohesion and self-esteem as observed on the table above, there was statistically significant positive correlation between the two ($r = .263, p < .01$). The result informs that adolescents' self-esteem is high in more cohesive families than in less cohesive families. Besides, the correlation between family cohesion and religiosity was positively significant ($r = .211, p < .01$). This also concurs that adolescents in more cohesive families demonstrated high religiosity as compared to those adolescents from less cohesive families. On the other hand, there was a statistically significant negative correlation between family cohesion and substance use ($r = -.205, p < .01$). As indicated above, the result shows adolescents who came from more cohesive families were less substance users as compared to those adolescents who came from less cohesive families. Similarly, there was a statistically significant negative correlation between

family cohesion and age ($r = -.160, p < .01$). The result tells that younger adolescents live in more cohesive families than older adolescents.

In relation to family SES, there is a statistically significant but weak positive correlation between family SES and self-esteem ($r = .081, p < .05$). This indicates that adolescents' self-esteem increased as family SES is higher. On the contrary, there was no significant correlation between religiosity and family SES. On the other hand, family SES was significantly and positively correlated with substance use ($r = .108, p < .01$). The result shows that adolescents from higher family SES group used more substances as compared to those adolescents who came from lower family SES group. On the other hand, family SES and age had a negative but statistically significant correlation ($r = -.155, p < .01$). This reveals that younger adolescents came from families who were high SES group.

Table 4.8: Pearson Product Moment Correlation between Neighborhood Disorganization and Neighborhood Collective Efficacy (N = 962)

Level 2

	1	2
1. Neighborhood disorganization		
2. Neighborhood collective efficacy	-.106**	

** $p < .01$

A bivariate correlation was conducted between neighborhood level variables and the result shows the existence of significant negative correlation between neighborhood disorganization and neighborhood collective efficacy ($r = -.106, p < .01$). The finding informs that adolescents who reside in more disorganized neighborhoods live in neighborhoods with lower collective efficacy than their counter parts.

Research Q-1: Does first coital initiation of adolescents vary by study variables? Table 4.9 answers this research question.

Table 4.9: The Bivariate Logistic Regression of the Predictor Variables for the Whole Sample With Respect to Sexual Activity (N = 962)

Variables	B	S.E	Wald	Df	Sign	Odds ratio Ex(β)
Gender(1)	1.391	.162	73.960	1	.000	4.020)
Age	.419	.061	47.479	1	.000	1.521
Self –esteem	-.048	.016	8.764	1	.003	.954
Religiosity	-.048	.013	13.311	1	.000	.953
Substance use	.369	.034	119.414	1	.000	1.446
Family structure			20.849	5	.001	
both biological parents	-.547	.173	9.970	1	.002	.579
Biological mother and step father	.988	.493	4.013	1	.045	2.685
Biological father and step mother	-.794	.566	1.963	1	.161	.452
Biological mother only	-.407	.246	2.739	1	.098	.666
Biological father only	-1.145	.552	4.296	1	.038	.318

Father's education			1.791			
Less than grade nine	.236	.220	1.145	1	.285	1.266
High school incomplete	.197	.272	.525	1	.469	1.218
High school complete	.187	.247	.573	1	.449	1.205
College/tec & voc. Student	.459	.437	1.101	1	.294	1.582
College/tech & voc.diplo	.260	.291	.801	1	.371	1.297
Mother's educ			4.108	5	.534	
Less than nine grade	.014	.247	.003	1	.954	1.015
High school incomplete	-.131	.204	.409	1	.522	.877
High school complete	.506	.349	2.104	1	.147	1.659
College/tec.&voc.student	-.159	.288	.304	1	.581	.853
College/tec. & voc.diplo	.226	.266	.723	1	.395	1.253
Family SES	-.012	.054	.048	1	.826	.988
Parental monitoring	-.146	.017	70.248	1	.000	.864
Family cohesion	-.067	.013	26.747	1	.000	.935
Neighborhood disorganization	.052	.016	10.045	1	.002	1.053
Neighborhood collective efficacy	-.075	.016	21.386	1	.000	.928

Bivariate logistic regression was conducted to examine the association between each individual, familial, and neighborhood level variables. Conducting bivariate logistic regression is crucial to filter or screen out predictor variables which had a statistically significant association with first coital intercourse. Predictor variables which showed significant associations with sexual activity in the bivariate logistic regression were good indicators for multivariate logistic regression when blocks of variables were entered to the model. Thus, the above table indicates

the bivariate logistic regression between predictor variables and first coital intercourse. As indicated above, in the bivariate model, gender (Wald = 73.960, $p = .000$) was significantly associated with adolescents' sexual activity. The result shows that male adolescents engaged in sexual initiation 4.020 times more likely than female adolescents. This implies that more females were virgins than males. Age (Wald = 47.479, $p < .05$) was statically significant in distinguishing those who had ever had sex and ever not had sex. The odds ratio $Ex(\beta) = 1.521$ indicates that older adolescents engaged in sexual activity 1.521 times more likely than younger adolescents. Similarly, there was a statistically significant association between self-esteem and adolescents' sexual activity (Wald = 8.76, $p < .05$). The odds ratio $Ex(\beta) = .954$ shows that non-virgin adolescents were .954 times less likely demonstrated lower self-esteem than virgin adolescents.

Both religiosity and substance use were significantly associated with sexual activity, religiosity (Wald = 13.11, $p < .05$). The odds ratio $Ex(\beta) = .953$ indicates non-virgin adolescents were .953 times more likely to be involved in religious activities than virgin youth. Substance use, (Wald = 119.41, $P < .05$) was statistically significant to identify virgin and non-virgin adolescents. Odds ratio $Ex(\beta) = 1.446$ demonstrated that non-virgin youth were 1.446 times more likely substance users than virgin youth.

In relation to family level variables, parental educational levels (fathers' and mothers' educational levels) were not significantly associated with the likelihood of adolescents' engagement sexual activity. In this study, Family Socio Economic Status which is derived from parental educational levels and family income was not significantly associated with adolescents' sexual activity.

Among the family structure categories, adolescents with biological parents, biological mother and step father, and biological father only were significantly associated with the odds of adolescents' engagement in sexual activity.

The remaining two family structure categories were not statistically significant. Since the reference category was "other living arrangements", the results were interpreted as compared to the reference category. Adolescents who live with both biological parents were .579 times less likely engaged on the odds of adolescents' sexual actively than adolescents who live with other living arrangements. Similarly, adolescents who live with biological father only were .318 times less likely engaged in the odds of sexual activity than adolescents who live with other living arrangements. On the contrary, adolescents who live with biological mother and step father were 2.69 times more likely engaged in sexual activity than adolescents who live with other living arrangements. Regarding adolescents who live with biological father and step mother, there were no statistically significant associations with sexual activity which shows that the two groups involve in sexual activity at similar rate. This worked for those adolescents who live with biological mother only.

Parental monitoring (Wald = 70.25, $p < .05$) was statistically significant in distinguishing virgin and non-virgin youth. The odds ratio $Ex(\beta) = .864$ indicates that non-virgin youth demonstrated .864 times less likely in receiving parental monitoring than virgin youth. Parents of non-virgin youth seem to be lenient in controlling and supervising their children. Similarly, family cohesion (Wald = 26.47, $p = .000$) was statistically significant in identifying those who had ever had sex and ever not had sex. The odds ratio $Ex(\beta) = .935$ revealed that adolescents from more cohesive family members were .935 times less likely to be engaged in sexual activity as compared to their counter parts.

In relation to neighborhood level characteristics, adolescents who reside in neighborhoods which were characterized by high disorganization demonstrated high involvement in sexual activity. That is, neighborhood disorganization (Wald = 10.05, $p < .05$) was statistically significant in distinguishing virgin and non-virgin youth. The odds ratio $Ex(\beta) = 1.053$ shows that non-virgin youth live 1.053 times more likely in highly disorganized neighborhoods than their counterparts (virgin youth). The result revealed that neighborhood disorganization had a positive effect on adolescents' sexual debut. On the contrary, adolescents who live in neighborhoods which were characterized by more neighborhood collective efficacy were virgins. That is, neighborhood collective efficacy (Wald = 21.386, $p < .05$) was statistically significant in identifying virgin and non-virgin adolescents. Odds ratio $Ex(\beta) = .928$ indicates that non-virgin youth live .928 times less likely in neighborhoods which demonstrated high collective efficiency than virgin youth. That is, virgin youth live in neighborhoods which were characterized by higher collective efficiency than their counterparts. Family SES (Wald = .048, $p > .05$) was not statistically significant in distinguishing virgin youth and non-virgin youth which showed that adolescents from all family SES brackets involve at the same rate in sexual activity.

Table 4.10: Chi-square Analysis That Shows the Association between Gender and Condom Use for Sexually Active Youth (N = 237)

Condom use	Gender			Chi-square(χ^2)
	Male	Female	Total	
Safe	93	41	134	.167, p > .683
Unsafe	74	29	103	
Total	167	70	237	

A 2x2 Chi-square analysis was conducted for sexually active youth to assess the associations between condom use at last sexual intercourse and gender. This analysis found no association between condom use at last sexual intercourse and gender, $\chi^2 (1, N = 237) = .167, p > .683$. That is, 28.22% female and 71.8% of male adolescents were unsafe (never used condoms) during their last sexual intercourse and 30.5% of female and 64.4% male adolescents reported to be safe during their last sexual intercourse. This finding confirmed that both male and female adolescents used condoms at about the same rate. In general, out of the sexually active youth, 41 female and 93 male adolescents used condom at last sexual intercourse while 29 female and 74 male adolescents never used condom at last sexual intercourse. This partly answers research question number one.

Research Q-1: Do risky and protective sexual behaviors vary by the study variables?

Table 4.11 and multivariate MANOVA answered this research question.

Table 4.11: Pearson Product Moment Correlation between Continuous Variables for Sexually Active Youth (N = 237)

Variables	1	2	3	4	5	6	7	8	9	10
1.Age										
2.Religiosity	.063									
3.Self-esteem	-.038	.340**								
4.Substance use	.081	-.234**	-.169**							
5.Family SES	-.119	-.035	.070	.243**						
6.Parental monitoring	-.098	.179**	.062	-.411**	.025					
7.Family cohesion	-.114	.266**	.257**	-.245**	.124**	.462**				
8.Neighborhood disorganization	.039	-.050	-.017	.264**	.014	-.164*	-.186**			
9.Neighborhood collective efficacy	.015	.199**	.150*	.209**	.038	.161*	.390**	-.133*		
10.Risky sexual behavior	.093	-.175**	-.041	.275**	.070	-.180**	-.136*	.079	-.124	
11. Protective sexual behavior	-.135*	.315**	.295**	-.332**	.060	.418**	.827**	-.153**	.330**	-.180**

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

Table 4.11 displays the correlations of continuous predictors and each continuous sexual behavior for sexually active adolescents. The majority of the study variables were significantly correlated with each other. As a result, there was a statistically significant correlation between religiosity and substance use, parental monitoring, family cohesion, neighborhood collective efficacy, risky sexual behavior and protective sexual behavior. That is, the correlation between religiosity and self esteem is positive and statistically significant ($r = .346, p < .01$). More religious adolescents showed higher self-esteem as compared to less religious adolescents. On the other hand, religiosity and substance use correlated negatively but statistically significant which indicates that substance user adolescents were less religious than their counter parts ($r = -.234, p < .01$). In relation to parental factors, there was a statistically significant positive association between parental monitoring and religiosity ($r = .179, p < .01$). The result concurred that religious adolescents received more parental controlling than their counter parts. Similarly, the association between religiosity and family cohesion was positively significant ($r = .266, p < .01$). This shows cohesiveness among family members enhances the religiosity of adolescents.

Regarding neighborhood factors, there was a statistically significant correlation between neighborhood collective efficacy and religiosity ($r = .199, p < .01$). The result shows that adolescents who live in neighborhoods with high collective efficacy were more religious than those adolescents who live in neighborhoods with less collective efficacy. Thus, neighborhood collective efficacy enhanced the likelihood that adolescents attended religious activities. The analysis also showed that religiosity was negatively and significantly associated with risky sexual behavior ($r = -.175, p < .01$). This result reveals religiosity is protective factor for adolescents health which reveals religious adolescents involved in less risky sexual activity. On the other hand, there was a statistically significant positive relationship between religiosity and

protective sexual behavior ($r = .315, p < .01$). The result confirms the fact that religious youth tend to be involved in safe sexual activities as compared to their counter parts. However, religiosity was not significantly correlated with family SES, neighborhood disorganization, and age. Among the adolescents' factors, age was the only variable which was not significantly correlated with any of the variables except protective sexual behavior as indicated above. That is, there existed a significant negative relationship between age of adolescents and protective sexual behavior ($r = -.135, p < .05$) which reveals that younger adolescents used protective mechanisms as compared to older adolescents in their sexual encounter.

As indicated above, there was a statistically significant negative correlation between self esteem and substance use ($r = -.169, p < .01$). The result reveals that adolescents who demonstrated high self esteem were less substance users than those who demonstrated low self esteem. To reduce adolescents' substance use, it is important to work on how to strengthen the self esteem of adolescents. In relation to family factors, there existed a statistically significant positive correlation between family cohesion and self esteem ($r = .257, p < .01$) which indicates that adolescents in more cohesive family setting showed higher self esteem than their counter parts. Similarly, there was a significant positive relationship between self esteem and neighborhood collective efficacy ($r = .150, p < .05$). The result showed that adolescents' self esteem increased in neighborhoods which demonstrated high collective efficacy. The same analysis tells that there is a statistically significant positive correlation between self esteem and protective sexual behavior ($r = .295, p < .01$). The finding tells that perhaps self esteem contributed towards adolescents' use of protective strategies in their sexual encounter.

Table 4.11 also shows that there was a statistically significant positive correlation between Family SES and substance use ($r = .245, p < .01$). Interestingly, the result reveals that adolescents

from High family SES were more substance users than those adolescents who were from low family SES. On the other hand, substance use correlated significantly albeit negatively with parental Monitoring, family cohesion and neighborhood collective efficacy. That is, the correlation between parental monitoring and substance use was ($r = -.411, p < .01$). This result informs that adolescents in more restrictive families were less substance users and might have indicated that parental monitoring is a protective factor. Similarly, there was a statistically significant negative correlation between family cohesion and substance use ($r = -.245, p < .01$) which concurs that less substance user adolescents came from more cohesive families than their counter parts.

Regarding neighborhood factors, there appeared a statistically significant positive correlation between neighborhood disorganization and substance use ($r = .264, p < .01$). This relationship was expected and hence adolescents who reside in more disorganized neighborhoods were more substance users. In contrast, there was a significant negative correlation between neighborhood collective efficacy and substance use ($r = -.209, p < .01$). The result tells that adolescents who reside in neighborhoods with high collective efficacy were less substance users. Interestingly speaking, except age of adolescents, substance use was significantly correlated with all of the continuous predictors either negatively or positively. The table also shows that there was a statistically significant positive correlation between substance use and risky sexual behavior ($r = .275, p < .01$). This result confirms that adolescents' risky sexual behavior was highly manifested among adolescents who used substances. On the contrary, there existed a negative significant correlation between substance use and protective sexual behavior ($r = -.332, p < .01$) which confirmed that adolescents who used substances demonstrated less protective mechanisms than their counter parts during their sexual intercourse.

Regarding family SES except substance use variable, family SES was not significantly correlated with other continuous predictor variables and risky and protective sexual behaviors. As clearly indicated from the table, parental monitoring was significantly correlated with family cohesion ($r = .462, p < .01$). This positive relationship between the variables indicated that families which demonstrated high parental monitoring were more cohesive which in turn translated into adolescents who came from high cohesive family members received high parental monitoring. On the other hand, there was a statistically significant negative correlation between neighborhood disorganization and parental monitoring. ($r = -.164, p < .05$). The result reveals that parents' capacity of monitoring their children decreased in more disorganized neighborhoods. In contrast, the relationship between neighborhood collective efficacy and parental monitoring was statistically significant but positively ($r = .161, p < .05$) which shows that parents' ability to monitor their adolescent children increased in neighborhoods which manifested high collective efficacy. As expected, there was a statistically significant negative correlation between parental monitoring and risky sexual behavior ($r = -.180, p < .01$). The result shows adolescents in more restrictive (high parental monitoring) families involved in less risky sexual activity. However, the correlation between parental monitoring and protective sexual behavior was positive and statistically significant ($r = .418, p < .01$). This result tells that adolescents who received high parental monitoring were involved in safe sexual activity.

Regarding family cohesion, there existed a significant negative correlation between family cohesion and neighborhood disorganization ($r = -.186, p < .01$). This also shows that adolescents in more disorganized neighborhoods live in less cohesive families. Contrary to this, there was a statistically significant positive relationship between family cohesion and neighborhood collective efficacy ($r = .390, p < .01$). This indicates as neighborhood collective

efficacy increased, cohesiveness among family members increased. More specifically, adolescents who reside in neighborhoods with high collective efficacy came from more cohesive family settings. Consistent with the literature, there was a statistically significant negative correlation between family cohesion and risky sexual behavior ($r = -.136, p < .05$). The result informs that adolescents from more cohesive families were involved in less risky sexual behavior as compared to those adolescents from less cohesive families. There was a high may be more inflated statistically significant positive correlation between family cohesion and protective sexual behavior ($r = .827, p < .01$). The result tells that cohesiveness among family members helped adolescents to practice safe sexual activities. This high correlation between family cohesion and protective sexual behavior was that the two variables were relatively skewed to the same direction; however, the variables need not be transformed since the assumption was not violated.

As expected, there existed statistically significant negative relationship between neighborhood disorganization and neighborhood collective efficacy ($r = -.133, p < .05$) which directs that less disorganized neighborhoods showed more collective efficacy among the members. On the other hand, neighborhood disorganization and risky sexual behavior were not correlated ($r = .079, p > .224$). Neighborhood collective efficacy and risky sexual behavior were marginally correlated but opposite in sign as their correlation coefficient indicated ($r = -.124, p < .058$).

There appeared a statistically significant positive correlation between protective sexual behavior and neighborhood collective efficacy ($r = .330, p < .01$). In this case, adolescents who live in neighborhoods which were characterized by high collective efficacy used protective mechanisms during their coital intercourse. On the other hand, protective sexual behavior and

neighborhood disorganization had significant negative correlation ($r = -.153, p < .01$). This result reveals that neighborhood disorganization had an adverse effect on adolescents' protective sexual behavior.

There was a significant negative relationship between risky sexual behavior and protective sexual behavior ($r = -.180, p < .01$). That is, adolescents who practiced safe sexual activity were involved in less risky sexual activity.

Research Q-1 regarding condom use: Does adolescents' condom use vary by the study variables? Table 4.12 and Tables 4.13 answer this research question.

Table 4.12: Independent Samples t- test of Continuous Predictors across Safe and Unsafe Adolescents (N = 237)

Variables	Condom use	N	Mean	S.dev.	T	P
Age	Safe	134	18.10	1.20	-1.90	.059
	Unsafe	103	18.42	1.32		
Religiosity	Safe	134	34.31	4.64	4.48	.000
	Unsafe	103	30.90	6.59		
Self-esteem	Safe	134	31.99	4.47	3.90	.000
	Unsafe	103	29.52	5.24		
Substances use	Safe	134	4.03	5.38	-4.06	.000
	Unsafe	103	7.83	8.22		
Family SES	Safe	134	3.18	1.39	.428	.669
	Unsafe	103	3.10	1.42		
Parental monitoring	Safe	134	20.85	4.46	7.34	.000
	Unsafe	103	16.46	4.70		
Family cohesion	Safe	134	30.19	3.39	8.38	.000
	Unsafe	103	19.86	3.51		
Neighborhood disorganization	Safe	134	10.99	7.85	-2.43	.016
	Unsafe	103	13.88	9.93		
Neighborhood collective efficacy	Safe	134	28.67	4.55	5.83	.000
	Unsafe	103	25.01	5.10		

Independent Samples t-test was conducted to examine the continuous predictor variables mean differences across safe and unsafe adolescents. The result revealed that the mean age of the two groups was marginally significant ($t(235) = -1.90, p < .059$). The result in fact indicates that younger adolescents were safe as compared to older adolescents in their last sexual encounter. On the other hand, there was a statistically significant religiosity mean difference across safe and unsafe adolescents, ($t(235) = 4.48, p = .000$). From this result, it is possible to say that safe youth demonstrated more religiosity than their counterparts. This finding is consistent to the existing literature which confirms the protective roles of religious activities from risk. Similarly, self-esteem mean difference was statistically significant across the two groups ($t(235) = 3.90, p = .000$). The figure shows that adolescents with high self-esteem used condoms better than adolescents of their counterparts in their last sexual intercourse.

As depicted on Table 4.12, there was a statistically significant substance use mean difference with respect to safe and unsafe youth ($t(235) = -4.06, p = .000$). The result revealed that unsafe adolescents consumed more substances than their counterparts. The analysis did not get any significant mean difference across unsafe and safe youth in relation to Family Socio-Economic Status ($t(235) = .428, p > .669$).

The mean parental monitoring was significantly different between safe and unsafe adolescents ($t(235) = 7.34, p = .000$) which indicates as expected adolescents who received more parental monitoring were safe as compared to adolescents who received less parental monitoring. Similarly, statistically significant mean difference was observed on family cohesion between safe youth and unsafe youth ($t(235) = 8.38, p = .000$). This also informs that safe adolescents came from more cohesive families than unsafe adolescents. Interestingly, consistent to the existing literature, there was a statistically significant neighborhood mean difference

between safe youth and unsafe youth ($t(235) = -2.43, p < .016$). This indicates safe youth came from less disorganized neighborhoods as compared to their counter parts. As expected, mean neighborhood collective efficacy was statistically different across safe and unsafe youth ($t(235) = 5.83, p = .000$). This tells that safe youth came from neighborhoods which were characterized by more collective efficacy than their counter parts. Thus, neighborhood collective efficacy can be regarded as a protective factor.

Table 4.13: Bivariate Logistic Regression of the Study Variables for Sexually Active Youth With Respect To Condom Use (N = 237)

Variables	B	SE	Wald	Df	Sig	Ex(β)
Gender (1)	.118	.288	.167	1	.683	1.125
Age	-.198	.105	3.536	1	.060	.820
Self-esteem	.106	.029	13.484	1	.000	1.112
Religiosity	.111	.028	17.869	1	.000	1.117
Substances use	-.084	.022	15.103	1	.000	.919
Family structure			11.955	5	.035	
Biological mother and step father	-1.569	.720	4.744	1	.029	.208
Biological father and step mother	.377	1.173	.103	1	.748	1.458
Biological mother only	-.786	.414	3.598	1	.058	.456
Biological father only	-1.820	1.173	2.407	1	.121	.162
Other living arrangements	-.748	.303	6.059	1	.014	.474
Father education			3.534	5	.618	
Less than grade nine	-.524	.397	1.740	1	.187	.592
High School incomplete	-.160	.496	.103	1	.748	.853
High School complete	-.536	.440	1.484	1	.223	.585

College/Technical & Vocational student	.480	.881	.296	1	.586	1.615
College/Technical & vocational diploma	-.465	.514	.817	1	.366	.628
Mother education			4.743	5	.448	
Less than grade nine	.346	.451	.587	1	.444	1.413
High School incomplete	.636	.580	1.202	1	.273	1.889
High School complete	-.134	.506	.070	1	.792	.875
College/Technical and Vocational student	.000	.673	.000	1	1.000	1.000
College/Technical & Vocational diploma	.875	.671	1.703	1	.192	2.400
Family SES	.040	.094	.185	1	.667	1.041
Parental monitoring	.203	.033	37.29	1	.000	1.236
Family cohesion	1.232	.223	30.45	1	.000	3.430
Neighborhood Disorganization	-.061	.028	4.620	1	.032	.941
Neighborhood Collective efficacy	.164	.032	25.940	1	.000	1.178

Bivariate logistic regression was conducted to examine the relationship between each predictor variables with the dependent variable (condom use). The results were depicted on the above table. Gender was not significantly associated with condom use (Wald = .167, $p > .683$). On the other hand, there was marginally significant association between age and condom use (Wald = 3.536, $p < .06$). The odds ratio $Ex(\beta) = .820$ may show that an increase in age was .820 times less likely to use condoms. That is, an increase in age decreased the odds of adolescents' condom

use by a factor of .820 which illustrated older adolescents were .820 times less likely to use condoms than younger adolescents in their last sexual intercourse. From the same table, there was a statistically significant association between self-esteem and condom use (Wald = 13.484, $p = .000$). The odds ratio $Ex(\beta) = 1.112$ indicates that an increase in self-esteem increased the odds of adolescents' condom use 1.112 times more likely. Religiosity (Wald = 17.869, $p = .000$) was significantly associated with condom use which distinguishes safe youth and unsafe youth. The odds ratio $Ex(\beta) = 1.117$ reveals that an increase in religiosity increased the odds of adolescents' condom use 1.117 times more likely than non condom use. That is, religious adolescents used condom 1.117 times more likely than less religious adolescents. Contrary to the immediate above results, substance use (Wald = 15.103, $p = .000$) was statistically significant in distinguishing safe and unsafe youth. The odds ratio .919 indicates that a unit increase in substance use decreased .919 times the odds of adolescents' condom use. That is, safe youth were .919 times less likely to consume substances than their counter parts.

In relation to family structure, the reference category is both biological parents. Thus, the results were compared with the reference category. In the analysis, adolescents who live with biological mother and step father were .280 times less likely use condoms as compared to adolescents of both biological parents. Similarly, adolescents with other living arrangements were .474 times less likely use condoms than both biological parents. On the other hand, adolescent with biological mother only (Wald = 3.598, $p < .058$) was marginally significant. As a result, adolescents with biological mother only were .456 times less likely use condoms than adolescents of both biological parents. The rest were not statistically significant. Regarding parental educational levels, no significant association existed between each parental education level category and the likelihood of condom use. In this study, parental education levels cannot

distinguish safe and unsafe youth. Thus, both adolescents in each parental education category use condoms at the same rate.

This study did not get any statistically significant association between family socioeconomic status and the likelihood of adolescents' condom use (Wald = .185, $P > .667$). On the other hand, other parental factors showed statistically significant associations with the likelihood of adolescents' condom use. For instance, parental monitoring (Wald = 37.29, $p = .000$) was significantly distinguishing safe and unsafe adolescents in their last sexual encounter. The odds ratio $Ex(\beta) = 1.226$ revealed that a unit increase in parental monitoring increased 1.226 times more likely to use condom in their last sexual intercourse. Similarly, family cohesion (Wald = 30.45, $p = .000$) was statistically significant in identifying safe and unsafe youth. The odds ratio $Ex(\beta) = 3.430$ revealed that an increase in family cohesion increase 3.430 times more likely to use condoms in their last sexual intercourse.

Regarding neighborhood factors, there were statistically significant association between each neighborhood factors and the likelihood of adolescents' condom use. That is, neighborhood disorganization (Wald = 4.60, $p < .032$) was statistically significant in distinguishing safe and unsafe adolescents. The odds ratio shows that adolescents who live in more disorganized neighborhoods were .941 times less likely used condoms than adolescents who live in less disorganized neighborhoods. Similarly, neighborhood collective efficacy (Wald = 25.940, $p = .000$) was statistically significant in identifying condom use and non-condom use adolescents in their last sexual intercourse. The odds ratio indicates that adolescents who live in neighborhoods with more collective efficacy were 1.178 times more likely to use condoms than their counter parts.

4. 3. Multivariate Analyses

4. 3. 1. Multivariate MANOVA

One way between subjects MANOVA was conducted on two moderately and significantly correlated dependent variables; risky sexual behavior and protective sexual behavior. Separate MANOVAs were conducted for each categorical independent variable; gender, family structure, fathers' education and mothers' education. After checking both univariate and multivariate assumptions, the analyses were done. To test gender differences on the composite dependent sexual behavior, Hotelling's T-test was conducted. The result of the multivariate Hotelling's T-test shows that there existed non-significant gender differences on the two sexual behaviors, ($F(2,234) = .198, p > .821$). This informs us that there were no reliable differences between the two gender groups on the composite dependent sexual behaviors which revealed gender was not differentially distributed on the two sexual behaviors.

Regarding family structure, originally, there were six categories but to balance the proportions of the categories, the six categories were collapsed (transformed) into three categories. The first category was adolescents' whose living arrangements were both biological parents coded as 1, biological mother and step father, biological father and step mother, biological mother only and biological father only were coded 2 and the last category was other living arrangements coded as 3. The analysis was conducted among the transformed three categories of family structure to examine whether or not there existed mean difference on the composite sexual behaviors across the groups. In the analysis, a non-significant Boxes M test ($P > .378$) showed us to use Wilk's lambda to assess the multivariate effect. As a result, using $F(4,468) = 2.122, p < .077$ showed that family structure marginally and significantly affected the

combined sexual behavior with partial eta square (η^2) = .018. Thus, 1.8% of the variance in combined dependent (sexual behavior) variate was attributed by family structure.

Besides, the post hoc (Scheffe's post hoc) test was performed for both sexual behaviors; however, statistical significance was achieved for only protective sexual behavior. The result revealed that adolescents who live with both biological parents (Mean = 6.495) had significant higher protective sexual behavior than adolescents who live with other living arrangements (Mean = 5.506, $p < .015$).

Similarly, there was a marginal significant mean protective sexual behavior difference between adolescents who live with both biological parents (Mean = 6.495) and adolescents who live with combination of single biological parents (Mean = 5.571, $p < .053$). The finding indicates that adolescents who live with both biological parents demonstrated a bit higher protective sexual behavior than their counter parts. This differential effect in favor of adolescents who live with both biological parents on protective sexual behavior was responsible for the statistically significant multivariate effect.

Finally, univariate ANOVA was conducted on each dependent measure separately to determine the locus of the statistically significant multivariate effect. Thus, family structure significantly affected protective sexual behavior $F(2, 234) = 3.620$, $p < .028$, partial eta square ($\eta^2 = .030$) while family structure did not have a significant effect on risky sexual behavior, $F(2, 234) = .301$, $p > .741$. Thus, 3% of the variance in protective sexual behavior was accounted for by family structure. That is, differences between the three family structure groups on protective sexual behavior attributed to the multivariate effect.

Besides, one way MANOVAs were conducted on fathers' educational levels and mothers' educational levels separately.

The results confirmed that there were no significant mean differences on the composite sexual behavior. Moreover, univariate ANOVA confirmed that fathers' education did not significantly affect both protective and risky sexual behaviors (For protective sexual behavior, $F(2,234) = 1.520, p > .221$; for risky sexual behavior, $F(2,234) = .445, p > .642$). Similarly, univariate ANOVA confirmed that mothers' education did not significantly affect both protective and risky sexual behavior (for protective sexual behavior, $F(2,234) = .114, p > .892$; for risky sexual behavior, $F(2,234) = .920, p > .400$). These analyses answer research question number one regarding gender, family structure and parental education level.

4. 3. 2. Hierarchical Regression Analysis

Research Q3a, b, 4a, b and 5a were answered by Table 4.14, Table 4.15, Table 4.16, and Table 4.17 for protective sexual behavior, risky sexual behavior, condom use, and first coital initiation respectively.

Table 4.14: Hierarchical Linear Regression of the Study Variables for Sexual Active Youth in Relation to Protective Sexual Behavior (N = 237)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	.119(.020)	.377(.062)	.341(.056)	.873(.144)*	.232(.038)	.240(.039)
Age	-.288(-.131)*	-.262(-.120)*	-.213(-.097)	-.193(-.088)	-.102(-.047)	-.100(-.045)
Religiosity		.098(.204)**	.094(.195)**	.075(.156)**	.033(.068)*	.033(.069)*
Self-esteem		.100 (.178)**	.097(.172)**	.103(.183)**	.031(.055)	.031(.055)
Substance use		-.100(-.251)**	-.106(-.267)**	-.054(-.135)*	-.046(-.116)**	-.048(-.121)**
Family structure			.661(.119)*	.565(.101)*	-.044(-.008)	-.046(-.008)
Father education			.284(.038)	.445(.060)	-.111(-.015)	-.131(-.018)
Mother education			-.773(-.084)	-.850(-.092)	-.022(-.002)	-.022(-.002)

Family SES			.227(.114)	.140(.070)	.000(.000)	.005(.003)
Parental monitoring				.192(.350)**	.007(.012)	.006(.011)
Family cohesion					.342(.759)**	.346(.768)**
Neighborhood disorganization						.007(.013)
Neighborhood collective efficacy						-.009(-.016)
R ²	.019	.218	.250	.340	.713	.714
▲ R ²	.019	.199**	.032**	.097*	.373**	.001
F	2.295	12.891**	8.401**	11.665**	50.854**	42.723**

*p<.05 and marginally significant, ** p<.01

Note: Numbers inside the parentheses indicate standardized beta weights and outside unstandardized beta weights

Table 4.14 displays summary results of the hierarchical regression analysis predicting protective sexual behavior for sexually active youth (non-virgin youth). In each analysis, the F-value indicated that the model fits the data well. Blocks of predictor variables were entered in the order of (1) individual controls; age and gender in Model 1, (2) religiosity, self-esteem, and substance use entered in Model 2 (3) family structure, father education, mother education, and families SES in Model 3 (4) parental monitoring in Model 4 (5) family cohesion in Model 5 (6) neighborhood disorganization and neighborhood collective efficacy in Model 6. The idea is to check the net effects of blocks of predictor variables on protective sexual behavior. Individual controls were entered into the regression analysis in the first step to control for any confounding effects of gender and age. Thus, within each model, the predictor variables were discussed by relative importance. The analyses were done for each model separately. Similar to individual controls, family demographic variables were entered before parental monitoring and family cohesion to control for any confounding effects of family structure, parental education (Fathers' educational levels and Mothers' Educational levels) and family SES.

Model 1 showed that only age significantly predicted adolescents' protective sexual behavior ($\beta = -.131$, $p < .044$) which confirms increase in age was related to decrease in protective sexual behavior of adolescents. That is, older adolescents were lenient in using protective mechanisms in their sexual encounter as compared to younger adolescents. On the contrary, gender has no role in predicting adolescents' protective sexual behavior ($\beta = .032$, $p > .629$). Thus, the variance accounted for protective sexual behavior by age and gender was 1.9%.

According to results displayed on Model 2, when religiosity, self-esteem, and substance use were added, 19.9 % of the variance in protective sexual behavior was accounted for by religiosity, self esteem and substance use which highly increased the model's explanatory power.

In this model, religiosity, self esteem, and substance use significantly predicted adolescents' protective sexual behavior (age, $\beta = -.120$, $p < .043$; religiosity, $\beta = .204$, $p < .001$; self esteem $\beta = .178$, $p < .005$ and substances use $\beta = -.251$, $p = .000$). Age remained significant in Model 2. In this model, religiosity significantly predicted protective sexual behavior which is the second strongest next to substance use. That is, youth or adolescents who attended religious activities used more protective mechanisms in their sexual intercourse as compared to their counter parts. As indicated above, self-esteem significantly predicted adolescents' protective sexual behavior positively. The result revealed that an increase in self esteem increased adolescents' protective sexual behavior. That is, adolescents who had high self-esteem utilized protective mechanisms in their sexual encounter as compared to adolescents who had low self esteem. Substance use was the strongest predictor of protective sexual behavior as indicated above. Adolescents who consumed substances were lenient to use protective mechanisms in their sexual encounter. Taken together, the predictors in this model accounted for 21.8% of the variance in protective sexual behavior.

When familial level demographics were added in model 3, only 25% of the variance in protective sexual activity was accounted for thus, slight increase in the model's explanatory power. In this model, the significant individual factors remained significant except age was marginally significant. But only family structure was a significant predictor of protective sexual behavior among family demographic variables ($\beta = .119$, $p < .049$). That is, adolescents who live with both biological parents were more likely to use protective mechanisms than adolescents who live in another family configurations (both biological parents =1, else = 0). The change in R^2 was .032. That is, family demographic variables contributed 3.2% of the variance for

protective sexual behavior. However, substance use was still the strongest important significant predictor variable followed by religiosity, self esteem, family structure and age.

Thus, family structure was one of the least important significant predictor variables in this model as compared to other variables, but better than age. However, father education, mother's education and family SES were not significant predictors of adolescents' protective sexual behavior showing that adolescents' protective sexual behavior did not rely on parental educational level categories (for Father's Education, university degree and above = 1, else = 0; Mother's Education, University degree or above = 1, else = 0) and family SES.

In Model 4, which added parental monitoring significantly improved the explanatory power of the model which increased the R^2 from .250 to .340. In other words, change in R^2 was .097. Hence, parental monitoring only contributed for the model 9.7% of the variance for protective sexual behavior. In this model, there were differences among the variables predicting power as compared to the above models. For instance, gender significantly predicted protective sexual behavior ($\beta = .144$, $p < .014$) in model 4 but it was not significant in Model 1, Model 2, and Model 3. Besides, in the analysis of MANOVA to examine gender differences on the composite sexual behavior, there was no association between gender and protective sexual behavior. The result in multivariate analysis showed that gender was a suppressor variable because its effect was evident after parental monitoring was added to the model. The other individual level variables such as religiosity, self esteem and substance use remained significant in Model 4. But family structure was marginally statistically significant ($\beta = .101$, $p < .073$) showing slight decrease. Family Socio-Economic Status did not significantly predict protective sexual behavior ($\beta = .070$, $p > .362$). That is, adolescents who reside in whatever level of family SES families were involved at similar rate in protective sexual behavior. Regarding parental monitoring, it

significantly predicted adolescents' protective sexual behavior ($\beta = .350, p = .000$). In this model, parental monitoring had the highest beta weight as compared to other variables. This shows parental monitoring was the strongest predictor of protective sexual behavior. As indicated above, adolescents who received more parental monitoring were more likely to be involved in protective sexual behavior than those adolescents who received less parental monitoring. Consistent with the literature, parental monitoring is considered as a protective factor. Taken together, 34% of the variance in protective sex behavior was accounted for.

Here came Model 5 which shows the highest variance accounted for protective sexual behavior. When family cohesion was added to the model, there was a dramatic increase in the variance of protective sexual behavior that was accounted for by only family cohesion. That is, adding family cohesion in the model highly and significantly improved the explanatory power of the model by increasing R^2 from .340 to .713. This model accounted for 71.3% of the variance in protective sexual behavior. On the same vein, by adding family cohesion in the model, 37.3% of the variance was accounted for protective sexual behavior. Almost beyond half of the variance in protective sexual behavior was accounted for by family cohesion. In this model, except substance use, the other variables failed to continue to be significant. Family cohesion was the strongest significant predictor of protective sexual behavior out of the other predictor variables ($\beta = .759, p = .000$). This indicates that adolescents in more cohesive family settings were involving in protective sexual behavior than those adolescents who were in less cohesive family settings.

In Model 6, adding neighborhood disorganization and neighborhood collective efficacy did not increase the models explanatory power. The variance accounted for protective sexual behavior was 71.4% which is only an increase of .001. That is, the R^2 change was not statistically

significant ($p > .869$). Only 0.1% of the variance was accounted for protective sexual behavior by neighborhood factors. In this model, only substance use ($\beta = -.121$, $p < .006$) and religiosity marginally ($\beta = .069$, $p < .086$) remained significant and family cohesion ($\beta = .768$, $p = .000$) significantly predicted protective sexual behavior. At this step, it is unwise to say that neighborhood factors did not predict protective sexual behavior because of the confounding nature of familial factors and individual factors. Thus, neighborhood factors might have significant direct effect if they entered in the first model. This was shown in the next analysis of mediating effects that neighborhood factors had direct effects on protective sexual behavior.

Table 4.15: Hierarchical Linear Regression Analysis of the Study Variables for Sexually Active Youth by Risky Sexual Behavior (N = 237)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	.171(.024)	-.098(-.014)	-.149(-.021)	-.239(-.034)	-.223(-.032)
Age	.229(.090)	.217(.085)	.234(.092)	.223(.088)	.230(.090)
Religiosity		-.078(-.140)*	-.077(-.138)*	-.069(-.125)*	-.069(-.124)*
Self-esteem		.033(.052)	.028(.043)	.031(.048)	.030(.046)
Substance use		.133(.246)**	.114(.249)**	.101(.220)**	.094(.205)**
Family structure			.422(.065)	.482(.075)	.476(.074)
Father education			.704(.082)	.699(.082)	.637(.074)
Mother education			1.009(.095)	.977(.092)	.968(.091)
Family SES			-.231(-.101)	-.202(-.088)	-.185(-.080)
Parental monitoring				-.036(-.056)	-.037(-.057)
Family cohesion					-.009(-.018)
Neighborhood Disorganization					.027(.041)
Neighborhood collective efficacy					-.022(-.035)
R ²	.009	.098	.114	.119	.121
▲ R ²	.009	.088**	.016	.005	.002
F	1.089	4.994**	3.241**	2.761**	2.371*

*p<.05 and marginally significant, **p<.01

Note: Numbers inside the parentheses indicate standardized beta weights and outside unstandardized beta weights

Table 4.15 shows the hierarchical regression analysis of the study variables on risky sexual behavior for sexually active youth. The analysis was done within each model. If we observe model 1, none of individual controls predicted risky sexual behavior significantly. In this model 0.9% of the variance in risky sexual behavior was accounted for.

Moving to model 2, when religiosity, self-esteem and substance use were added, 8.8% of the variance in risky sexual behavior was accounted for, thus, moderately increasing the model's explanatory power. In this model, only two individual level factors significantly predicted risky sexual behavior. That is, religiosity ($\beta = -.140, p < .041$) significantly predicted risky sexual behavior. This confirms that adolescents who attend religious activities were less likely involved in risky sexual activity as compared to their counterparts. On the contrary, substance use ($\beta = .246, p = .000$) positively and significantly predicted risky sexual behavior. This is, clearly indicating that adolescents who used substances were more likely involved in unsafe (risky) sexual activity as compared to those adolescents who used almost no substances or less substances. The rest did not show any significant impact on adolescents' risky sexual behavior. Over all, the predictors in this model accounted for 9.8% of the variance in risky sexual behavior.

When familial level demographic variables (family structure, fathers' education, mothers' education, and family SES) were added in model 3, only 11.4% of the variance in risky sexual activity was accounted for. Taking separately, 1.6% of the variance was accounted for risky sexual behavior by parental demographic variables which showed little improvement in the model's explanatory power. In this model, significant individual level variables remained significant. What is important in hierarchical regression is the variance shared (accounted for) better than significant beta weights. The variables relative importance can be seen through the

change in variance that is accounted for the dependent variables by adding block of variables in the model.

Similarly, when parental monitoring and family cohesion were added in model 4, only .5% of the variance in risky sexual activity was accounted for which had a slight increase in the model's explanatory power albeit the added variables did not significantly predict risky sexual activity. In this model, religiosity remained significant though marginally and substance use remained significant. Taken together, the predictors in this model accounted for 11.9% of the variances in risky sexual behavior.

When neighborhood disorganization and neighborhood collective efficacy were added in model 5, 12.1% of the variance in risky sexual activity was explained. Therefore, total variance that is accounted for risky sexual activity by all of the study variables was 12.1% while 87.9% of the variance in risky sexual behavior was accounted for by other than these variables. Among the variables, substance use was the leading significant predictor of adolescents' risky sexual behavior from models 2-5 followed by religiosity. In fact, familial level variables such as parental monitoring and family cohesion were negatively and significantly correlated with risky sexual behavior in the bivariate correlation section. I guess that individual factors like substance use might confound their effects on adolescent risky sexual behavior. Thus, this study extends further analyses to examine substance use mediated both parental monitoring and family cohesion in predicting risky sexual behavior. Moreover, Sobel's Z-test was used to test mediation in the link between neighborhood factors and risky sexual behavior using family cohesion and parental monitoring. The analyses were presented on mediating effect section.

Table 4.16: Hierarchical Logistic Regression of the Study Variables for Sexually Active Youth by Condom Use Status (N = 237)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	.163(1.177)	.086(1.090)	.127(1.135)	-.489(.613)	-.832(.435)	-1.014(.361)
Age	-.179(.836)*	-.194(.823)*	-.149(.862)	-.165(.848)	-.806(.447)*	-.776(.460)*
Religiosity		.085(1.089)**	.084(1.088)**	.080(1.083)*	.227(1.254)*	.228(1.257)*
Self-esteem		.071(1.073)*	.072(1.075)*	.094(1.099)**	.021(1.021)	.042(1.043)
Substance use		-.062(.939)**	-.065(.937)**	-.018(.983)	-.085(.918)	-.097(.911)
Family structure (1)			.797(2.220)**	.789(2.201)*	.098(1.103)	.093(1.097)
Father education (1)			.268(1.307)	.539(1.714)	.572(1.772)	.902(2.466)
Mother education (1)			-.409(.664)	-.694(.500)	3.483(32.550)*	3.785(44.026)*
Family SES			.079(1.082)	-.017(.983)	-1.151(.316)*	-1.156(.315)*
Parental monitoring				.220(1.246)**	.173(1.188)	.185(1.203)
Family cohesion					1.995(7.354)**	.028(7.601)**
Neighborhood disor						-.051(.950)
Neighborhood collective efficacy						.101(1.106)
Nagelkerke R ²	.019	.210	.254	.403	.935	.938
▲ R ²	.019	.191	.044	.149	.532	.003
Goodness of fit	7.634	7.748	9.567	2.780	.773	.671

*p<.05 and marginally significant, **p<.01

Note: Numbers inside the parentheses indicate odds ratios and outside unstandardized beta weights

As indicated on Table 4.16 above, the analyses were done based on each block. The relative importance of blocks of variables was examined.

In Model 1, individual controls age and gender were entered. In this model, age marginally and significantly predicted the likelihood of condom use (Wald = 2.923, $P < .087$). The odds ratio .836 shows an increase in age was accompanied with .836 times less likely to use condoms. The model classified 58.6% of the cases to the dependent variable. Gender did not significantly predict the odds of adolescents' condom use (Wald = .163, $p > .577$). The goodness of fit was $\chi^2 = 7.634$, $p > .366$ which showed the adequacy of the model. The model with gender and age as the two explanatory variables explained 1.9% of the variation in condom use status.

In Model 2, religiosity, self esteem and substance use were added. The results indicated that religiosity (Wald = 8.999, $p < .003$) significantly predicted the odds of adolescents' condom use. The odds ratio was 1.089 which shows that adolescents who attended religious activities were 1.089 times more likely to use condoms than adolescents of their counter parts in their last sexual intercourse. Similarly, self esteem (Wald = 4.842, $p < .028$) significantly predicted the odds of adolescents' condom use with odds ratio of 1.073. This result showed adolescents with high self esteem were 1.073 times more likely to use condoms than those adolescents with low self esteem in their last sexual encounter. Contrary to self esteem and religiosity, substance use adversely and significantly predicted the odds of adolescents' condom use (Wald = 7.885, $p < .005$). As indicated on the table above, the odds ratio was .939 which indicated more substance user adolescents were .939 times less likely to use condoms than their counter parts in their last sexual intercourse. In this model, marginally significant age continued to be marginally significant. The model correctly classified 67.5% of the cases to the dependent variable.

Nagelkerke R^2 change was .191 which shows 19.1% of the variance in condom use was accounted for by religiosity, self esteem and substance use. This substantially increased the model's explanatory power. The model fits the data well (goodness of fit of 7.748 $p > .458$). Taken together, the predictors in this model contributed the variances of 21% for condoms use.

When familial level demographics were added in model 3, 25.4% of the variance in condom use was accounted for, slightly increasing the model's explanatory power. In this model, significant individual factors in model 2 remained significant except age. Among familial level demographics, only family structure (Wald = 6.831, $p < .009$) significantly predicted the likelihood of adolescents' condom use. The odds ratio 2.220 indicates that adolescents who live with both biological parents were 2.220 times more likely to use condoms than other family configurations (both biological parents = 1, else = 0 (reference category); condom use = 1, non-condom use = 0) in their last sexual intercourse. Family SES, Fathers' educational and Mothers' educational levels did not significantly predict the odds of adolescents' condom use (Family SES, Wald = .285, $p > .594$; fathers' education, Wald = 257, $p > .612$; mothers' education, Wald = .461, $p > .497$). In this case, the model correctly classified 71.7% of the cases to the dependent variable. The change in Nagelkerke R^2 was .044 which informs that only 4.4% of the variance in condom use was accounted for by familial level demographic variables. Goodness of fit of the model was a chi-square of 9.567, $p > .254$) which showed that the model is adequate for the data.

Model 4 which added parental monitoring substantially and significantly improved the explanatory power of the model, increasing the variance from .254 to .403. In other words, this model accounted for 40.3% of the variance in condom use. In this model, self esteem, religiosity, and family structure remained to be significant predictors of the odds of adolescents' condom use. Parental monitoring significantly predicted the odds of adolescents' condom use (Wald =

28.664, $p = .000$). The odds ratio 1.246 confirmed that a unit increase in parental monitoring increased 1.246 times greater likelihood of adolescents' condom use. The model classified correctly almost 75.9% of the cases to the dependent variable. Goodness of fit of the model was a chi-square of 2.780, $p > .947$ which showed the data's best fit to the model.

When family cohesion was added to Model 5, there was substantial improvement in the model's explanatory power by increasing the variance from .430 to .935. In other words, 93.5% of the variance in condom use was accounted for. Only family cohesion contributed about 50.5% for the variance of adolescents' condom use in their last sexual intercourse. The model correctly classified 97.5% of the cases to adolescents' condom use. Age and mothers' education were marginally significant (age, Wald = 3.624, $p < .057$; mothers' education, Wald = 3.053, $p < .081$) while religiosity, and family SES were significant in this model (Family SES, Wald = 4.727, $p < .030$; religiosity, Wald = 5.638, $p < .018$). Family SES was not significant in bivariate model and in the previous models but it was significant in Model 5 after family cohesion was added which showed the suppressor effect since its effect is evident after the addition of family cohesion. In this study, family SES was a suppressor variable. Finally, family cohesion significantly predicted the odds of adolescents' condom use (Wald = 14.385, $p = .000$). A unit increase in family cohesion increased 7.354 times more likely the odds of adolescents' condom use.

When neighborhood disorganization and neighborhood collective efficacy were added to model 6, none of neighborhood characteristics predicted the likelihood of condom use (Neighborhood disorganization (Wald = .219, $p > .640$) and neighborhood collective efficacy (Wald = 1.007, $p > .316$) did not significantly predict the odds of adolescents' condom use. In this model, age and mothers' education were marginally significant (age, Wald = 3.289, $p < .070$;

mothers' education, Wald = 3.169, $p < .075$) and family cohesion and family SES remained significant. By adding neighborhood factors, slightly increased the model's explanatory power which increased from .935 to .938. Thus, 93.8 % of the variance in condom use was accounted for by the study variables. Neighborhood factors contributed only .3% of the variance in condom use. Neighborhood factors did not directly predict adolescents' condom use since these factors were confounded by family factors. However, based on the significant bivariate logistic regression results, I believe that neighborhood factors had direct effects on the odds of adolescents' condom use if they were entered in the first model. Thus, concluding that neighborhood factors did not have direct effect on the odds of adolescents' condom use is too early at this stage. On the other hand, there is a need to investigate whether or not family cohesion and parental monitoring mediated in the relationship between neighborhood factors and the odds of adolescents' condom use. For these purposes, the study tried to examine the mediating roles of family cohesion and parental monitoring in the relationships between neighborhood factors and adolescent condom use in the next section. To do so, neighborhood factors were entered together with demographic variables in the first model. Thus, this analysis method informs us that neighborhood factors might have direct effects on adolescents' condom use.

Table 4.17: Hierarchical Logistic Regression Analysis of the Study Variables by Sexual Initiation for the Whole Sample (N = 962)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	1.312(3.713)**	.999(2.715)**	1.007(2.736)**	.942(2.565)**	.956(2.601)**
Age	.448(1.565)**	.369(1.446)**	.347(1.412)**	.345(1.412)**	.341(1.407)**
Self esteem		-.022(.978)	-.121(.322)	-.015(.985)	-.012(.988)
Religiosity		-.002(.998)	.000(.999)	.001(1.001)	.003(1.003)
Substance use		.315(1.370)**	.317(1.373)**	.302(1.353)**	.301(1.351)**
Family structure(1)			.106(1.112)	.029(1.029)	.036(1.037)
Family SES			.041(1.042)	.065(1.067)	.066(1.068)
Fathers' education(1)			.363(1.437)	.397(1.487)	.389(1.476)
Mothers' education(1)			.053(1.055)	.061(1.063)	.090(1.094)
Parental monitoring				-.033(.968)	-.032(.968)
Family cohesion				-.010(.990)	.001(1.001)
Neighborhood disorg					.009(1.009)
Neighborhood col.effi					-.045(.956)*
Nagelkerke R ²	.182	.392	.395	.398	.404
▲R ²		.210	.003	.003	.006
Goodness of fit	3.834	2.123	4.646	1.658	5.468

*p<.05 and marginally significant, **p<.001

Note: Numbers inside the parentheses indicate odds ratios and outside unstandardized beta weights

Table 4.17 indicates the relative importance of the predictor variables on the odds of adolescents' coital initiation. Similar to the other models indicated elsewhere, I added individual controls, gender and age in Model 1. In this model, gender significantly predicted the odds of adolescents' engagement in sexual activity ($\beta = 1.312, p = .000$). Perhaps, the odds ratio 3.713 indicated that males initiate first coital intercourse 3.713 times more likely than females (Male = 1, Female = 0; ever had sex = 1, ever not had sex = 0; reference category female). This further strengthened the bivariate result that more females were virgins than males. Besides, age significantly predicted the odds of adolescents' engagement in sexual activity ($\beta = .448, p = .000$). The odds ratio 1.565 showed that a unit increase in age was related to an increase to 1.567 times more likely engage in sexual activity. In other words, older adolescents were 1.565 times more likely to be engaged in sexual activity than younger adolescents. This model correctly classified 76.8% of the cases to the dependent variable. In this model, 18.2 % of the variance in sexual activity was accounted for by gender and age.

When self esteem, religiosity and substance use were added to Model 2, 39.2 % of the variance in sexual activity was accounted for. Self esteem, religiosity and substance use contributed 21% of the variance in sexual initiation. Only substance use significantly predicted the odds of adolescents' engagement in sex ($\beta = .315, p = .000$). For a unit increase in substance use, there is 1.370 times greater likelihood of initiating sexual intercourse. Significant variables in Model 1 remained significant in this model. However, self esteem and religiosity did not significantly predict the odds of adolescents' engagement in sex. The model correctly classified 83.5% of the cases to the dependent variable. The goodness of fit was 2.123, $p > .977$ which showed that the best fit of the model to the data.

When family demographic variables were added to the model, 39.5% of the variance in sexual activity was accounted for though none of these variables significantly predicted the odds of adolescents' engagement in sexual initiation. The model correctly classified 83.8% of the cases to sexual initiation (activity). Family demographics explained .3% of the variance in sexual activity which is very tiny portion. In this model, all significant individual factors remained significant.

When parental monitoring and family cohesion were added in Model 4, 39.8% of the variance in sexual activity was accounted for. Only .3% of the variance which is a small portion in sexual activity was accounted for by parental monitoring and family cohesion. The model correctly classified 84.1% of the cases to the dependent variable. Goodness of fit of the model was 1.658, $p > .990$ which showed its adequacy. In this model, all significant variables in the preceding models remained significant. All familial level variables were not statistically significant in this analysis; the reason might be that individual factors might confound their role. This will be inspected in the next model which analyzed the mediating roles of familial and individual factors in the relationship between neighborhood level factors and adolescent coital initiation.

Model 5 added neighborhood disorganization and neighborhood collective efficacy, only neighborhood collective efficacy significantly predicted the odds of adolescents' sexual debut ($\beta = -.045$, $p < .032$). The odds ratio .956 indicated that a unit increase in collective efficacy decreased .956 times more likely the odds of adolescents' coital initiation. In this model, only 40.4% of the variance in adolescents' sexual debut was accounted for. The neighborhood factors explained .6% of the variance in adolescents' sexual initiation. All significant individual factors in the previous models remained significant in this model. The model correctly classified 83.9%

of the cases to the dependent variable which is a small decrease in model 4. Neighborhood disorganization was not significant in this model because other familial and individual level variables confounded its effect on adolescents' first coital initiation. The direct effects of neighborhood factors can also be inspected in the upcoming section by entering them in the first model.

Mediating Effects

The following section tried to answer the research questions in relation to mediation. Each analysis was done by explicitly considering every dependent variable. On top of each analysis, the research questions were presented. Here the mediations might be full mediation or partial mediation. To employ mediation effects, this study used Baron and Kenny's (1986) criteria and Sobel's test for continuous sexual behaviors. Besides, hierarchical regression was employed by hierarchically entering blocks of variables based on their presumed causal priority for all dependent variables. There are four possible requirements for mediation to be established (Baron & Kenny, 1986; Preacher & Leonardelli, 2006): (1) The independent variable must be significantly related to the mediator; (2) The independent variable, without the mediator, must be significantly related to the dependent variable; (3) The mediator significantly affects the dependent variable; (4) The influence of the independent variable on the dependent variable must be reduced or non-significant when the mediator is added to the model (Baron & Kenny, 1986; Preacher & Leonardelli, 2006). In addition, interaction effects were analyzed in the next sections.

Do familial factors (parental monitoring and family cohesion) mediate in the linkages between neighborhood factors and condom use?

The following regression model answered this research question.

Table 4.18: Hierarchical Logistic Regression for Sexually Active Youth by Condom Use Status Which Show Family Cohesion and Parental Monitoring as Mediating Factors

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	-.399(.671)	.234(1.264)	.656(1.927)	1.014(2.758)	.805(2.236)
Age	-.191(.826)*	-.195(.823)	-.576(.562)	-.776(.460)*	-.1.203(0.300)*
Religiosity				.228(1.257)*	.271(1.311)*
Self-esteem				.042(1.043)	.079(1.082)
Substance use				-.097(.907)	-.075(.927)
Family structure	.820(2.309)*	.837(2.309)*	.280(1.323)	.093(1.097)	.306(1.358)
Father education	.755(2.128)	.960 (2.612)*	.319(1.375)	.902(2.466)	1.391(4.019)
Mother education	-.481(.618)	-.609(.544)	2.991(19.898)	3.785(44.026)*	3.730(41.662)*
Family SES	-.114(.892)	-.106(.899)	-.909(.403)*	-1.156(.315)*	-1.655(.191)*
Parental monitoring		.213(1.237)**	.108(1.114)	.185(1.203)	-.667(.513)
Family cohesion			1.519(4.569)**	2.028(7.601)**	2.270(9.679)**
Neighborhood disorganization	-.068(.934)*	-.052(.949)	.008(1.008)	-.051(.950)	-1.159(.314)
Neighborhood collective efficacy	.184(1.202)**	.178(1.194)**	.148(1.160)	.101(1.106)	.250(1.284)
Nei,dis* Par.mon					.057(1.058)
Nei.col* par.mon					-.009(.991)

*p<.05 and marginally significant, **p<.01

Note: Numbers inside the parentheses indicate odds ratios and outside unstandardized beta weights

As indicated in Table 4.18, to answer research questions posed, it is imperative to examine the mediating effects of family cohesion and parental monitoring in the relationship between neighborhood characteristics and adolescents' condom use. For this purpose, five models were assessed. The first model included neighborhood characteristics, individual and family demographic variables. In the second model, I added parental monitoring variable to the baseline model to examine how neighborhood characteristics affect adolescents' negotiation to use condoms are altered by the inclusion of parental monitoring.

The third model included family cohesion to examine the effects of neighborhood factors on adolescents' negotiation to condom use were altered by the inclusion of family cohesion. The fourth model includes individual continuous variables and the fifth model includes interaction terms. As a result, all neighborhood variables significantly predicted adolescents' condom use in their last sexual intercourse (for neighborhood disorganization, $\beta = -.068$, $p < .040$, for neighborhood collective efficacy, $\beta = .184$, $p = .000$). The results revealed that neighborhood disorganization adversely affected the likelihood of adolescents' condom use status. However, neighborhood collective efficacy enhanced the likelihood of adolescents' condom use.

In Model 1, as indicated above, only 27.7% of the variance in condom use status was accounted for by all demographic variables and neighborhood characteristics. This model correctly classified 69.6% of the cases to the likelihood of condom use status. In this model, family structure significantly predicted adolescents' condom use ($\beta = .820$, $p < .008$). The point of interest in this model is to examine the effects of neighborhood disorganization and neighborhood collective efficacy on adolescents' condom use. But the point is, did these neighborhood factors significantly predict if parental monitoring was added to the next model? To test this, parental monitoring was added in the second model, but the effect of neighborhood

disorganization was not significant on condom use status whereas neighborhood collective efficacy remained significant with a tiny portion of its unstandardized beta coefficient decreased. In this case, parental monitoring mediated in the relationships between neighborhood disorganization and adolescents' condom use. That is, (in Model 1, neighborhood disorganization, $\beta = -.068$, $p < .009$; in Model 2, $\beta = -.052$, $p < .151$). Clearly the unstandardized beta coefficient altered from $-.068$ to $-.052$ which shows parental monitoring was regarded as a mediator. Therefore, in this analysis, neighborhood disorganization adversely affected parental monitoring and in turn this is translated to adolescents being lenient to use condoms since parents' power of controlling their children was compromised by high level of neighborhood disorganization. However, parental monitoring did not mediate in the linkages between neighborhood collective efficacy and the odds of adolescents' condom use.

When family cohesion was added to Model 3, all variables were not statistically significant except family SES ($\beta = 1.519$, $p < .039$). This indicates family cohesion was a powerful mediating factor in the relationship between neighborhood factors and adolescents' condom use. In Model 3, the significant parental monitoring and significant neighborhood collective efficacy were non-significant. Similarly, the magnitude of the unstandardized coefficient for neighborhood collective efficacy was altered from $\beta = .178$ in Model 2 to $\beta = .148$ in Model 3. In Model 2, neighborhood collective efficiency was significant but in Model 3, $\beta = .148$ $p > .113$ it was not significant. Over all, family cohesion mediated in the linkages between neighborhood factors and adolescents' condom use.

These findings indicated that parental monitoring mediated in the linkages between neighborhood disorganization and condom use. However, family cohesion mediated in the linkages between neighborhood characteristics and the odds of adolescents' condom use. But

significant parental monitoring in the previous model was not significant in third model when family cohesion was added to the model.

Parental monitoring was statistically significant if entered to the model without family cohesion and if parental monitoring and family cohesion were added in the same model, parental monitoring was not significant while family cohesion was significant because the effect of parental monitoring on condom use was taken by family cohesion. Hence, it is better to enter parental monitoring and family cohesion in separate models to see the independent effects on condom use.

The fact that family cohesion mediated neighborhood disorganization to predict the odds of adolescents' condom use showed that high neighborhood disorganization decreased the cohesiveness of family members and this in turn translated to decrease the odds of adolescents' condom use. On the other hand, high neighborhood collective efficacy increased the family members to be more cohesive which in turn increased the odds of adolescents' condom use in their last sexual encounter.

Similarly, these arguments held true for parental monitoring. That is, high neighborhood disorganization influenced parents' effort to control their children and this in turn translated to decrease adolescents' negotiation to condom use as parents' power of monitoring was incapacitated by high neighborhood disorganization.

Model 5 includes the interaction terms, thus the result shows that both interaction terms were not statistically significant. The results were presented on the moderating effect section.

Baron and Kenny's (1986) statistical procedure to test mediations was used to determine whether or not substance use mediated in the linkages between parental monitoring and risky sexual activity and family cohesion and risky sexual activity. To test mediation, series of

separate regression models were generated for each factor. These models were then evaluated to check if results met conditions to establish mediation.

Q-6: Does substance use serve as a mediator in the relationship between parental monitoring and risky sexual behavior?

To test mediation, I used Baron and Kenny's (1986) criteria. First, I have to check whether there was significant relationship between independent variable and the mediator. Clearly, the first regression equation which tested the association between parental monitoring and substance use showed parental monitoring significantly predicted adolescents' substance use, $R^2 = .169$, $F(1, 235) = 47.800$, $p = .000$. More specifically, there is a trend that youth reporting high parental monitoring were more likely to report less amount of substance use by adolescents, $B = -.570$, $SE = .082$, $\beta = -.411$, $p = .000$. The second standard regression analysis confirmed that parental monitoring significantly predicted risky sexual behavior, $R^2 = .032$, $F(1, 235) = 7.862$, $p < .005$ and $B = -.115$, $SE = .041$, $\beta = -.180$, $p < .005$.

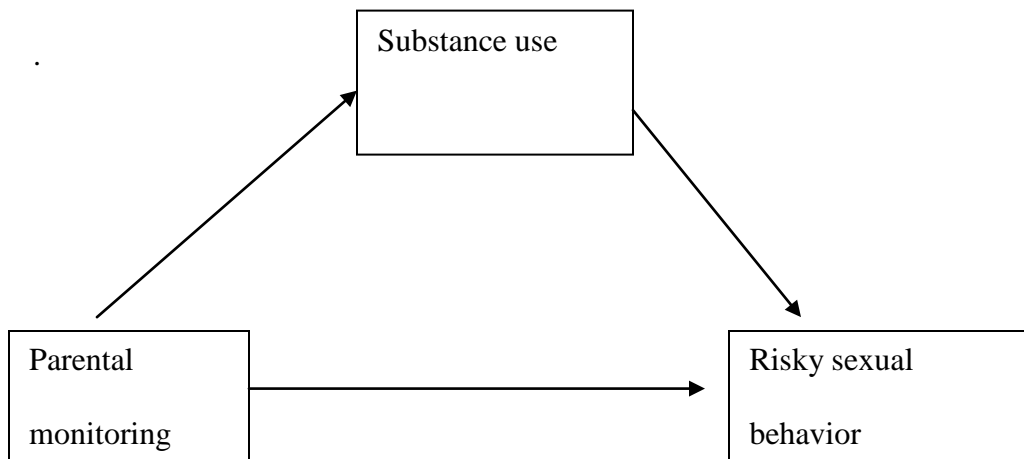


Fig. 4.1. The diagrammatical representation of the mediating role of substance use in the linkages between parental monitoring and risky sex

Since the first two equations significantly met the condition to further test mediation, a third regression model was generated. This regression model included both parental monitoring and substance use to predict risky sexual behavior. In this case, substance use significantly predicted risky sexual behavior, $B = .111$, $SE = .032$, $\beta = .242$, $p < .001$ while parental monitoring did not significantly predict risky sexual behavior, $B = -.051$, $SE = .044$, $\beta = -.080$, $p > .244$. Both substance use and parental monitoring accounted for about 8.1% of the variances in risky sexual behavior $F(2,234) = 10.335$, $p = .000$. Clearly substance use was significantly linked with risky sexual behavior, $R^2 = .076$, $F(1,235) = 19.275$, $p = .000$. More specifically, this analysis showed that adolescents who use more substances were more likely to engage in risky sexual behavior as compared to youth with less substance use, $B = .126$, $SE = .029$, $\beta = .275$, $p = .000$.

According to Baron and Kenny (1986), in order to establish mediation, the effect of parental monitoring on risky sexual behavior when both parental monitoring and substance use entered greatly reduced and less than the effect of parental monitoring on risky sexual behavior

when entered alone. This preliminary result revealed that substance use partially mediated the association between parental monitoring and risky sexual behavior.

Q-7: Does substance use mediate the linkages between family cohesion and risky sexual behavior?

A series of three regression models were examined. The first regression model tested the relationship between family cohesion and substance use. Clearly family cohesion significantly predicted substance use, $R^2 = .060$, $F(1, 235) = 14.936$, $p = .000$ and $B = -.278$, $SE = .072$, $\beta = -.245$, $p = .000$. This confirmed that adolescents who received more family cohesion were less likely to use substances as compared to their counterparts. The second regression analysis revealed that family cohesion was significantly associated with risky sexual behavior, $R^2 = .014$, $F(1, 235) = 4.419$, $p < .037$ and $B = -.071$, $SE = .034$, $\beta = -.136$, $p < .037$. The third regression model used both family cohesion and substance use which accounted for about 8.1% of the variance in risky sexual behavior, $F(2, 234) = 10.284$, $p = .000$. Baron and Kenny's (1986) criteria dictates to check to what extent the effect of family cohesion was reduced or went down to 0 when both family cohesion and substance use were entered simultaneously. That is, substance use significantly predicted risky sexual behavior, $B = .118$, $SE = .0258$, $p = .000$ while family cohesion $B = -.038$, $SE = .034$, $\beta = -.073$, $p > .261$ did not significantly predict risky sexual behavior. Based on Baron and Kenny's (1986) criteria, the effect of family cohesion when entered with substance use was reduced as compared to the direct effect of family cohesion on risky sexual behavior. Thus, substance use partially mediated in the relationship between family cohesion and risky sexual behavior.

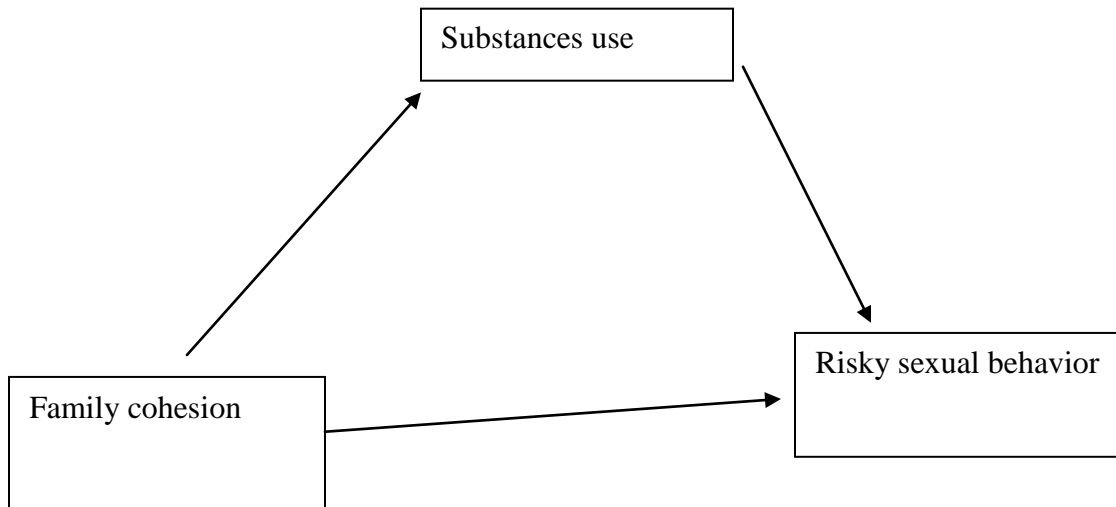


Fig. 4.2. The diagrammatical representation of the mediating role of substance use in the linkages between family cohesion and risky sex

Q-8: Do family factors (parental monitoring and family cohesion) mediate in the linkages between neighborhood factors and adolescents' risky sexual behavior?

The next analyses tried to test the mediating roles of parental monitoring and family cohesion in the linkages between neighborhood disorganization and risky sexual behavior and neighborhood collective efficacy and risky sexual behavior. These analyses steps were not guided by Baron and Kenny's (1986) criteria. In these analyses, I used Sobel's prob. test to test whether the above familial factors mediated in the relationship between neighborhood factors and risky sexual behavior. To confirm mediation, the Sobel's prob test was conducted to determine the magnitude and significance of the mediation effects of both familial factors in the relationship between neighborhood factors and risky sexual behavior.

As a result, an online Sobel test calculator was then used to assess the significance of the mediation effect (Preacher & Leonardelli, 2001, 2006). The calculator uses the unstandardized regression coefficients for the association between the independent variable and the dependent

variable, (a); the unstandardized coefficient for the association between the mediator and the dependent variable (b), controlling for the independent variable; and finally the standard error of both of these coefficients. The calculator performs three versions of mediation tests, the Sobel, Aroian, and Goodman tests for significance of mediation. Results of the three tests are similar, and this study employed Sobel test statistics as the Sobel test generally is considered to be a very conservative measure of mediation (Kenny, 2012).

Let's see whether parental monitoring mediated in the linkages between neighborhood disorganization and risky sexual behavior. In this case, neighborhood disorganization did not significantly predict risky sexual behavior as it is distal from the individual. Thus, its effect was evident via parental monitoring. Here is the diagrammatical relationship of the three variables.

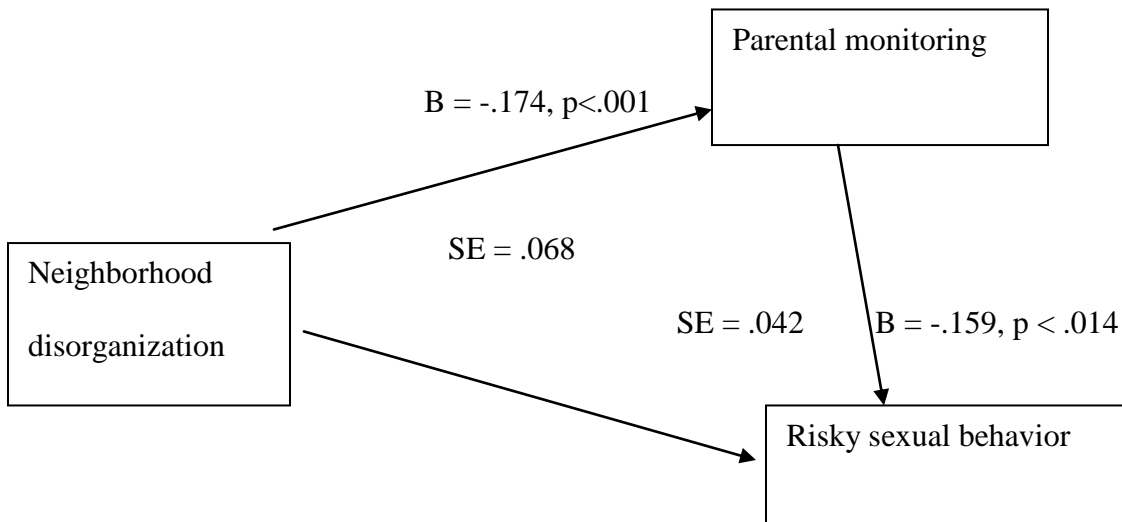


Fig. 4.3. The diagrammatical depiction of the mediating role of parental monitoring in the relationship between neighborhood disorganization and risky sex

Using Sobel's test, it suffices to show that parental monitoring mediates in the relationship between neighborhood disorganization and risky sexual behavior. This was so if

significant Sobel's test existed. However, this test demonstrated that the magnitude of parental monitoring as a mediator between neighborhood disorganization and risky sexual behavior. As a result, Sobel's statistic = 2.12, $p < .034$ was significant showing that parental monitoring carried any of the effects that neighborhood disorganization did on risky sexual behavior.

The next analysis was to see the mediating role of parental monitoring in the relationship between neighborhood collective efficacy and risky sexual behavior. Similarly, neighborhood collective efficacy was not significantly associated with risky sexual behavior as it is distal from the individual. Its effect was true through parental monitoring on risky sexual behavior. Hence, a significant Sobel's Statistic confirmed this relationship; computing Sobel's test showed that parental monitoring mediated the linkages between neighborhood collective efficacy and risky sexual behavior, Sobel's prob. test = -2.091, $p < .037$.

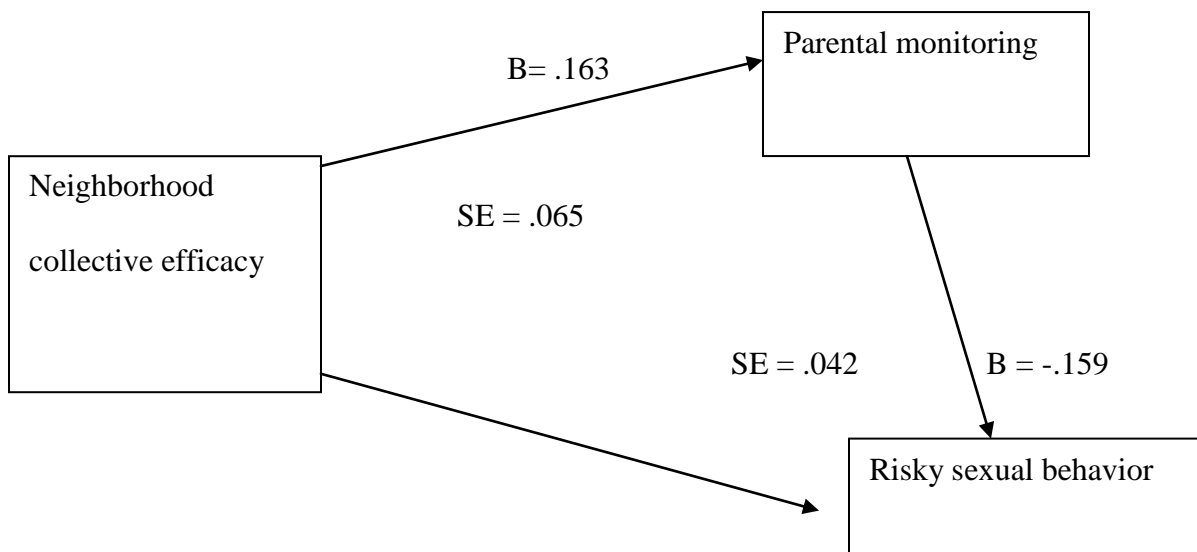


Fig.4.4. The diagrammatical representation of the mediating role of parental monitoring in the linkages between neighborhood collective efficacy and risky sex

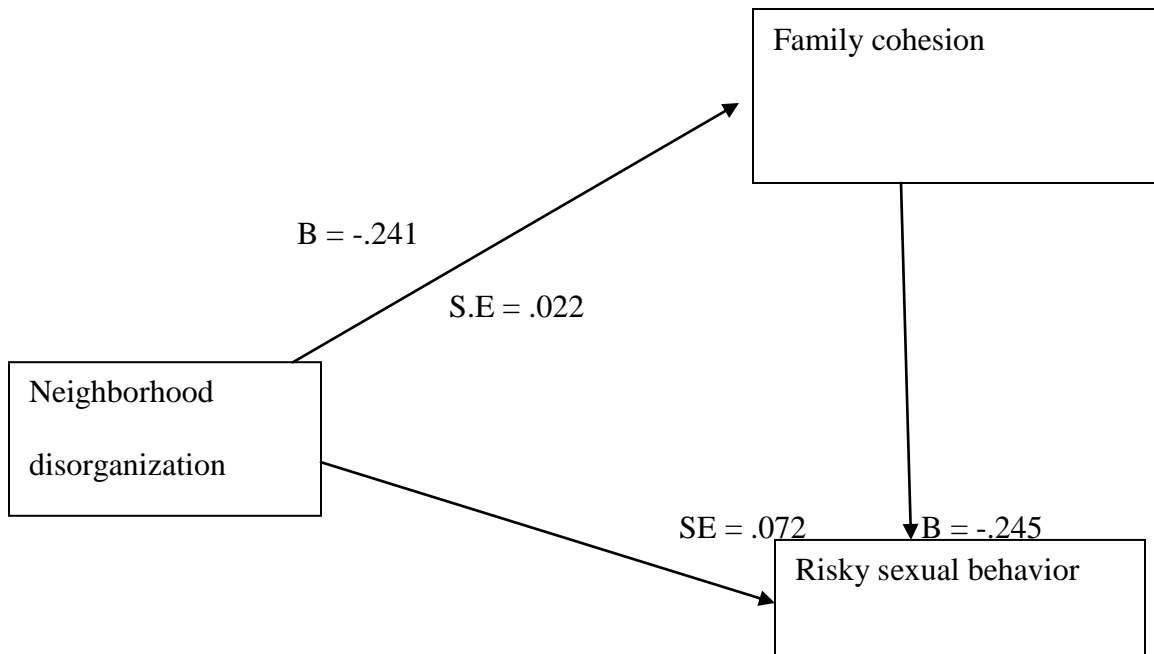


Fig.4.5. The diagrammatical depiction of the mediating role of family cohesion in the relationship between neighborhood disorganization and risky sex

In the same vein, Sobel’s test was conducted to determine the magnitude and significance of mediation effects of family cohesion (see Preacher and Leonardell, 2001, 2006). The Figure above showed the magnitude of family cohesion as a mediator between neighborhood disorganization and risky sexual behavior. This was confirmed by calculating Sobel’s statistic. (That is, Sobel’s statistic = 3.25, $p < .018$). The result tells us that family cohesion mediated in the relationship between neighborhood disorganization and risky sexual behavior.

Similarly, to examine the mediating role of family cohesion in the linkages between neighborhood collective efficacy and risky sexual behavior, Sobel’s test was conducted similar

to the above analysis. Thus, Sobel's test = -3.01, $p < .002$ was obtained. Significant Sobel's test informs us that family cohesion is regarded as a mediator in the relationship between neighborhood collective efficacy and risky sexual behavior.

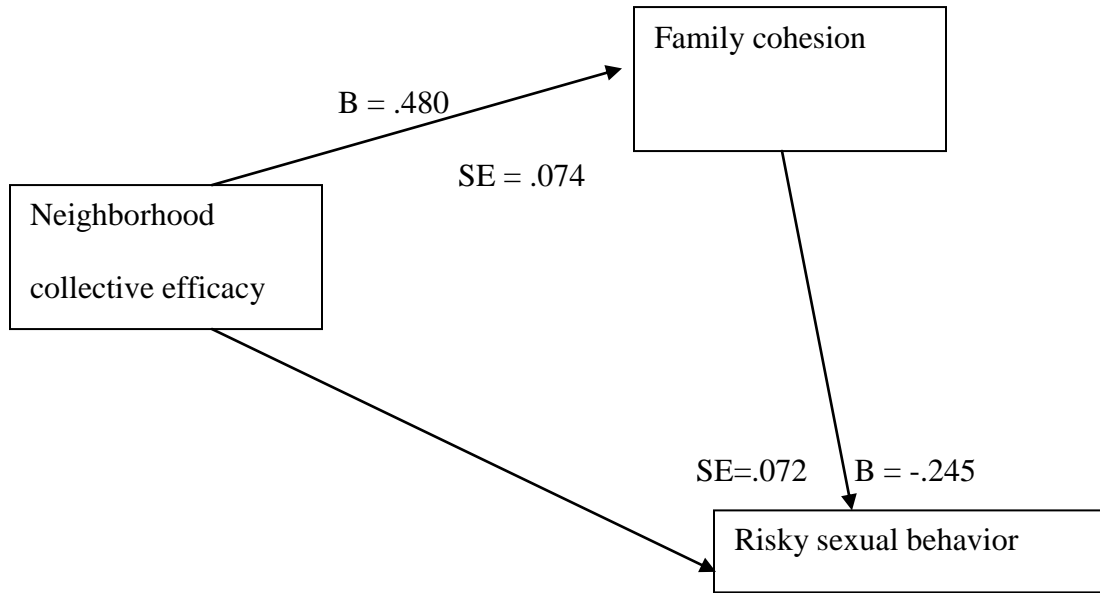


Fig. 4.6. The diagrammatical depiction of the mediating role of family cohesion in the relationship between neighborhood collective efficacy and risky sex

The mediating role of substance use in the relationships between familial factors (parental monitoring and family cohesion) and risky sexual behavior were examined using Baron and Kenny's (1986) criteria. Besides, the mediating role of family cohesion and parental monitoring in the relationships between risky sexual behavior and each neighborhood factors were inspected. These were tested by Sobel's test though this test was applied for those paths where Baron and Kenny's (1986) criteria were not applicable. However, Sobel's Z-test can be applied to check Baron and Kenny's (1986) criteria are effective as well. These path ways worked to how family cohesion and parental monitoring served as mediators in the relationships

between protective sexual behavior and each neighborhood factors. These were tested by Sobel's Z-test.

Substance use was a mediator variable. In that case, high parental monitoring reduced adolescents' substance use and this higher parental monitoring was translated into less risky sexual behavior. Thus, children in more restrictive family (parents) consumed less substance and in turn, these adolescents were less likely to involve in risky sexual activity.

This argument held true for adolescents who came from more cohesive family members. Adolescents from more cohesive family members were more likely to reducing substance use and this high cohesiveness among family members translated into less risky sexual activity.

Regarding parental monitoring and neighborhood disorganization, parents who live in highly disorganized neighborhoods demonstrated less control of their children's activities. This less parental monitoring in turn gave opportunity for adolescents to involve in risky sexual activity.

Do parental factors (parental monitoring and family cohesion) mediate in the linkages between neighborhood factors and protective sexual behavior?

The following table attempts to answer the research question using Baron and Kenny's (1986) criteria whether mediation held or not by each parental factor in the linkages between each neighborhood factors and protective sexual behavior.

Table 4.19: Hierarchical Linear Regression Analysis That Shows the Mediating Roles of Family Cohesion and Parental Monitoring for Sexually Active Youth in the Relationship between Neighborhood Factors and Protective Sexual Behavior.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	-.051(-.008)	.704(.116)*	.274(.045)	.305(.050)	.312(.051)
Age	-.240(-.110)*	-.199(-.091)	-.130(-.059)	-.119(-.054)	-.089(-.040)
Religiosity				.034(.071)*	.043(.090)*
Self esteem				.030(.054)	.022(.039)
Substance use				-.048(-.122)**	-.058(-.146)**
Family structure	.652(.117)*	.508(.091)	-.067(-.012)	-.055(-.010)	-.101(-.018)
Father education	.931(.126)	.985(.133)*	.086(.012)	-.124(-.017)	-.131(-.018)
Mother education	-1.007(-.110)	-1.006(-.109)	-.124(-.014)	-.022(-.002)	.067(.007)
Family SES	.001(.001)	.003(.002)	-.085(-.043)	.006(.003)	.007(.003)
Parental monitoring		.212(.385)**	.033(.059)	.008(.014)	-.157(-.285)
Family cohesion			.360(.799)**	.347(.771)**	.346(.768)**
Neigh. Disorga.	-.079(-.136)*	-.052(-.089)	.003(.003)	.009(.016)	.109(.187)
Neigh. Col.effic	.175(.317)**	.135(.245)**	.003(.006)	-.015(-.027)	-.197(-.356)*
Neig.dis*Par.mon					-.005(-.222)
Neigh.col.*par.mon					.010(.617)*

*p<.05 and marginally significant, **p<.01

Note: Numbers inside the parentheses indicate standardized beta weights and outside unstandardized beta weights

From the table above, there was a clear indication that parental monitoring mediated in the linkages between neighborhood disorganization and protective sexual behavior albeit not neighborhood collective efficacy. In Model 1, neighborhood disorganization and neighborhood collective efficacy were statistically significant. When parental monitoring was added in Model 2, significant neighborhood disorganization in Model 1 was non-significant in Model 2. (That is, in Model 1, neighborhood disorganization, $\beta = -.136$, $p < .026$; in Model 2, $\beta = -.089$, $p > .118$). Clearly, the standardized beta weights were altered from $-.136$ to $-.089$ which shows that parental monitoring was a mediator in the relationship between neighborhood disorganization and protective sexual behavior. However, parental monitoring did not mediate in the linkages between neighborhood collective efficacy and protective sexual behavior. This was because significant neighborhood collective efficacy in Model 1 remained significant in Model 2 with a small portion decrease in the standardized beta weight.

When family cohesion was added in Model 3, significant neighborhood collective efficacy in the previous two models was not significant. That is, (in Model 1, $\beta = .317$, $p = .000$; in Model 2, $\beta = .243$, $p = .000$ but in Model 3, $\beta = .006$, $p > .890$) which was a dramatic decrease in the standardized beta weight. This clearly indicates that family cohesion mediated in the linkages between neighborhood collective efficacy and protective sexual behavior. There were also clear indicators that family cohesion mediated in the relationship between both neighborhood factors and protective sexual behavior. This was further confirmed by Baron and Kenny's (1986) criteria.

Similar to the analyses on risky sexual behavior section, the mediating roles of family factors (parental monitoring and family cohesion), in the linkages between neighborhood factors are illustrated next.

Does parental monitoring mediate in the linkages between neighborhood disorganization and protective sexual behavior?

To examine this, let's first test the mediating role of parental monitoring in the relationship between neighborhood disorganization and protective sexual behavior. As usual, three separate regression models were generated. The first regression equation which tested the association between neighborhood disorganization and parental monitoring, $R^2 = .027$, $F = 6.507$, $p < .011$. In this analysis, neighborhood disorganization adversely affected parental monitoring, $B = -.174$, $\beta = -.164$, $p < .011$.

The second regression model tested that neighborhood disorganization was significantly linked with protective sexual behavior, $R^2 = .024$, $F = 5.656$, $p < .018$. Specifically, this analysis confirmed that adolescents who live in highly disorganized neighborhoods did not use protective mechanisms in their sexual intercourse, $B = -.090$, $\beta = -.153$, $p < .018$.

The third regression analysis included both neighborhood disorganization and parental monitoring predicting protective sexual behavior. The result showed that neighborhood disorganization did not predict protective sexual behavior while parental monitoring significantly predicted protective sexual behavior (Neighborhood disorganization, $\beta = -.087$, $p > .148$; Parental monitoring, $\beta = .404$, $p = .000$). According to Baron and Kenny (1986), in order to establish mediation, the effect of neighborhood disorganization on protective sexual behavior on the third

equation should be less than on the second equation. That is, $B = -.051$, $\beta = -.087$, $p > .148$ on the third equation; $B = -.090$, $\beta = -.153$, $p < .018$ on the second equation. This confirmed that parental monitoring partially mediated in the relationship between neighborhood disorganization and protective sexual behavior.

Does parental monitoring mediate in the linkages between neighborhood collective efficacy and protective sexual behavior?

In Table 4.19, there was evidence that parental monitoring did not mediate in the relationship between neighborhood collective efficacy and protective sexual behavior. Thus, the following analyses confirmed the above result.

In the first regression model, neighborhood collective efficacy predicted parental monitoring, $R^2 = .026$, $F = 6.291$, $B = .163$, $\beta = .161$, $p < .013$. In the second regression model, neighborhood collective efficacy predicted protective sexual behavior, $R^2 = .109$, $F = 28.655$, $B = .183$, $\beta = .330$, $p = .000$. In third regression model where neighborhood collective efficacy and parental monitoring were analyzed together, both significantly predicted protective sexual behavior. That is, neighborhood collective efficacy, $B = .149$, $\beta = .269$, $p = .000$; parental monitoring, $B = .260$, $\beta = .374$, $p = .000$. When we compare the effect of neighborhood collective efficacy on the second and third regression models, a slight change in its effect but remained significant which did not meet the Baron and Kenny's (1986) criteria. Hence, the result supported the result on Table 4.19 above that parental monitoring did not mediate in the linkages between neighborhood collective efficacy and protective sexual behavior.

The next analyses tested the mediating role of family cohesion in the relationships between neighborhood factors and protective sexual behavior.

Does family cohesion mediate in the linkages between neighborhood disorganization and protective sexual behavior?

This analysis tested three separate regression models. The first regression equation examining the links between neighborhood disorganization and family cohesion was significant, $R^2 = .241$, $\beta = -.186$, $p < .004$. The second regression equation which examined the association between neighborhood disorganization was clearly significant, $R^2 = .024$, $F = 5.656$, $B = -.090$, $\beta = -.153$, $p < .018$. The third regression analysis included both neighborhood collective efficacy and family cohesion in the model. The result showed that neighborhood disorganization ($B = .000$, $\beta = .001$, $p > .987$) was not significant while family cohesion ($B = .372$, $\beta = .827$, $p = .000$) was highly significant. Therefore, the effect of neighborhood disorganization on the third equation was non-significantly approached to zero as compared to the second equation. The result confirmed that family cohesion fully mediated in the linkages between neighborhood disorganization and protective sexual behavior.

Does family cohesion mediate in the linkages between neighborhood collective efficacy and protective sexual behavior?

The first regression equation testing the link between neighborhood collective efficacy and family cohesion was significant, $R^2 = .152$, $F = 42.219$, $B = .480$, $\beta = .390$, $p = .000$.

The second regression analysis which examined the association between neighborhood collective efficacy and protective sexual behavior was clearly significant, $R^2 = .109$, $F = 28.655$, $B = .183$, $\beta = .330$, $p = .000$. The third regression model which included neighborhood collective efficacy and family cohesion showed that neighborhood collective efficacy was not significant ($B = .005$, $\beta = .008$, $p > .837$) whereas family cohesion was highly significant ($B = .371$, $\beta = .824$, $p = .000$).

When we compared the effect of neighborhood collective efficacy on protective sexual behavior on the third equation, it highly, but non-significantly decreased (almost nearest to zero) as compared to the effect of neighborhood collective efficacy on protective sexual behavior on the second equation. Thus, this result supports the analysis on the table above showing that family cohesion fully mediated the linkages between neighborhood collective efficacy and protective sexual behavior.

Table 4.20: Multivariate Logistic Regression Analysis of the Study Variables Which Testes the Mediating roles of Parental Monitoring in the Linkages between Neighborhood Factors and Sexual Initiation for the Whole Sample

Variables	Model 1	Model 2	Model 3	Model 4
Gender	1.340(3.819)**	1.107(3.024)**	.956(2.601)**	.951(2.588)**
Age	.427(1.533)**	.415(1.514)**	.341(1.407)**	.341(1.407)**
Self-esteem			-.012(.988)	-.012(.988)
Religiosity			.003(1.003)	.003(1.003)
Substances use			.301(1.351)**	.301(1.351)**
Family structure(1)	.034(1.035)	.153(1.165)	-.036(.935)	-.031(.970)
Family SES	.187(1.206)*	.213(1.238)*	.066(1.068)	.068(1.070)
Fathers' education(1)	-.379(.685)	-.445(.641)	-.389(.677)	-.383(.682)
Mothers education(1)	-.020(.980)	-.024(.977)	-.090(.914)	-.085(.918)
Parental monitoring		-.093(.912)**	-.032(.968)	.096(1.101)
Family cohesion		-.004(.996)	.001(1.001)	.001(1.001)
Neighborhood disorganization	.033(1.033)*	.025(1.025)	.009(1.009)	.082(1.085)
Neighborhood collective efficacy	-.076(.927)**	-.061(.941)**	-.045(.956)**	.002(1.002)
Nei.dis*par.mon				-.004(.996)
Nei.col*par.mon				-.002(.998).

*p<.05 and marginally significant, **p<.001

Note: Numbers inside the parentheses indicate odds ratios and outside unstandardized beta weights

This section revealed the multivariate logistic regression results presented in Table 4.20. These analyses were conducted by fitting four models; the first model contained all adolescents' and parents' demographics as control variables and neighborhood factors. The second model contains demographic variables, neighborhood level variables, family cohesion and parental monitoring to examine whether parental variables mediate in the relationship between neighborhood factors and adolescents' engagement in sex or not. The third model contained demographic variables, neighborhood variables, family variables and individual variables. This also helped to examine whether individual factors mediated in the linkages between family factors and adolescents' coital initiation or not. As a result, in Model 1, gender significantly predicted adolescents' coital initiation. That is, males engaged 3.819 times more likely than females in sexual activity.

Age also significantly predicted the odds of adolescents' sexual engagement. That is, older adolescents were 1.533 times more likely involved in coital initiation than younger adolescents. In this model, except family SES, other family demographic variables did not significantly predict adolescents' engagement in sexual activity. In relation to neighborhood disorganization, there was marginal statistical significance in predicting adolescents' engagement in sex. That is, adolescents who engaged in sexual activity live in more disorganized neighborhoods than those adolescents who ever not engaged in sexual activity ($p < .067$). On the other hand, neighborhood collective efficacy significantly predicted adolescents' sexual initiation. The result revealed that adolescents who live in neighborhoods which were characterized by more collective efficacy among the members initiated sexual activity .927 times less likely than their counter parts.

Significant variables in Model 2 remained significant except neighborhood disorganization. In this model, family factors such as parental monitoring and family cohesion were added, the

result showed that only parental monitoring significantly predicted adolescents' sexual initiation. That is, adolescents who received more parental monitoring were .912 times less likely engaged in sexual activity than those adolescents who received less parental monitoring ($p = .000$).

In this model, family cohesion did not significantly predict adolescents' coital initiation. To confirm that parental monitoring and family cohesion mediated in the linkages between neighborhood factors and adolescent sexual activity. The model shows only neighborhood disorganization was non-significant but neighborhood collective efficacy remained significant with a slight portion decrease of unstandardized coefficient (neighborhood disorganization, in Model 1, $\beta = .033$, $p < .067$ in Model 2, $\beta = .025$, $p > .176$; neighborhood collective efficacy, in Model 1, $\beta = -.076$, $p < .000$, in Model 2, $\beta = -.061$, $p < .001$). Since family cohesion was not significant, only parental monitoring mediated the linkages between neighborhood disorganization and adolescents' sexual activity. The result implied that in more disorganized neighborhoods, parents' effort to control their children diminished, this in turn increased the likelihood of adolescents' to engage in sex, and however, parental monitoring did not serve as a mediator in the relationship between neighborhood collective efficacy and adolescent coital initiation. This was because significant neighborhood collective efficacy remained significant after parental monitoring was added to the model.

In Model 3, self-esteem, religiosity and substance use were added, only substance use significantly predicted adolescents' coital initiation. The result revealed that adolescents who consumed substances were 1.351 times more likely engaged in sexual activity than their counterparts ($p = .000$). In this model, significant age, gender and neighborhood collective efficacy variables in model 3 remained significant. But parental monitoring was significant in model 2 but after self-esteem religiosity and substance use were added in Model 3, parental monitoring

appeared non-significant. This was another indication that substance use mediated in the relationship between parental monitoring and adolescents' sexual activity. The result implied that adolescents who consumed substances might be very difficult for parents to monitor and this in turn translated to engage in sexual activity. In this analysis, neighborhood collective efficacy had direct effect on adolescents' first coital initiation.

Model 4 includes all variables and interaction terms. In fact, individual controls and substance use remained significant in this model. However, the interaction terms and other variables were not significant.

Table 4.21: Multivariate Logistic Regression Analysis of the Study Variables Which Testes the Mediating Roles of Family Cohesion in the Linkages between Neighborhood Factors and Sexual Initiation for the Whole Sample (N = 962)

Variables	Model 1	Model 2	Model 3	Model 4
Gender	1.340(3.819)**	1.327(3.769)**	1.107(3.024)**	.956(2.601)**
Age	.427(1.533)**	.417(1.517)**	.415(1.514)**	.341(1.407)**
Self esteem				-.012(.988)
Religiosity				.003(1.003)
Substance use				.301(1.351)**
Family structure	.034(1.035)	.128(1.137)	.153(1.103)	-.036(.965)
Father's education	-.379(.085)	-.350(.705)	-.445(.641)	-.389(.677)
Mother's education	-.020(.980)	-.058(.944)	-.024(.977)	-.090(.965)
Family SES	.187(1.206)*	.204(1.227)*	.213(1.238)*	.066(1.068)
Family cohesion		-.036(.965)*	-.004(.996)	.001(1.001)
Parental monitoring			-.093(.912)**	-.032(.968)
Neighborhood disorganization	.033(1.033)*	.029(1.029)	.025(1.025)	.009(1.009)
Neighborhood collective efficacy	-.076(.927)**	-.063(.939)**	-.061(.941)**	-.045(.956)*

*p<.05 and marginally significant, **p<.01

Note: Numbers inside the parentheses indicate odds ratios and outside unstandardized beta weights

I examined another analysis (refer to Table 4.21 above), only to check whether family cohesion mediated in the linkages between neighborhood factors and adolescent first sex or not. The variables were entered in similar order as Table 4.20 above. When family cohesion was added in the model before parental monitoring, it significantly predicted the odds of adolescents' first coital initiation. That is, adolescents who came from a more cohesive family setting were .965 times less likely engaged in first coital initiation than adolescents of their counter parts ($p < .021$). In Model 2, after family cohesion was added, significant neighborhood disorganization reached non-significance which revealed that family cohesion mediated in the relationship between neighborhood disorganization and adolescent coital initiation. That is, Neighborhood disorganization in Model 1, $\beta = .033$, $p < .067$; in Model 2, $\beta = .029$, $p > .111$. However, neighborhood collective efficacy remained significant after family cohesion was added to the model which confirmed that family cohesion did not mediate in the linkages between neighborhood collective efficacy and adolescent first coital initiation. When parental monitoring was added to the next model, significant family cohesion reached non-significant. The reason why this was the case was unclear, however, it might be speculated that parental monitoring may confound their relationship. Moreover, substance use mediated in the linkages between parental factors (parental monitoring and family cohesion) and adolescents' coital initiation because significant parental factors were non-significant after substance use was added in both Tables 4.20 and 4.21.

Interaction effects

These analyses answered research question number 5b.

In addition to examining whether and how the effects of neighborhood characteristics operate through parental monitoring and family cohesion to ultimately affect adolescents'

condom use, risky sexual behavior, protective sexual behavior and sexual initiation, and in this study, I also examined whether and how neighborhood characteristics and parental monitoring interact to ultimately affect the odds of adolescents condom use, risky and protective sexual behaviors and coital initiation. The findings revealed that for condom use neighborhood disorganization by parental monitoring was not significant (Wald = 1.876, $p > .171$). Here, the main effects for neighborhood disorganization (Wald = 1.964, $p > .161$) and parental monitoring main effect (Wald = .208, $p > .648$) were not significant. The non-significant interaction effect revealed that the effect of parental monitoring on adolescents condom use did not depend on the levels of neighborhood disorganization. That is, parental monitoring did not vary from one neighborhood level to another.

Similarly, this analysis did not get any significant interaction effect in relation to parental monitoring by neighborhood collective efficacy. That is, neighborhood collective efficacy by parental monitoring was not significant (Wald = .056, $p > .813$). The result confirmed that the relationship between parental monitoring and adolescents' condom use did not depend on the levels of neighborhood collective efficacy (refer to Table 4.18).

Regarding protective sexual behavior, one interaction effect was found to be significant. That is, neighborhood disorganization by parental monitoring was not significant ($\beta = -.222$, $p > .250$) whereas neighborhood collective efficacy by parental monitoring interaction effect was significant in predicting adolescents' protective sexual behavior ($\beta = .617$, $p < .016$). Moreover, the main effect neighborhood collective efficacy was significant ($\beta = -.356$, $p < .012$) but main effect parental monitoring was not significant ($\beta = -.285$, $p > .232$). Besides, the main effect neighborhood disorganization was not significant ($\beta = .187$, $p < .201$) (refer to Table 4.19).

In sum, high level of neighborhood collective efficacy increased parents control of their children to ultimately increase the possibility that adolescents used protective mechanisms in their sexual intercourse. On the other hand, the relationship between parental monitoring and protective sexual behavior did not depend on the levels of neighborhood disorganization.

Regarding risky sexual behavior, both interaction effects were not significant. That is, (neighborhood disorganization by parental monitoring, $\beta = -.042$, $p > .908$; neighborhood collective efficacy by parental monitoring, $\beta = .300$, $p > .506$). In this case, both main effects were not significant. Regarding interaction effects, the distribution of risky sexual activity of adolescents was the same from one neighborhood level to another across the polarities of parental monitoring.

Regarding sexual initiation, all interaction terms were not significant (Neig.dis *par.mon, Wald = .573, $p > .449$; Neig.col*par.mon, Wald = .235, $p > .628$). Therefore, adolescents coital initiation did not vary due to variations in parental monitoring across each neighborhood levels (the relationship between adolescent sexual initiation and parental monitoring remains constant across the levels of neighborhood factors (refer to Table 4.20).

Chapter Five

5. Discussion

5.1 Introduction

The central aim of this dissertation was to examine to what extent individual, familial, and neighborhood level factors were related to adolescents' sexual behaviors. As discussed in the literature section, there were three categories which were believed to contribute to the variance of adolescents' sexual behaviors. These factors were (1) Individual level factors (2) Familial level factors, and (3) Neighborhood level factors. Adolescent (individual) factors include gender, age, self-esteem, religiosity, and substance use. Familial level factors include family structure, parental educational level, family socio-economic status, parental monitoring, and family cohesion. Neighborhood level factors include neighborhood disorganization and neighborhood collective efficacy.

For this dissertation, Bronfenbrenner's (1979, 1986) ecological systems theories were used to explain how individual, familial and neighborhood factors might have been related with adolescents' sexual behaviors. Within each system, the direct and indirect effects of salient individual, familial and neighborhood factors on adolescents' sexual behaviors were examined. Besides, interaction effects were generated on parental monitoring and neighborhood factors. However, individual factors have only direct effects on adolescents' sexual behaviors.

The general framework of this chapter was designed as follows. To facilitate an examination of patterns of findings within each level, I discussed findings based on groups of predictors across each level. Within each section, I tried to address how the research questions pertaining to that group of predictors were answered, describe how results were consistent to the

extant literature or conflicting with previous research. More specifically, the discussions of the findings were presented in reference to three major categories. (1) Individual level factors (2) Familial level factors (3) Neighborhood level factors.

Moreover, though not under this chapter, I presented summary, potential implications in relation to theory, methodology, and policy and finally I concluded with a discussion of limitations and suggestions for future research.

5.2. Individual level factors associated with adolescents' sexual behaviors

This part of the discussion was examining basically by classifying individual level factors as demographics (individual controls) and substantial individual variables. Demographics include age and gender while substantial variables include self esteem, religiosity, and substance use.

5.2.1 Adolescent demographics

Results examining individual factors gave important points on how individual factors were associated with coital initiation, condom use, risky and protective sexual behaviors. In these analyses, from elementary statistical analyses to regression analysis, the results partially seemed to be consistent albeit some inconsistencies were seen.

In relation to gender, males were more likely to initiate first coital intercourse than females in the bivariate analysis. This result was further corroborated in the multivariate analysis. Regarding condom use, there was no statistically significant association between males and females in the chi-square analysis. The result showed that both male and female adolescents used condoms at the same rate. In the multivariate analysis, gender did not differentially and significantly associated with adolescents' condom use status in their last sexual encounter. Both

analyses techniques confirmed that to use condoms in their last sexual intercourse did not depend on the gender group which clearly showed that both males and females used condoms at the same rate.

However, inconsistent to the present study, studies in the past revealed that males were more likely to use condoms than females (Baele et al., 2001; DiClemente et al., 1996). These findings suggest that males have greater control of condom use compared to females, as it is a male behavior, and this control translated into greater use of condoms, a reality that puts adolescent females at greater risk for HIV/AIDS and unwanted pregnancy. Thus, future research is needed to expound whether or not the finding of the present study is consistent or inconsistent to previous studies.

The fact that females were more likely to report virginity status compared to males falls consistent with previous research which suggests that adolescent males are more likely to transition into sexual activity before adolescent females (Whitebeck et al., 1999). Besides, the existing literature suggests boys have first sexual intercourse at earlier ages than their female counter parts (Alberte et al., 2003). These studies support the finding of this study. The reason why this differentially associated females and males in their coital initiation might be due to social and cultural norms regarding male and female sexuality. This might explain the higher rates of female virginity compared to that of males. In this analysis, more females reported that they were virgins as compared to males. In my view, in our society still holds lenient attitudes toward male sexuality that provide negligent context in which males are more likely to translate their sexual desires into behavior. On the other hand, less permissive attitudes toward female sexuality might prevent female adolescents from engaging in sexual behavior even if the desire is available. Besides, I speculate that males might get higher support from their peers for sexual

affairs as compared to females. Thus, in the present study, these conditions provide support for the idea that social context might explain gender differences in virginity status. Besides, the extant literature provides support for the idea that society holds different expectations for sexual activity as a function of gender. For instance, De Gaston, Weed and Jensen (1996) found that adolescent girls, compared to boys perceived less parental approval for teen sexual activity and more support for delaying sexual activity until marriage. The findings in this study were consistent to the literature and these confirmed that gender differences exist in virginity status and perhaps social norms pertaining to sexuality might be associated with the observed gender differences.

In the present study, gender did not significantly predict risky sexual behavior and gender differences did not exist with respect to risky sexual behavior. Adolescent males reported that their mean age of sexual initiation was about 15.48 while the mean age of sexual initiation for female adolescents was about 15.57. Surprisingly and unbelievably, the minimum age of sexual debut for male adolescents, as endorsed by them, was 6 while the minimum age of sexual debut for female adolescents as reported by them was 12. These ages are too early to start sexual intercourse for both sexes and still a question for the researcher how a male adolescent started first coital activity at the age of 6 needs further investigation. I speculate that those adolescents might be perpetrated by others not by their consent to involve in sexual activity. In any cases, starting sexual activity at these ages by adolescents can be considered risky sexual behavior.

This study found that females transition to sexual activity later than males, but when they do begin sexual activity, females engage in similar rates of risky sexual activity as compared to males. The finding in this study that gender differences did not exist in relation to risky sexual behavior which is in contrast to sexual initiation may be that once females transition

to sexual activity conservative attitude female sexuality no longer refrain them from engaging in further sexual affairs. My speculation is that adolescent females, they may begin to pay attention to cultural norms that open to their sexual activity to find more validation for their already initiated behavior. It might also be that female adolescents are more likely to be in sexual relationship with older partners as compared to adolescent boys which might explain their equal status in risky sex with their male counter parts. For instances, Miller, Clark and Moore (1997) suggest that if adolescent girls do sexual activity with older partners, older partners are more successful than equal age mates at persuading young adolescent girls to engage in sexual activity and to do so without using any protection mechanisms. I think that gender differences were evident regarding coital initiation in the present study but gender differences did not exist in relation to risky sexual behavior. Of course, it is believed that cultural background regarding male and female sexuality play a role in adolescents' reports of virginity status and risky sexual activity. However, the differential existence of adolescent partner relationship might explain the existing gender differences in coital initiation and gender similarities in risky sexual activity in this study. Besides, gender did not predict adolescent protective sexual behavior as well ($\beta = .032, p > .629$). As discussed above, regarding adolescent condom use status, different scholars suggest that males were more likely to use condoms as compared to females. The idea that showed more decision makers to use protective mechanisms falls on the shoulders of males and neglect females is our every day scenario in our society. The finding that was not in line with the literature needs further investigation where male and female adolescents use protective mechanisms at the same rate in their sexual encounter. Therefore, more research is needed to further investigate to reconcile the findings of this study to the existing literature. In my view, it

is not fair that females depend on their sexual partners' decision to use any protective mechanisms in their sexual encounter.

Therefore, I strongly suggest the essence of more research why in this study gender disparities did not exist in relation to condom use, risky and protective sexual activities while in other researches the scholars confirmed the existence of gender differences in condom use, risky and protective sex (see, Baele et al., 2001, DiClemenet et al., 1997). Moreover, more research is needed to understand how gender is associated with condom use, risky and protective sexual behaviors and more importantly to discover how females can be empowered in their sexual encounter to request protected sex or refuse unprotected sex. On top of this, more research is needed on the ways in which male youth could be more concerned of their sexual partners during their sexual encounter.

This dissertation examined how age was related to each sexual behavior. Thus, age significantly predicted adolescents' first coital initiation (Wald = 43.204, P = .000). The result showed that older adolescents were more likely engaged in sexual activity than younger adolescents. In any cases, results pertaining to adolescent demographic factors confirmed that as compared to sexually active youth, virgin adolescents were more likely to be young. Besides, in the gender analyses parts, virgins were females. In relation to protective sexual activity, age did not significantly predict protective sexual activity. Thus, it is possible to say that older and younger adolescents participated at the same rate in protective sexual activity. However, age marginally and significantly predicted the odds of adolescents' condom use ($\beta = -.179$, $P < .087$). In this case, older adolescents less likely used condoms in their last sexual intercourse as compared to younger adolescents. Despite similarities of younger and older adolescents in risky

and protective sexual behaviors, older adolescents were more likely to transition of first sex and less likely to use condoms as compared to their counter parts. Partly, the present finding corroborate the literature suggesting that older adolescents are more likely to be sexually active (Bersamin, Walker, Fisher and Grube, 2006, Abdulhakim, 2008) and less likely to use condoms (Sheeran et al., 1999) compared to younger adolescents. The reason why older adolescents were more likely to initiate sexual activity as compared to younger adolescents might be the pubertal changes that come with age might explain the high rates of non-virginity. Harpern et al. (1998) confirmed this idea by suggesting that puberty is positively associated with initiation of sexual activity. Harpern and his colleagues further stated that the increase in testosterone levels at puberty might be linked with sexual behavior by increasing sexual arousal and a greater interest in sex related behavior.

Besides, the lower rates of condom use of older adolescents might be associated with an increasing interest in establishing intimate relationships. In other words, older adolescents might be more prone to be in longer and more secured relationships compared to their counter parts. Scholars contend that within a perceived stable relationship, a sense of mutual trust and monogamy increased at which time transitioning out of condom use to other forms of contraceptive use can be a sign of such trust (Misovich et al., 1997). In contrast, Conley and Rabinowitz (2004) confirm that consistent condom use can symbolize an uncommitted relationship and infidelity. On the other hand, the findings in this dissertation showed that both protective and risky sexual behaviors were not differentially associated with age of adolescents. The results were not in line with Kotchick et al. (2000) who contend that older adolescents engage in more frequent and multiple forms of sexual behaviors compared to younger adolescents and lower rates of protective sex. Perhaps, these discrepancies were not the cases in

the present study. This might be that adolescents got trainings on how to protect themselves while they were practicing sexual activity irrespective of their age. This is my speculation based on the findings of the current study. On the other hand, adolescents might engage in sexual activity unsafely without referencing their age ranges because they may feel that using protective mechanisms in their sexual encounter might be regarded as the sign of infidelity by their sexual partners. In general, regarding protective and risky sex, more research is needed to understand how age is associated with risky and protective sexual behavior to be consistent with the present findings. Over all, the variance in coital initiation that was accounted by age and gender was 18.2%. This is the largest variance in coital initiation by age and gender as compared to the other sexual constellations (risky and protective sex and condom use). As discussed above, age and gender were outstanding in predicting the odds of adolescents' engagement in first sexual activity. On top of this, age and gender remained significant in predicting adolescents' transition to first sex in all of the models.

Besides, though not statistically significant, age and gender contributed .9% of the variance for risky sexual behavior and 1.9% of the variance in protective sexual behavior. These shared variances for each sexual constellation should not be overlooked. Thus, future research should be needed why this was the case in the present study. In contrast, the variance in condom use that was accounted by age and gender albeit gender was not significant was 1.9%. In fact, this variance was the smallest as compared to other blocks of variables except neighborhood factors.

5.2.2 Individual level substantial variables

Under this sub topic, I will discuss how self esteem, religiosity and substance use were related to each sexual behavior. Regarding self esteem, after controlling the effects of age and gender, self esteem predicted adolescents' protective sexual behavior ($\beta = .176$, $p < .005$). The finding confirmed that higher self esteem was associated with higher protective sexual behavior. In other words, adolescents who manifested higher self esteem used protective strategies better than those adolescents with lower self esteem in their sexual encounter.

In the bivariate analysis, self esteem and protective sexual behavior were positively correlated ($r = .315$, $p < .01$). The result further corroborated the finding on the multivariate analysis. Similarly, self esteem and condom use were associated significantly in the bivariate logistic regression analysis (Wald = 13.484, $p = .000$). Besides, there was a statistically significant self esteem mean difference across condom use and non-condom use adolescents in their last sexual encounter ($t(235) = 3.90$, $p = .000$, Safe youth (Mean = 31.99, SE = 4.47) and unsafe youth (Mean = 29.52, SE = 5.24) which shows that safe youth showed higher self esteem than unsafe youth. The bivariate and univariate analyses confirmed that youth who used condoms in their last sexual intercourse were safe. This might be translated to adolescents with higher self esteem were more efficacious to use condoms as compared to those adolescents with lower self esteem.

Studies in the past suggest that lower self esteem was associated with engaging in risky sex and had more negative attitudes toward using condoms (Sterk, Klein & Elifson, 2004). On the other hand, adolescents with higher self esteem were more likely to hold more positive attitudes towards condom use, feel more efficacious and less fearful in negotiating condom use, more

frequently communicate with parents and partner, and perceive fewer barriers to condom use (Salazar, Crosby, and Diclemente, 2005). I feel that condom use among adolescents was one of the mechanisms to protect the self from unwanted pregnancy for female adolescents and STI for both gender groups.

Other studies also suggest that higher levels of self esteem were associated with lower levels of various risk behaviors including sexual risk behavior (Peterson, Buser, and Westburg, 2010). In the multivariate analysis, after controlling the effects of age and gender, self esteem significantly predicted the odds of adolescents' condom use ($\beta = .071$, $p < .028$). The odds ratio 1.073 reveals that adolescents who demonstrated higher self esteem were 1.073 times more likely to use condoms than those adolescents with lower self esteem in their last sexual intercourse. In this study, self esteem is regarded as a protective factor.

The bivariate correlation analysis showed that self esteem and risky sexual behavior were not significantly associated ($r = -.041$, $p > .05$). Besides, in the multivariate analysis, self esteem did not significantly predict risky sexual behavior. The finding of this study was not a strange one since there were some studies which support the present finding. For instance, Goodson, Buhi and Dunsmore (2006) revealed that there were no significant associations with self esteem and risky sexual activity. Besides, Small and Luster (1994) confirmed that self esteem did not play a significant role in sexual behavior at all. The fact that studies in the past did not get consistencies in the relationship between self esteem and adolescents' coital initiation, which show high self-esteem is predictive of later intercourse (Whitebeck et al., 1999) while high self esteem is correlated to earlier first intercourse (Lammers et al., 2000). In contrast, Crockett et al. (1996) found no support for their self esteem to be predictive of early first

intercourse. Miller and Dyk (1993) in their review suggest that there may not be an absolute effect of self-esteem on adolescents' first intercourse. The finding in this dissertation should not be surprising. In relation to self esteem and sexual initiation in the bivariate analysis, there was a significant negative association between self-esteem and adolescents' coital initiation (Wald = 8.764, $p < .003$). The result confirmed that a unit increase in adolescents' self esteem was .954 times decrease in adolescents' engagement in first sexual activity. Besides, Independent Samples t-test was conducted to examine self esteem mean difference across virgin and non-virgin youth. The result showed that virgin youth (Mean = 31.93, St.dev = 4.41) had higher self esteem than non-virgin youth (Mean = 30.91, St.dev = 4.95) $t(235) = -2.83$, $p < .005$. This was in line with the finding in the bivariate analysis.

In the multivariate analysis, this study did not get any significant effect of self esteem on adolescents' first intercourse. The reason why self esteem was associated with adolescents' coital initiation in the bivariate analysis was not consistent with the result in the multivariate analysis in relation to sexual initiation was unclear. I guess its effect might be taken (confounded) by religiosity and substance use since substance use was a powerful predictor of adolescents' first coital initiation. Miller and Dyk (1993) also suggested that self esteem's effect on age at first intercourse varied according to beliefs about premarital sex predicted sexual activity, whereas high self esteem and negative beliefs about premarital sex predicted abstinence. The authors witnessed that the effect of self-esteem may be mediated by other variables and there is no absolute effect of self esteem on adolescents' first intercourse. This may be the possible reason why in the multivariate analysis, self esteem failed to predict adolescents' coital initiation after controlling the effects of age and gender. Thus, I suggest that future research should be needed to

examine these inconsistencies in the relationships among self-esteem and each sexual constellations.

Regarding religiosity and adolescents' sexual behaviors, there was a statistically significant positive association between religiosity and protective sexual behavior ($r = .295$, $p < .01$). The result shows that higher religiosity was associated with higher protective sexual behavior. In other words, adolescents who participated in religious activities used protective mechanism in their sexual intercourse as compared to their counter parts. In the multivariate analysis, after controlling for the effects of age and gender, religiosity predicted adolescents' protective sexual behavior ($\beta = .204$, $p < .001$). The finding is consistent to McCree, Wingood, DiClemente, Davis, and Harrington (2003) who revealed that religious youth are more likely to refuse unsafe sexual intercourse. Others also confirm that adolescents who had higher religiosity scores reported that higher self-efficacy in communicating with new and steady partners about sex, STDs, HIV/AIDS and pregnancy prevention and in refusing on unsafe sexual encounter. The study further showed that these adolescents were more likely to initiate sex at later age, use a condom and possess more positive attitudes toward condom use. (McCree et al., 2003)

The literature stated above supported the link between religiosity and adolescents' condom use which is the case in the current study showing that religiosity was positively and significantly associated with the likelihood of adolescents' condom use in the bivariate logistic regression (Wald = 17.869, $p = .000$). The odds ratio 1.117 indicates that religious adolescents were 1.117 times more likely to use condoms than adolescents of their counter parts. Moreover, in the multivariate analysis, religiosity significantly predicted the odds of adolescents' condom

use in their last sexual intercourse ($\beta = .085$, $p < .003$). The results in the bivariate and multivariate analyses were consistently and significantly predicting the odds of adolescents' condom use.

This study found that religiosity and risky sexual behavior were associated significantly but negatively in the bivariate and multivariate models. (In the bivariate analysis ($r = -.175$, $p < .01$) and in the multivariate analysis ($\beta = -.140$, $p < .041$)). In both analyses, the results were consistent. The results confirm that adolescents who were less religious were involved in more risky sexual activity than their counter parts. Literatures consistently support this finding. For instance, most religious groups discourage involvement in risky sexual behavior, premarital sex and dating violence (Howard, Qiu, & Boekeloo, 2003 cited in Alemayehu, 2012; Debebe, 2008).

The majority of research conducted to date supports that for adolescents and young adults, religiosity plays a protective role against sexual risk behavior. Moreover, studies suggest that religious affiliations conveyed attitudes towards premarital sexual intercourse and contraceptive use (Brewster et al., 1998; Thorrtton and Camburn, 1989). On the other hand, there was contradicting literature of the finding of this study. Adolescents' religious convictions may encourage participating engagement in unprotected intercourse. This engagement in sexual activities limits pregnancy but increased the likelihood of acquiring sexually transmitted diseases and HIV/AIDS infection to avoid negative effects associated with the violation of religious teachings and values (Rostosky et al, 2004; Ott and Kerr.2006). I think further research is needed to reconcile why these discrepancies exist. In this study, religiosity is a protective factor and youth should be encouraged to attend religious activities. In the contrary, religiosity did not predict the odds of adolescents' coital initiation in the multivariate analysis. However, in the

bivariate analysis, religiosity was significantly associated with the likelihood of adolescents' first coital initiation (Wald = 13.11, $p < .05$). The reason why the role of religiosity in predicting the odds of adolescents' sexual initiation in multivariate analysis was not significant consistent to the bivariate analysis was not clear. May be like self esteem, its effect might be taken (confounded) by substance use as substance use was a powerful predictor of adolescents' first coital intercourse. Future research is needed to test whether or not substance use mediated in the relationship between religiosity and initiation of sexual activity.

Regarding condom use, Independent Samples t-test was conducted to examine the mean difference regarding religiosity across safe and unsafe youth. The result showed that safe youth (Mean = 34.31, S.dev = 4.64) demonstrated higher religiosity than unsafe youth (Mean = 30.90, S.dev = 5.24) $t(235) = 4.48, p = .000$. This result consolidated the finding that religiosity significantly predicted the odds of adolescents' condom use.

Similarly, the Independent Samples t-test was performed to examine religiosity mean difference across virgin and non-virgin adolescents. The result showed that virgin adolescents (Mean = 34.31, S.dev = 5.13) demonstrated higher religiosity than non-virgin adolescents (Mean = 32.83, S.dev = 5.80) $t(235) = 3.51, p < .001$. This result consolidated the finding in the bivariate analysis. In the analysis of religiosity to predict each sexual activity, there were inconsistencies and consistencies in the findings of this study. These are in fact, inevitable since these behaviors are dynamic in nature. However, this study recommends the essence of future research to understand why these discrepancies existed.

Regarding the relationship between substance use and each domain of sexual behaviors, substance use in this study was the strongest predictor of the likelihood of adolescents' sexual

behaviors. As a result, substance use was negatively and significantly associated with protective sexual behavior in the bivariate analysis ($r = -.332, p < .01$). Moreover, a univariate t-test indicates that the mean substance use difference between virgin and non-virgin adolescents was significantly different. In multivariate analysis, substance use significantly predicted protective sexual behavior after controlling the effects of age and gender ($\beta = -.253, p = .000$). The result on both analyses showed that substance use adversely affected adolescents' protective sexual behavior. In other words, adolescents who used more substances were less likely to use protective mechanisms than their counter parts.

The relationship between substance use and adolescents' condom use was statistically significant. The bivariate logistic regression analysis (Wald = 15.103, $p = .000$) showed that substance use was significantly associated with the odds of adolescents' condom use. Besides, in the univariate t-test, there was a significant substance use mean difference across safe adolescents (Mean = 4.03, S. dev = 4.47) and unsafe adolescents (Mean = 7.83, S. dev = 8.22) $t(235) = -4.06, p = .000$. The result confirms that safe adolescents consumed fewer substances than unsafe adolescents.

The multivariate analysis indicates that substance use significantly predicted the odds of adolescents' condom use after controlling the effects of age and gender $\beta = .939, p = .005$. This also informs that a unit increase in adolescents' substance use .939 times more likely decrease the odds of adolescents' condom use. The findings in this study showed that substance use is a risk factor that exposed adolescents to involve in risky sexual activity. Research confirmed that substance use and use at last sexual intercourse were strongly associated with the likelihood of multiple partners (Leigh, 1990 Cited in Santelli et al., 2001). Similarly, Santelli and

his colleagues suggest that the number of substance ever used was strongly associated with likelihood of condom use at last sexual intercourse though the direction of relationship was not mentioned. The present study also found that substance use and risky sexual behavior were positively associated ($r = .275, p < .01$). Besides, substance use significantly predicted risky sexual behavior ($\beta = .246, p = .000$). The results in the bivariate and multivariate analyses indicate that substance use had a positive effect on adolescents' risky sexual behavior. Previous researches besides the above confirm that using substances before intercourse could directly impair judgment and this in turn be translated to engage in risky sexual behavior. Moreover, the use of alcohol and other drugs may also support the meeting of new sexual partners and result in intercourse with new or casual sexual partners or could result in earlier initiation of intercourse within a relationship with a new romantic partner (Santellie et al., 2001).

The relationship between substance use and initiation of sexual intercourse had positive relationship in the bivariate analysis ($\beta = .369, p = .000$). Besides, the study found that the mean substance use difference across virgin (Mean = .70, S.dev = 2.03) and non-virgin (Mean = 5.68, S.dev = 7.01) $t(235) = 10.8, p = .000$ was significantly different. As witnessed by the data non-virgin youth consumed more substances than virgin youth. In the multivariate analysis, substance use significantly predicted adolescents' first coital initiation ($\beta = .315, p = .000$). The result consolidated the above findings. In other words, adolescents who consumed substances were 1.370 times more likely to initiate sexual intercourse than adolescents of their counter parts. Study in the past supports this finding. For instance, Rosenbaum & Kandel (1990) suggest that substance use appears to play a critical role in adolescents' risky sexual practices because the use of substances often immediately proceeds on the onset of sexual activity. Similarly, the use of

alcohol and drugs is associated significantly with sexual experience and sexual risk (Boyer, Tschann, & Shafer, 1999). Moreover, Stueve & O' Donnel (2005) revealed that early alcohol use and subsequent alcohol use among adolescents led to initiation of sexual intercourse. The consequences of using substances by adolescents before intercourse could directly impair judgment and give themselves permission to engage in risky sexual activity. Many other studies confirmed the findings of the present study. For instance, adolescents who are under the influence of drugs or alcohol usually do not use condoms during sexual intercourse or they use them inconsistently (Gullette & Lyons, 2005; Jones, 2004). Moreover, others added that substance use causes sexual risk taking through intoxication: by impairing judgment, suppressing inhibition, reducing perception of risk, and/or heightening desire (Elkington, Bauermeister, & Zimmerman, 2010).

Hingston, Zakocs, Kopstein, & Wechsler (2002) on their part reported that large number of adolescents had unprotected sex while intoxicated with alcohol. Other studies have also shown that being under the influence of alcohol contributes to unplanned, unprotected sexual intercourse (Clapp and Mc Donell, 2000; Hingston et al., 2002). Studies further clarified why adolescents did not use condoms in monogamous relationships believed that they are not at risk for acquiring an STI or HIV. They assumed that their partners are disease free and trust him or her to be faithful (Jones, 2004; Williams, Norris & Bedor, 2003).

The use of khat and alcohol among adolescents in Addis Ababa showed strong links with the incidence of rape as a factor contributing to early sexual initiation (Fekadu, 2001). Moreover, substance use among Ethiopian adolescents was linked with committing risky sexual behaviors. The most common substances used among adolescents were Khat, Shisha & alcohol (Kebede et

al, 2005; Meressa Mossie & Gelaw 2009). These studies were all consistent to the findings of the present study.

In general, after controlling the effects of age and gender, 19.9% of the variance in protective sexual behavior was accounted for by self esteem, religiosity and substance use. Similarly, after controlling the effects of age and gender, 8.8% of the variance in risky sexual behavior was accounted for by self esteem, religiosity and substance use, 19.1% of the variance in condom use was explained by self esteem, religiosity, and substance use, and 21.0% of the variance in sexual initiation was accounted for by self esteem, religiosity, and substance use. When all individual level variables were considered, the variance 9.8% in risky sexual behavior, 39.2% in sexual initiation, 21.8% of the variance in protective sexual behavior, and 21% of the variance in condom use were accounted for.

Finally, this study suggests the need to conduct future research to further examine the relationship among individual level variables and each domain of sexual behaviors so as to elucidate why these inconsistencies exist in the findings of this study and the extant literature in relationship among some of individual level variables and some domains of sexual activities.

5.3 Familial level variables

This section discusses the findings by considering family demographics and substantial family variables. Family demographics include family structure, parental education, and family Socio-Economic Status and substantial familial variables including parental monitoring and family cohesion.

5.3.1 Family demographics

Adolescents living with two biological parents are less likely to have ever had sex when compared to adolescents from other family structures. The literature also suggests that adolescents from intact families would also be expected to have had few sexual partners and to have engaged in fewer acts of sexual intercourse when compared to adolescents from other family structure (Sturgeon, 2008). In the current study, family structure significantly predicted the adolescents' protective sexual behavior ($\beta = .119$, $p < .049$). The fact that adolescents from both biological parents more likely used protective mechanisms in their sexual encounter as compared to adolescents from other family constellations has got support by Sturgeon (2008). Regarding condom use, adolescents from both biological parents used condoms more likely than adolescents from other family structure groups as evidenced by the result ($\beta = .797$, $p < .009$, both biological parents = 1, else = 0). In fact, in this study, family structure did not significantly predict the odds of adolescents' sexual initiation (first intercourse). This does not go in line with the existing literature. For instance, Sturgeon (2008) revealed that adolescents from intact families were less likely to be sexually active than adolescents from other family structure; however, the differences were not uniform across family structure. This also supported by (Ambanesh, 2007; Dejene, 2005; Debebe, 2008). Adolescents from no parental /other households were most likely to be sexually active followed by adolescents living with a single parent.

In the multivariate MANOVA, the results of the current study partly were in line with the findings of Sturgeon (2008). That is, adolescents who live with both biological parents were better than adolescents from other living arrangements in using protective strategies in their

sexual encounter. Moreover, adolescents from both biological parents were more likely better in using protective mechanisms in their sexual intercourse than adolescents with a combination of single biological parents. But the study did not find any significant protective sexual behavior mean differences with respect to adolescents from a combination of single biological parents and other living arrangements.

In the multivariate analysis, family structure did not predict the odds of adolescents' sexual initiation. However, the literature showed that family structure consistently predicted adolescents' sexual debut and its timing. Adolescents living with single or remarried parents tend to initiate sex earlier than those living with both biological parents (Brewster, 1994; Whitebeck et al., 1999). Other studies confirmed that adolescents who live in two parent households tend to delay sexual initiation (Ali & Dwyer, 2011; Laflin et al., 2008). The inconsistencies in the findings of this study should need further study to clarify why this was the case.

To the positive side, which is in line with the finding of the present study, previous studies have found that youth who engage in protective sexual behavior, or remain abstinent for a longer period of time are more likely to come from a two-parent household than youth who come from a single parent households (Lammers, Ireland, Resnick, & Blum, 2000; Oman, Vesey, Kegler, McLeroy, & Aspy, 2003).

Regarding risky sexual behavior, family structure did not significantly predict risky sexual behavior. The finding in this case contradicts the studies by Lammers et al. (2000) and Oman et al. (2003). Other studies confirmed that the family structure which adolescents reside was found to be associated with risky sexual behavioral choices (Crosby, 2006). This was not the

case in this study and hence leads me to suggest future research that should explicate why these inconsistencies existed in the findings of this study and the previous literature regarding risky sex.

Studies in the past about the association of parental education and adolescents' sexual behavior have produced mixed results. For instance, Upchurch et al. (1998) have shown no significant effect observed in the relationship between parent education and adolescents' sexual behavior. Thus, the findings in this study were consistent to the finding of Upchurch and his colleagues. On the other hand, other studies suggest that lower levels of parental education were a risk factor for initiation of sex for both males and females (Kirby, 1999b). Similarly, Ali & Dwyer (2011) confirmed that the delay of sexual intercourse is associated with higher levels of parental education. However, the findings in this study were not consistent to the above findings. Both fathers' education and mothers' education were not significantly associated with each constellation of sexual behavior.

Moreover, contrary to the findings of this study, Koss (1985) found that children whose parents had less than a 12th grade education were 5.7 times more likely to have initiated sexual intercourse and children whose parents had high school education or equivalent were 7 times more likely to have initiated sexual intercourse compared to those children whose parents had a college level education. Regarding the findings of the present study, the associations of parental education and adolescents' sexual behaviors were not statistically significant in the bivariate and multivariate analyses. This confirms that adolescents, whatever educational levels their parents had, they involved at the same rate in sex. The reason why the findings of this study were not consistent to most of the previous studies was not clear. I recommend that future research is

needed to understand why these discrepancies occurred and the trajectories of parental educational levels and adolescents' sexual behaviors as far as Addis Ababa families are concerned.

As revealed in the bivariate logistic regression, both fathers' education and mothers' education were not significantly associated with adolescents' condom use. However, in the multivariate analysis, mothers' education was significant in model 5 after family cohesion was added. This might indicate that mother's education acted as a suppressor variable because its effect was observed after family cohesion was added in the model. The effect that significantly predicted the odds of adolescents' condom use by mother's education was a suppressor effect. This effect was solely dependent on family cohesion. Similarly, the effect of mother's education on the odds of adolescents' condom use was statistically significant in the next model as well. Its suppressing effect was not altered after the inclusion of neighborhood level factors. The suppressing effect of mother's education should need other studies because this study did not get any empirical evidence in the previous studies about the suppressing effect of mother's education on adolescents' condom use.

In the bivariate correlation analysis, family Socio-Economic Status was not significantly correlated with both protective and risky sexual behaviors. Besides, the bivariate logistic regression indicates that there was no significant association between family SES and adolescents' initiation of sexual intercourse. Similarly, this study did not get significant family SES mean difference across condom use (safe) and non-condom use (unsafe) adolescents. On top of this, there was no significant family SES mean difference with respect to virgin and non-virgin adolescents. The bivariate logistic regression further confirmed that family SES was not significantly associated with the odds of adolescents condom use. However, previous studies

acknowledged that family SES was associated with adolescents' more likely engagement in earlier onset of sexual activity than adolescents from other socio-economic brackets (Bridgman & Phillips, 1998). Besides, a Meta analysis by Blum and Mmari (2005) revealed a significant and positive relationship between contraception use and high SES in five of seven studies reviewed.

Regarding family SES, almost all of these studies were inconsistent with the findings of present study. In contrast to the literature in the previous studies, the multivariate analyses regarding the association of family SES and adolescent sexual behaviors were not statistically significant in the present study. However, family SES significantly predicted adolescents' condom use in the multivariate analysis in model 5 after family cohesion was added. As discussed above, there was no significant association between family SES and the odds of adolescents' condom use in the bivariate analyses. But in Model 5 and 6, Family SES was statistically significant after the inclusion of family cohesion in model 5 and neighborhood factors in Model 6. This might indicate the suppressor effect of family SES on adolescents' condom use. This effect is pseudo effect since its effect was evident after family cohesion was added to the model though in the bivariate logistic regression it was not significantly associated with adolescents' condom use. The inconsistencies of the findings of this study to the previous studies need further research to clarify why these inconsistencies existed. Moreover, future studies should be needed to explicate why family SES acted as a suppressor variable after family cohesion and neighborhood factors were added to their respective models.

5.3.2 Familial level substantial variables

Parental monitoring is widely recognized as a protective factor for adolescent health risk behaviors. Studies in the past have shown that monitoring of adolescent social activities by

parents directly impacts adolescent health by decreasing teen involvement in situation that involve drinking, drug use, and/or risky sexual behavior (Crosby et al., 2003; Sieverdings, Adler, Witt, & Ellen, 2005).

In the present study, parental monitoring was acting as a protective factor in most of sexual behavior domains. The result in the bivariate correlation witnessed that parental monitoring was significantly and positively correlated with protective sexual behavior while negatively and significantly correlated with risky sexual behavior ($r = .418$, $p < .01$ and $r = -.180$, $p < .01$) respectively. Besides, in the bivariate logistic regression model, parental monitoring was significantly associated to the odds of adolescents' initiation of sexual activity (Wald = 70.248, $p = .000$). The result was in support of the previous studies that parental monitoring decreased adolescents' engagement in their first sexual intercourse. In relation to condom use, parental monitoring was significantly associated with the odds of adolescents' condom use (Wald = 4.4, $p = .000$). The result consolidated the idea that parental monitoring is a protective factor which in this study revealed in relation to condom use, adolescents from higher parental monitoring families were more likely using condoms than their counter parts in their last sexual intercourse. Previous studies support the findings of this study in varieties of ways. When adolescents perceive a low level of parental monitoring, they are more likely to engage in risky sexual behavior (Hutchinson & Wood, 2007; Li, Feigelman, & Stanton, 2003) and are also inversely correlated with all forms of risky health behavior including drug and alcohol use (Crosby et al., 2003). This is particularly important because adolescents who engage in drugs and alcohol are

more likely to have unprotected sex when they choose to initiate sexual activity (Li, Feigelman, & Stanton, 2000).

To strengthen the findings of the present study, Independent Samples t-test revealed that virgin adolescents received higher parental monitoring than non-virgin adolescents (virgin mean, = 21.92; non-virgin, Mean = 18.94) $t(960) = -8.24, p = .000$). Another Independent Samples t-test analysis regarding adolescents' condom use consolidated the idea that parental monitoring increased adolescents to use condoms in their last sexual encounter (condom use, Mean = 20.85; non-condom use, Mean = 16.46) $t(235) = 7.34, p = .000$). Previous studies were consistently describing the protective role of parental monitoring which support the findings of the present study. High parental monitoring is associated with less sexual activity (Jacobson & Crocket, 2000), fewer partners and greater likelihood of using condoms (Miller, Forehand, & Kotechick, 1999), later onset of sexual activity (Small & Luster, 1994).

The multivariate results were consistent with previous studies stated above. Regarding protective sexual behavior, after controlling the effects of individual variables and family demographic variables, parental monitoring significantly predicted protective sexual behavior ($\beta = .350, p = .000$). It contributed 9.7% of the variance for protective sexual behavior. The result indicates that adolescents who received higher parental monitoring used different protective mechanisms than adolescents of their counter parts.

Besides, parental monitoring predicted adolescents' condom use which revealed that adolescents from higher parental monitoring families were 1.246 times more likely to have used condoms than their counter parts in their last sexual encounter. The variance that is accounted for

condom use only by parental monitoring after controlling the effects of individual variables and family demographic variables was 14.9%. This is tremendous contribution. The finding got support by previous studies.

Regarding adolescents in Addis Ababa, the direction of relationship between adolescent sexual engagement and parental monitoring was reversed. However, this might pose questions regarding the situation that adolescents used protective mechanisms in their sexual encounters and condoms at last intercourse were influenced by parental monitoring. Is it attributed by because of fear of their parents' reprimand or there might be free discussion with their parents about sex or share ideas with their proximal peers the essence of protective mechanisms in every sexual encounter? There were suggestions in this regard by Xiamong, Feigelman, & Stanton (2000) which might be nearest to my doubt that adolescents may attribute their decisions about sex to parental monitoring, which causes adolescents to either reduce their involvement in sexual behaviors or with sexually active peers because of fear of being reprimanded by parents. An overall good positive relationship between parent and child has been found to delay sexual experiences for adolescents (Ikramullah, et al., 2009). These relationships allow both parent and child to develop better lines of communication, which will allow for the likelihood of them having an open dialogue about sex (Pearson, Muller, & Frisco, 2006). This needs further research as far as my experience dictates me that discussing about sexual affairs are still taboos and may not be accepted by parents positively in our society.

Another multivariate analysis showed that parental monitoring did not predict risky sexual behavior. As presented in the bivariate section, parental monitoring and risky sex were negatively and significantly correlated but in the multivariate analysis the relationship was hampered by individual level variables. In fact, indirectly parental monitoring influenced risky

sexual behavior via substance use. However, the direct effect of parental monitoring on risky sex was not significant which was inconsistent to the existing literature though it had indirect impact through adolescent substance use. This needs further research to clarify why adolescents engaged at the same rate in risky sexual activity across high level or low level of parental monitoring. However, parental monitoring impacted adolescents' first coital initiation through individual factors. If parental monitoring is entered in the model before individual substantial variables, it significantly predicted adolescents' first coital initiation. Consistent to the findings of the present study, adolescents who reported their parents monitored their behavior closely were less likely to have early first intercourse than those who said their parents did not monitor their behavior closely (Small & Luster, 1994; Paikoff, 1995). Parents not only become monitors, but also act as supervisors and regulators for the adolescent's decision-making process to engage in risky sexual behavior (Parera & Suris, 2004; Bronte-Tinkew, Moore, Capps & Zaff, 2006). These factors are only related if the parent takes an active role in adolescent's life. Parera and Suris (2004) have discovered that decreased parental monitoring can lead to adolescents having multiple sexual partners or a laboratory confirmed STI. In any case, the present researcher calls for future research to elucidate some of the inconsistencies in the findings of the present study and the findings of other previous studies.

Out of the four types of sexual behaviors examined, protective sexual behavior and condom use were directly associated with family cohesion in the multivariate analysis. More specifically, adolescents from more cohesive family settings used protective strategies in their sexual intercourse than adolescents of their counter parts. Similarly, adolescents who came from cohesive family settings were more likely used condoms than adolescents of their counter parts in their last sexual intercourse.

Studies in the past though disaggregated by gender, which was partially examined in this study show the linkages between family cohesion and female adolescents with gender family support (Crosby, Diclemente, Wingwood & Harrington, 2002) and positive parent adolescents relationship (Tannenbaun, 2002).

However, in this dissertation, there was no association between condom use and gender $\chi^2(1, N = 237) = .167, p > .683$ which confirmed that both male and female adolescents used condoms at about the same rate.

The fact that family cohesion was associated with female adolescents' condom use as suggested by the previous studies is not in line with the finding of the present study. Those previous studies might have used gender as a moderator variable in the relationship between family cohesion and condom use which was not the case in the present study. However, consistent to the findings of the present study, Solomon (2004) concurred that adolescents with better family connectedness were more likely to use condom consistently. Besides, in the multivariate analysis, family cohesion was a strong predictor of both protective sexual behavior and adolescents' condom use. Other studies support the findings of the present study in such a way that youth who perceived their families to be supportive are more likely to use protective means and communicate with their partners about risky sexual activity (Crosby et al., 2002) and postpone sexual activity (Lammers et al., 2000) compared to adolescents who report risky sexual behavior and early debut of sexual activity.

Similarly, consistent to the findings of the present study, previous studies suggest that close family bonding has been identified as a protective factor for youth risk taking behavior

(Lonczak, Abbot, Hawkins, Kosteman & Catalano, 2002 Cited in Grayson, 2007). Other previous studies confirmed that perceptions of familial support and connectedness have been found to be negatively associated with risky sexual behavior, such as multiple partners and failure to use contraceptive methods (Small & Lustre 1994). The bivariate correlation in the present study showed that family cohesion and risky sexual behavior significantly and negatively correlated ($r = -.136, p < .05$). The result goes in line with the above studies that higher family cohesion decreased adolescents' engagement in risky sexual activity. Moreover, in the bivariate logistic regression, family cohesion was associated with adolescents' first coital initiation (Wald = 26.747, $p = .000$). On top of this, significant family cohesion mean difference was observed across virgin (Mean = 27.96) and non-virgin (Mean = 25.70) $t(960) = -5.03, p = .000$ adolescents. The results were consistent with the existing literature stated above.

Commendador (2010) has found that adolescents with close parental relationships benefit from self-esteem and confidence. Close relationships allow the parents to enforce values, morals, and rules, which will be effective in the moral and behavioral development of the child.

In the multivariate analysis, regarding risky sexual behavior and coital initiation, family cohesion did not directly predict risky sex. Though family cohesion did not directly predict both risky and coital initiation sexual activities, it can have direct impact if it were entered before parental monitoring and individual level variables. However, the results of the present analyses were consistent to the literature reporting inverse associations between sexual debut, risky sex and family connectedness (Henrich, Brookmeyer, Shrier & Shahar, 2006; Rose et al., 2005). On the other hand, the discrepancies between the multivariate results regarding risky sex and coital

initiation and the bivariate and univariate results might reflect the fact that individual factors might confound the relationships between family cohesion and risky sex and coital initiation. The other possible speculation about the non-significant findings in the multivariate analyses regarding the relationship between family cohesion and risky sex and first coital initiation might be that family becomes less involved and influential in adolescents' sexual behavior as youth transition into adolescence, a time in which they begin to attend more to their peer. Evidence for this can be the finding showing positive linkages between peer norms which support sex, virginity and non-virginity status and risky sex (Caal, 2008). It was suggested that highly engaged family and high family support were associated with less risky sex (Miller et al, 1998; Crosby et al, 2001). It may also be attributed to good relationships formed between parents and the child, which have allowed the child to feel more comfortable with communicating with the parent about decisions to engage in risky sexual behaviors (Ikramullah, Manlore, Cui, & Moore, 2009).

In any circumstances, future studies are needed to clarify why these discrepancies and inconsistencies existed in this particular study. Nonetheless, this study contributed a lot to generate and add new knowledge to the existing literature. In the multivariate analysis, in relation to the associations between familial level variables and variety of sexual behavior domains, the explained variances gave important direction for future research. As discussed above, familial level variables contributed large variances in condom use and protective sexual behavior after controlling the effects of individual level variables.

On the other hand, little was contributed in the relation to risky sex and first coital initiation by these variables after controlling the effects of individual level variables. I suggest future research will be needed again to elucidate why these gaps occurred.

5.3.4. Neighborhood level characteristics

Social disorganization theory informs how neighborhood factors influence health. Individuals living in more disadvantaged neighborhoods were more likely to manifest high rates of problem behaviors than their counter parts living in more advantaged neighborhoods. Consistent with the above idea, the present study examined how neighborhood factors were related to each adolescent sexual behavior. Accordingly, in the bivariate regression regarding first coital initiation, neighborhood disorganization was significantly associated with adolescent's first coital initiation (Wald = 10.045, $p < .002$). Besides, there was a significant neighborhood disorganization mean difference across virgin (Mean = 18.18) and non-virgin (Mean = 19.29) $t(960) = 3.20$, $p < .001$. In any cases, the result revealed that non-virgin adolescents live in neighborhoods characterized by highly disorganized as compared to adolescents of their counter parts. In other words, adolescents who live in more disorganized neighborhoods more likely initiated sex than adolescents who live in less disorganized neighborhoods. The findings were in accordance with Burgard & Lee-Rife (2009) who suggest that greater neighborhood disorganization was associated with earlier sexual onset and inconsistent condom use among male and female adolescents. With regard to neighborhood influences on initiating sex, the majority of studies found that greater neighborhood disadvantage predicted early initiation to sex (Bauermeister et al., 2010; Browning et al., 2008; Browning, Leventhal, & Brooks-Gunn, 2005; Roche et al., 2005).

Regarding adolescents' condom use, this study got significant association between neighborhood disorganization and adolescents' condom use in their last sexual intercourse (Wald

= 4.620, $p < .032$). The odds ratio in the bivariate logistic regression showed that adolescents from more disorganized neighborhood were .941 times less likely to use condoms (inconsistent condom use) than adolescents of their counterparts. The finding was consistent to the theoretical relationships which suggest greater social disorganization should be associated with adolescents' inconsistent condom use. The reason why adolescents in more disorganized neighborhoods hesitated to use condom in their last sexual intercourse was unclear. However, it is speculated that there might not be proper guidance by their parents or guardians, because the environment where they reside create stress on parents' ability to manage their children. Besides, in highly disorganized neighborhoods, there might not be adult role models who are able to educate the youngsters the importance of using condoms in every sexual encounter. The other speculation might be adolescents may think that using condoms might hinder their sexual satisfaction. In this regard, studies revealed that condom use, however, may be perceived as signifying distrust between partners and may ultimately be foregone, even when youth express concerns regarding pregnancy and HIV/STI vulnerability (Bauman, Karasz, Hamilton, 2007).

Consistent to the literature, this study revealed that neighborhood disorganization would have a direct effect on adolescents' sexual initiation when entered in the first model. This finding received support from Browning et al. (2008) which suggests that neighborhood disorganization was related to youth likelihood of having initiated sexual activity.

In the bivariate correlation, neighborhood disorganization was associated with protective sexual behavior ($r = -.223$, $p < .01$). The result informs that in neighborhoods characterized by greater neighborhood disorganization, adolescents' interest to use protective mechanism in their sexual intercourse were minimal. In contrast, neighborhood disorganization

and risky sexual behavior were not significantly correlated ($r = .079, p > .224$). This relationship indicates that adolescents residing in neighborhoods characterized by greater disorganization were practicing risky sexual activity similar to those adolescents who live in less disorganized neighborhoods. The finding was not in line with Leventhal and Brooks-Gunn (2000) who stated that adolescents growing up in neighborhoods marked by concentrated poverty (disadvantage neighborhoods) are at risk for range of negative outcomes including poor physical and mental health, risky sexual behavior. Other studies repeatedly found a link between neighborhood disadvantage and a number of risky adolescent sexual outcomes such as inconsistent contraceptive use and teenage child bearing (Baumer & South, 2001).

In the multivariate analyses, the direct effect of neighborhood disorganization was not evident in all of the domains of sexual behaviors. This was because of the presence of parental variables and individual variables in the model. Though the effects of individual level and familial level variables were controlled, the effects of neighborhood disorganization on each adolescent's sexual behavior were not statistically significant. However, its effects were evident if we enter in the model first together with demographic variables. Hence, this dissertation also examined how family cohesion and parental monitoring served as mediators in the relationship between neighborhood disorganization and each adolescent sexual behavior.

Studies suggest economic disadvantage influences the composition of sexual networks and place youth at risk for greater HIV/STI vulnerability (Baumer & South, 2001; Dembo, Belenko, Childs, Wareham, & Schmeidler, 2009). Sexual contact for example may serve to create bonds between individuals and create kinship in a social network (Friedman, Cooper, Osborne, 2009; Baumeister & Vohs, 2004). It is imperative to consider these findings together which

suggest that social disadvantage theory may be extended to condom use because youth living in neighborhoods characterized by greater disorganization may experience compounded risk of engaging in inconsistent condom use. On the contrary, Bauermeister et al. (2010) found that living in greater disorganized neighborhood was associated with more consistent condom usage among teens. Even studies in the past showed mixed results in the relationship between adolescents' condom use and neighborhood disorganization as discussed above.

However, more research is needed to elucidate whether the findings of this study were consistent or not in the relationship between neighborhood disorganization and each sexual behaviors of adolescents. The inconsistencies in the findings of previous studies regarding condom use calls future research to expound more the association of condom use and neighborhood disorganization either goes in the same direction or reverse way.

Collective efficacy theory emphasizes community level social disorganization as a main neighborhood level factor influencing adolescent behavior outcomes (Sampson, 1997). My investigation of the link between neighborhood collective efficacy and each adolescent sexual behavior showed that collective efficacy as symbolized by the joint influence of intergenerational closure, social cohesion and expectations for adult protection and active support of local youth has invaluable consequences in decreasing risky sexual behavior though indirectly promoting protective sexual behavior and condom use and limiting the time onset of first sexual intercourse. Thus, in the bivariate correlation, the result revealed that protective sexual behavior was positively and significantly correlated with neighborhood collective efficacy ($r = .335, p < .01$). However, the relationship between neighborhood collective efficacy and risky sexual behavior was marginally significant ($r = -.124, p < .058$). In the multivariate analysis on risky sexual

behavior, all neighborhood factors did not directly predict risky sexual behavior after individual and familial level factors were controlled. To further clarify whether these relationships were evident or not, I added neighborhood factors before individual and familial level variables were added to the model, the analysis did not get any significant effects on risky sexual behavior except neighborhood collective efficacy which was marginally significant ($\beta = -.128, p < .052$).

However, neighborhood factors had effects on risky sexual behavior through parental monitoring and family cohesion. These effects were discussed in the upcoming section of mediating effects.

In this regard, a number of studies have examined the effect of neighborhood collective efficacy on early onset of sexual activity. For instance, Browning et al. (2005) had found significant impact of timing of sexual initiation in children whose parents displayed low monitoring which is consistent to the findings in the present study which also provides support for the assertion that neighborhood cohesion may provide a protective effect on the adolescents most at risk for early sexual onset.

Regarding the inconsistencies between the findings of the previous studies and the present study, more research is needed to explicate why and how these inconsistencies occurred.

2.5. The interrelationship of individual, familial, and neighborhood factors

2.5.1. Mediation and interaction effects

Even though studies have demonstrated support for the notion that the neighborhoods within which adolescents are embedded affect their ultimate decision to engage in problem behavior, the nature of this relationship is not consistent. To assert, the idea that neighborhood factors may not always have a direct effect on adolescents' sexual behavior, one potential

mechanism that had some attention in the literature is that of parenting practices (Luster & Small, 1994).

It is clearly known that parents are significant in the lives of adolescents. Thus, in this study, parental monitoring and family cohesion were important familial variables which linked neighborhood factors and adolescent sexual behaviors. Previous studies suggest that parents who reside in socially disorganized neighborhoods may not have the needed time and/or energy to monitor their children well (Sampson, Morenoff, & Earls, 1999, cited in Matisa, 2005). This idea reinforces the assertion that parental supervision/monitoring may be a link between neighborhood characteristics and adolescent sexual behaviors. And specifically this effect is mediated by parental monitoring. Consistent with the literature parental monitoring mediated in the linkages between adolescents condom use and neighborhood disorganization though it had a direct effect on adolescents' condom use. In multivariate analysis, when individual and familial demographics and neighborhood factors were entered in Model 1, both neighborhood disorganization and neighborhood collective efficacy significantly predicted the odds of adolescents' condom use (Neighborhood disorganization $\beta = .068$, $p < .040$; Neighborhood collective efficacy, $\beta = .180$, $p < .000$). In Model 2, after parental monitoring was added, neighborhood disorganization reached non-significance whereas neighborhood collective efficacy remained significant.

The result in this section confirmed that parental monitoring mediated in the linkages between neighborhood disorganization and condom use; however, this mediating power did not work for neighborhood collective efficacy. The fact that parental monitoring mediated in the

relationship between neighborhood disorganization and adolescents' condom use revealed that neighborhood disorganization incapacitated parents' power of monitoring their adolescents and this in turn translated into adolescents who could not get proper advice and guidance from parents and may be lenient to involve in sexual intercourse and fail to use condoms. Parental monitoring did not mediate in the linkages between neighborhood collective efficacy and condom use. The reason why parental monitoring failed to mediate in the relationship between neighborhood collective efficacy and condom use was not clear. It might be speculated that in neighborhoods characterized by high collective efficacy, there might be possibility of the residents to discuss about the benefits of condom use and this might be directly addressed to the adolescents of that neighborhood without influencing parental supervision and monitoring. Moreover, there might be trainings or informal exchange of information to create awareness among adolescents of that neighborhood about the risk of not using condoms whenever they had sex.

The above ideas are not beyond speculation, however, it is expected that adolescents might be members of some reproductive health clubs in schools or in health centers around their residence which might be stretched in that community as well.

The analysis of this study confirmed that family cohesion was one of the potential mediators of the link between neighborhood collective efficacy and adolescents' condom use. Family cohesion and parental monitoring were regarded as mediators in the relationship between neighborhood factors and risky sexual behavior. The multivariate analysis informed that neighborhood disorganization and neighborhood collective efficacy did not directly link to risky sexual behavior. However, their linkages to risky sexual behavior were evident via parental monitoring and family cohesion. These path ways were revealed by conducting Sobel's Prob.

Test. This study assured that though parental monitoring and family cohesion were correlated with risky sexual behavior, their relationships were also carried by adolescent substance use. Baron and Kenny's (1986) criteria was implemented for this purpose and the result revealed that substance use mediated in the relationship between parental monitoring and family cohesion. Previous studies partly stood to the side of the findings of this study which suggested that parental monitoring can significantly decrease adolescent engagement in substance use and other risky activity even in high risk settings (Longmore, Manning, & Giordano, 2001). In this regard, to show the influence of parental monitoring, parents place an emphasis on curfew-setting, rule making, and trust adolescents are more likely to avoid risky situations in order to maintain an amiable relationships with their parents (Fuligni & Eccles, 1993). The finding of this study regarding the influence of parental monitoring on adolescents' substance use, the amount of substances used by adolescents' decreased and this in turn placed adolescents to decrease involving in risky sexual activity. Studies in the past also confirmed the findings of this study. For instance, Sim, Jordan-Green & Wolfman (2005) suggest that parental monitoring has a positive influence on preventing substance use among adolescents, much parental control is associated with fewer partners, and greater likelihood of using condoms (Miller, Forehand, and Kotchick, 1999).

The mediating role of substance use in the relationship between family cohesion and risky sex got little support in the literature. Some studies revealed that the relationship between family cohesion and adolescent substance use which indicated that higher levels of use of alcohol, cigarette, and marijuana, and can delay increase in cigarette use (Velleman et al., 2007). Crundall (1993) suggest that low family cohesion and adolescent negative self-perception added

more likely inviting adolescents to involve with substance use. The relationship between family cohesion, substance use, and risky sex may not be clearly stated in the literature. May be, I guess that high cohesiveness among family members might create open discussion about sexual affairs and the risk of substance use before sex. This open discussion among the members of the family may inform adolescents to decrease using substances and this might be translated to decreasing of practicing risky sex. However, this study suggests the need to conduct further research to prove or disprove the relationships of family cohesion, substance use, and risky sexual activity.

The finding in this study also showed that parental monitoring mediated in the relationship between neighborhood disorganization and protective sex. However, parental monitoring did not mediate in the relationship between neighborhood collective efficacy and protective sex. Studies in the past reveal more or less consistent to the findings of this study, which stated that adolescents experience lower amounts of substance use, sexual activity and general deviant behavior when parents have strong relationships with adults in the community. Such adults may include teachers, other adults' family members', parents of peers, and close friends from the neighborhood within which the family lives (Small & Luster, 1994). These adults can play a critical role in supervising other people's adolescents by reporting back to parents on where their children were, who they were with, and what they were doing (Small & Luster, 1994). This, indirect effect of the community members on adolescents' behaviors supports the results of the mediating role of family cohesion in the relationship between neighborhood factors and adolescent risky sex, protective sex, first coital intercourse, and condom use of the current study. In addition, the literature supports the findings of this study by suggesting that increased levels of family stress and conflict might be associated with higher

rates of unprotected sex. While greater family cohesion is inversely correlated with adolescents' unprotected sex (Jaccald, Dittus & Gordon, 1996).

Besides, the multivariate analysis indicated that neighborhood disorganization and neighborhood collective efficacy had direct effects on adolescents' first coital initiation in Model 1. When parental monitoring and family cohesion were added in Model 2, significant neighborhood disorganization failed to reach significance but neighborhood collective efficacy remained significant.

These findings lead us to conclude that parental monitoring and family cohesion mediated in the relationship between neighborhood disorganization and first coital initiation; however, these parental variables did not mediate in the linkage between neighborhood collective efficacy and adolescents' coital initiation. The findings of this study got support in the literature by suggesting the impact of communities' social and economic conditions on timing of first intercourse and contraceptive use which indicate that high population turnover might be a factor leading to neighborhood disorganization. This may lead to feelings of anonymity and of not being closely watched or monitored among youth and had debilitating effect on parental monitoring in a way that could produce a variety of forms of deviance among youth leading to engagement in sex (Brewster, Billy, & Gradys, 1993). Coleman (1988) also suggests that when parents and parents of their children's friends mingle a consensus of standard sanctions imposed for problem behaviors among neighborhood youth and there will be agreement about how to sanction children for inappropriate behavior, but neighborhood parents will be more likely to monitor their neighbors' children in which parents can inform each other when children are misbehaving or getting into trouble such as sexual initiation.

Neighborhood structure may interact with parental practices to affect onset of sexual activity among adolescents (Stark, 1987). Although greater support and monitoring by parents decrease the likelihood of youth engaging in deviant behaviors, this effect may be lessened in neighborhoods with relatively high levels of disorganization (Roche et al, 2005). In other words, regardless of the sources of parenting practices, youth in more disorganized neighborhoods will likely experience more deviance producing conditions that offset and lessen the effects of parenting practices. Conversely, living in less disorganized neighborhoods may add an additional protective factor (e.g. Collective social control, community role models, etc) for youth whose parents do not have the best practice and thereby, may buffer the impact of inadequate parenting (Matisa, 2005). In the present study, interaction effects of neighborhood factors and parental monitoring on adolescents' sexual behaviors were examined. The results were not consistently in line with the findings of the previous studies. That is, interaction effect of neighborhood disorganization by parental monitoring on protective sexual behavior was not statistically significant; however, the interaction effect of neighborhood collective efficacy by parental monitoring significantly predicted protective sexual behavior. Inconsistent to the literature, the result of the present study showed that parents in highly disorganized neighborhoods, parental monitoring of their adolescents was similar to that of parents in less disorganized neighborhood and due to this adolescents' protective sexual behavior was not altered across neighborhood groups.

Consistent to the literature, parents in neighborhoods characterized by high collective efficacy can have effectively monitored their children so that adolescents could use protective mechanisms in their sexual encounter. Conversely, less collective efficacy among the members of the neighborhood lessens parents' effective monitoring because of less social network among

the members. This in turn, influenced adolescents' capacity not to use protective mechanisms. The previous literature in this area did not provide enough empirical evidences regarding the interaction effects of neighborhood factors and parental monitoring on adolescent sexual behavior. Thus, to check whether the findings of this study go in line with or contradict the existing literature or not needs future research to clarify these effects were consistent or inconsistent to the findings of the current study.

Interaction effects of neighborhood factors by parental monitoring on adolescents' condom use, risky sex, and first coital initiation were not statistically significant. These results were not consistent to the previous study which reveals neighborhood structure interacting with parental factors to affect onset of sexual activity (Stark, 1987).

Besides, inconsistent to the findings of this study, Roche et al. (2005) investigated whether neighborhood socio economic disadvantage modifies the relationship between parenting practices and sexual initiation among adolescents; the result confirmed that greater parental involvement decreases the likelihood of an adolescent's initiation in sex but only in socially advantaged neighborhoods.

Inconsistent to the findings of this study, Matisa (2005) also found that in neighborhoods characterized by low to moderate levels of disadvantage, as peers' parents interact with more parents of their children's friends' parents, the likelihood that adolescents will engage in sex decreases. Conversely, in more highly disadvantaged neighborhoods, when adolescents' parents interact with less of their child's friends' parents, adolescents are at an increased risk of engaging in sex.

The inconsistencies between the findings of this study and the available small research findings might be due to the differences in socio cultural and socio economic factors. The

majority of these studies were Western culture studies referencing the Western parenting style and economic background. In Ethiopia, however, discussing about the sexual behaviors of children among the community members might be considered as a taboo while discussing about sexual behaviors of their children among Western community might be taken as one of the basic issues to promote adolescents' development and health. I feel that this is not more than speculation on my part but future research is needed to elucidate how parents interact with their neighborhood and show this interaction among community members might result in a positive or adverse effect on their adolescents' developmental outcomes specifically to sexual behaviors.

Chapter Six

6. Summary, Implications and Conclusions

6.1. Summary

The main purpose of this study was to examine which individual, familial, and neighborhood level factors best predicted adolescents' sexual behaviors in Addis Ababa. The study tried to answer the following research questions.

1. Do sexual behaviors of adolescents vary by the study variables (age, gender, self esteem, religiosity, substance use, family structure, parental education, family SES, parental monitoring, family cohesion, neighborhood disorganization and neighborhood collective efficacy)?
2. Are there any mean differences between sexually experienced (Non-virgin) and inexperienced (Virgin) youth on continuous predictor variables?
3. How are individual level factors related to adolescents' sexual behaviors?
 - a. To what extent are individual demographics related to adolescent's sexual behaviors?
 - b. To what extent are self-esteem, religiosity and substance use related to adolescents' each sexual behavior?
4. How are family level factors associated with adolescents' sexual behaviors?
 - a. To what extent are family level demographic factors related to adolescents' sexual behaviors?

- b. To what extent are parental monitoring and family cohesion related to each adolescent sexual behavior?
5. How are neighborhood level characteristics associated with adolescent sexual behaviors?
- a. To what extent are neighborhood disadvantage and collective efficacy related to each adolescent sexual behavior?
 - b. To what extent do neighborhood characteristics interact with parental monitoring for a moderated relation with each sexual behavior?
6. Does substance use mediate in the linkages between parental monitoring and each sexual behavior?
7. Does substance use mediate in the linkages between family cohesion and each sexual behavior?
8. Do family factors (parental monitoring and family cohesion) mediate in the relationships between neighborhood factors and each sexual behavior?

The respondents of this study were 962 randomly chosen preparatory school adolescents where 525 were female adolescents and 437 were male adolescents. Out of 962 adolescents, 725 were reporting virgins and 237 were non-virgins. To carry out this study, Bronfenbrenner's (1979) ecological systems theory was used as the basis for this study. The research methodological approach was quantitative. The study participants were obtained by employing multistage cluster sampling technique. The study variables were classified as individual variables which include gender, age, self-esteem, religiosity, and substance use; familial level variables which include family structure parental education, family socio-economic status, parental

monitoring, and family cohesion; and neighborhood level variables include neighborhood disorganization and neighborhood collective efficacy. The analytical techniques were univariate and bivariate analyses techniques which were used for the whole sample and the sexually active sub sample. These statistical techniques were Pearson Product Moment correlation to see the magnitude and direction of the relationship between the continuous predictor variables and the continuous sexual behaviors. The non-parametric test was employed to see the association between two categorical variables. For this purpose, Chi-square test was used. Besides, independent samples t-test was used to examine whether there existed mean differences on continuous individual, familial, and neighborhood factors across male vs female groups, virginity vs non-virginity status, and safe youth vs unsafe youth groups. This study employed one way multivariate MANOVA to examine mean differences on the composite sexual behavior across gender, family structure, and parental education. To examine gender differences on the composite sexual behavior, Hotelling's T-test was used.

Moreover, multivariate analyses were undertaken to examine the effects of blocks of individual, familial, and neighborhood factors on each adolescent sexual behavior for the whole sample and the sexually active sub sample. For the purpose of this, hierarchical regression analyses were employed to check the relative importance of blocks of variables in the model. On top of the above statistical analyses, this study examined the mediation and interaction effects of theoretically supported individual, familial, and neighborhood factors on adolescents' sexual behaviors.

The results of this study were presented in accordance with their corresponding test statistics. Thus, regarding the bivariate correlation, most of the study variables were correlated significantly with each other and with the continuous sexual behaviors.

For sexually active youth, the Pearson Product Moment correlation showed that risky sexual activity was not significantly correlated with age, self-esteem, and family socio economic status, neighborhood disorganization, and neighborhood collective efficacy. However, risky sexual activity was significantly correlated with religiosity, substance use, parental monitoring and family cohesion. Besides, protective sexual behavior was significantly correlated with all of the study variables except family socio-economic status.

The Chi-square analysis confirmed that there was statistically significant association between gender and first coital initiation which shows male adolescents were non-virgin than female adolescents. Besides, the Chi-square analysis informs us that there was significant association between family structure and adolescent coital initiation. However, the Chi-square test did not get any significant associations between parental education levels (father's education and mother's education) and adolescents first coital intercourse. Besides, the Chi-square analysis confirmed that there was no significant association between gender and adolescents' condom use.

The Independent Samples t-test revealed that there were significant mean differences on self-esteem, religiosity, substances use, age, parental monitoring, family cohesion, and neighborhood factors across virgin vs non-virgin groups. However, the analysis did not get significant family SES mean differences across virgin and non-virgin adolescents. The Independent Samples t-test also shows that there were significant mean differences on religiosity, self-esteem, substances use, parental monitoring, family cohesion, and neighborhood factors with respect to safe and unsafe adolescents whereas the analysis did not show significant mean difference on family SES across safe and unsafe youth. There was marginally significant mean difference on age of adolescents across safe and unsafe youth. The bivariate logistic

regression also showed that except family SES, parental educational levels and two categories of family structure (biological father and step mother and biological mother only) the remaining variables were associated with adolescents' sexual initiation.

Similarly, the bivariate logistic regression indicates that except gender, biological mother and step father, biological mother, both fathers' educational levels, both mothers' educational levels, and family SES, other variables were associated with the odds of adolescents' condom use in their last sexual encounter.

Regarding multivariate analyses, one way between subjects MANOVA indicated that there was no gender difference on composite sexual behavior. Moreover, the multivariate MANOVA indicates that there were no mean differences on the composite sexual behavior across levels of parental education. However, one way MANOVA reveals that family structure had marginally significant effect on the composite sexual behavior.

Besides, the post hoc test reveals that significant effect was achieved on protective sexual behavior which revealed adolescents who live with both biological parents had significant higher protective sexual behavior than adolescents who live with other living arrangements and marginally significant higher protective sexual behavior than adolescents who live with combination of single biological parents.

Regarding hierarchical regression, the effect of gender was not significant on protective sexual behavior; however, age had significant effect on protective sexual behavior. Similarly, religiosity, self esteem and substance use significantly predicted protective sexual behavior after controlling age and gender on Model 2. On Model 3, only family structure significantly predicted protective sexual behavior among family demographic variables. In Model 4, parental monitoring significantly predicted protective sexual behavior and in Model 5, family cohesion

was highly significant in predicting protective sexual behavior. However, in Model 6, both neighborhood factors did not significantly predict protective sexual behavior; neighborhood factors had direct effect on protective sexual behavior if they were entered first.

Regarding risky sexual behavior, the hierarchical regression analysis shows that only religiosity and substance use significantly predicted risky sex. Though family factors such as parental monitoring and family cohesion had direct effect if they are entered first, these variables failed to predict risky sex in this analysis.

Regarding condom use, the hierarchical regression analysis indicates that age significantly predicted condom use but not gender in Model 1. In Model 2, religiosity, substance use, and self esteem significantly predicted the odds of adolescents' condom use and in Model 3, only family structure significantly predicted condom use.

In Model 4, parental monitoring significantly predicted adolescents' condom use and family cohesion which significantly predicted condom use in Model 5. However in Model 6, neighborhood factors did not significantly predict condom use. This does not mean that neighborhood factors did not directly predict condom use but in this analysis, individual and familial level variables confound their effects. If they entered first, they significantly predicted condom use.

In relation to first coital initiation, in Model 1, gender and age significantly predicted adolescents' coital initiation. In Model 2, only substance use significantly predicted adolescents' coital initiation. When we move to Model 3, except significant individual factors, all familial demographic factors were non-significant and in Model 4 parental monitoring and family cohesion did not significantly predict first coital initiation due to the confounding nature of substance use.

In Model 5, only neighborhood collective efficacy significantly predicted adolescents' first coital initiation by overcoming the confounding effect of individual and familial level variables.

In this study, substance use partially and significantly mediated in the relation between parental monitoring and family cohesion and risky sex. Similarly, parental monitoring mediated in the relationship between neighborhood factors and risky sex using Sobel's test.

As far as mediation is concerned, family cohesion significantly mediated in the relationship between neighborhood factors and risky sex using Sobel's test.

Similarly, parental monitoring significantly mediated in the relationship between neighborhood disorganization and protective sex and condom use but not significantly mediated in the linkages between neighborhood collective efficacy and protective sex and condom use. Family cohesion was a powerful mediator in the linkages between each neighborhood factors and protective sex and condom use.

Regarding sexual initiation, parental monitoring only mediated in the linkages between neighborhood disorganization but not neighborhood collective efficacy and sexual initiation. Similarly family cohesion only mediated in linkages between neighborhood disorganization but not neighborhood collective efficacy and sexual initiation. In this case, substance use mediated in the linkages between parental monitoring and family cohesion and sexual initiation. The analysis got only neighborhood collective efficacy by parental monitoring significant interaction effect on protective sexual behavior.

6.2. Implications

Theoretical implications

The findings of this study have implications for the conceptual understanding of development within family and neighborhood contexts, methodological considerations, future research, and policy implications. This dissertation was founded based on Bronfenbrenner's (1979) ecological systems theory as the framework since it is one of the few theories that not only focuses on development as function of interaction between the persons and their environment but also it proposes that different aspects of the built environment are interrelated in their influence on development. Although, this study employed Bronfenbrenner's (1979) ecological systems theory as a major theoretical concept, Bronfenbrenner's (1989) person-process-context behaviors has received support by the present study in that adolescents' sexual behaviors depended on as a function of the characteristics of adolescents and of multiple systems of influence. Specifically, adolescents' sexual behaviors were influenced by factor across individual, familial and neighborhoods levels. More importantly, the interactions of the contexts result in the variation of sexual behaviors among adolescents. The most notable variables which had the greatest share in adolescents' condom use and protective sexual behaviors were parental factors such as parental monitoring and family cohesion. This does not mean that characteristics pertaining to the adolescents did not play a significant role in predicting adolescents' sexual behaviors. Especially, substance use was one of the potential predictors of adolescents' sexual behaviors in all of sexual behavior domains. For instance, substance use served as a potential mediator in the relationship between parental monitoring and family cohesion and risky sex. Not only substance use served in the relationships between family factors (parental monitoring and

family cohesion) and risky sex but also it mediated these parental factors to create links with first coital initiation.

Parental monitoring and family cohesion were potential mediators in the relationships between neighborhood factors and adolescent risky sexual behavior. The fact that neighborhood factors affect adolescents' sexual behavior via parental factors got support by Bronfenbrenner's (1986) theory suggesting that neighborhood was a distal environment in the exosystem, which is a system of influence that exerts its influence indirectly through more proximal persons and institutions. However, these relationships were not consistent in relation to other sexual behavior domains. In contrast, neighborhood factors had direct effects on adolescents' condom use, protective sexual behavior and first coital initiation in mediation models. These relationships also got support on Wilkenfeld (2007) suggesting that neighborhood directly influences development in multiple domains. The direct effect of neighborhood on adolescents' condom use, protective sex, and first coital initiation enriched the proposition that was outlined in this dissertation in the theoretical section and can be a good witness that neighborhoods are placed in the microsystem. There were interactions that are generated in this study; however, the most notable interaction that reached significant was neighborhood collective efficacy by parental monitoring.

In fact, in this dissertation, it is difficult to say that there existed exosystemic interaction, mesosystemic interaction and microsystemic interaction because interactions were generated only on parental monitoring and neighborhood factors.

However, there is a vivid indication that significant microsystemic interactions occurred since both neighborhood collective efficacy and parental monitoring had direct effect on adolescents' protective sex. Finally, the direct, indirect, and interaction effects were observed partly by neighborhood factors and because of this neighborhood is considered as component of

exosystem in one aspect and microsystem in three aspects. The ideas that neighborhoods considered as both exosystem and microsystem component is consistent to Bronfenbrenner's (1979) ecological systems theory and the assertion that Wilkenfeld (2007) concurred respectively. Therefore, neighborhoods in this study play both direct and indirect roles in predicting adolescents' sexual behaviors and regarded as in most part the microsystem component and in another part as exosystem component which show good insight for intervention depending on its effect.

Methodological Implications

The present study provides further support for the value of controlling demographic variables to examine the net effects of the other substantial individual and familial variables.

The other important tenet of this study is examining the net effects of blocks of individual demographics, individual substantial variables, familial level demographic variables, familial substantial variables, and neighborhood factors. This method of analysis helps to check the proportion of variance in each adolescent sexual behavior that was accounted for. This method also provides to identify which blocks of variables contributed the variance in sexual behavior a lot which is important to stretch intervention programs.

The analytic method used in this dissertation had important implications for intervention and future research by which inspecting which blocks of variables entered first in the model. Demographic variables entered first in the model to control their confounding effects on other variables. Moreover, to examine mediation effects, the present study used the notion of causal priority such that neighborhood factors and demographic variables were entered in the model first to check whether or not neighborhood factors had direct effect on adolescents' sexual behaviors. If they are statistically significant to test whether these factors are significant in the

next model or not, family variables were entered. After family factors were entered and significant, and if significant neighborhood factors in the first model reached non-significant in the model that family factors are added, then family factors mediated in the relationship between neighborhood factors and each sexual behaviors. Moreover, in the next step to examine whether significant family factors reached non-significant or not, individual factors were entered in the next model and if the model showed that significant family factors in the previous model is found to be non- significant, this showed that individual factors can be considered as mediators. These methods helped researchers to check which variables or block of variables entered first next, etc. to assure the existence of mediation.

When variables entered hierarchically, the relative importance of variables can be inspected. This method helps to strengthen their relationship if the effect of variables on adolescent sexual behavior had positive effect and to provide intervention if block of variables had negative effect on adolescent development. The methodological approach which was employed in this study without using simultaneous entering of the variables within the context of individual, familial, and neighborhood levels showed that the study's ability to explain more variance in the sexual behaviors of adolescents by controlling the effects of other variables in comparison to prior research done elsewhere in the world.

Policy implications

According to this study, there are important policy recommendations that are implied by the findings of this research.

The first and most important thing to be noticed is the need to create and implement policies that provide devices and resources for adolescents' parents residing in neighborhoods characterized by socially disorganized neighborhoods.

In this dissertation as revealed by the results, most of the effects of neighborhood disorganization were mediated by parental monitoring and family cohesion on adolescents' sexual behavior. That is, families residing in neighborhoods which are highly disorganized could not have the ability to monitor and supervise their children and this in turn transmitted to adolescents to involve in various problem behaviors. Moreover, in neighborhoods characterized by high social disorganization, the bonds, mutual trust, and affections among the family members might be threatened and so the outcome might be less bondage, less mutual trust, and affection among family members. Thus, policies should focus on youth and parents by providing necessary social and economic supports that will enable parents effectively monitor and support their children. On top of this, to strengthen and create a situation that makes family members to be close each other and help one another, there should be a need to subsidize parents so that they can be able to give time to stay with their children. As far as parents of Addis Ababa adolescents are concerned, programs should be developed within their locality and Kebeles that offer educational classes, Kebele support groups, paid work trainings. In addition, there should be parent-teacher associations working together to encourage parents' activity to participate in their children's education and where about. Policies should be developed to create accesses to different NGOs to reach those neighborhoods which are economically weak. Besides, policy should encourage community members to organize themselves in various incomes generating section so that their economic and social problems might be solved. This might boost parents' ability to control their children and to have close relationship with each other within that neighborhood.

The protective roles of religiosity in this study were very high. Thus, policies should be developed by creating links with religious institutions to mobilize the young generation to

strengthen healthy and conventional behaviors and to eliminate dependency on various substances. This would reduce the propensity of youth to engage in delinquent acts.

Policies should focus on how to maintain the families who might be in the verge of separation because family structure is one of the familial factors which was associated with adolescent protective sexual behavior and condom use. More specifically, among the family structure configurations, adolescents who live with both biological parents were by far better than any other family configurations, safe in their sexual encounters and delay in the initiation of coital intercourse.

In the analyses, substance use was the most potential predictor of adolescent sexual behaviors. In this study, substance use should be understood as composite of alcohol, cigarette smoking, shisha smoking, Khat chewing and other Cannabis like drugs using among adolescents. Hence, policies should focus on preventing and controlling these substances by preparing policy documents about the adverse effects of using these substances separately or jointly on the health of the community and specifically for adolescents. Moreover, strict rule should be formulated concerning substance use among community members especially among youth. That is, prohibition of alcohol, khat, cigarette consuming or purchasing to adolescents before age 18 should be in action. Moreover, there should be other alternative works created for those people whose lives depend on selling of Khat, shisha, alcohol, and the likes. The government should develop policy which promote and enhance adolescents' capacity to use protective mechanisms and positive choices regarding sexual activity.

Policies should also be implemented that brings positive attitude towards using condoms and the worst of not using condoms while adolescents engage in sex.

In relation to school and neighborhood (Kebele), these organizations should create programs that encourage positive self-led initiatives and peer-led initiatives that provide messages discouraging engagement in sexual behavior and encouraging abstinences and contraceptive use.

Policies should focus on and provide assistance for local organizations to develop activities and programs (after school) that offer adolescents a safe supervised place to stay. This might alleviate the opportunity for adolescents to associate with non-contagion peers without supervision and will decrease the chance adolescents would have sex.

6.3. Conclusions

This study suggests that individual, familial and neighborhood level variables influenced adolescents' sexual behaviors. The study was guided by Bronfenbrenner's (1979) systems theory in which the study variables were interrelated. There were direct, indirect, and interaction effects of predictor variables on each adolescent sexual behavior. The findings were complicated in the sense that most of the results were consistent to the extant literature while some results were inconsistent to the extant literature. Although the findings of this study were promising for further research and intervention, the researcher did not believe that the study covers all salient individual, familial and neighborhood level variables. Thus, other studies will be recommended to clarify the inconsistencies of the findings of the present study and the findings of the previous studies. Moreover, future studies should include other important variables besides the variables under consideration to explain additional variance for adolescents' sexual behaviors. Therefore, I concluded by suggesting limitations of the findings of this study and implications for future research.

Limitations of this study

This study shed light on salient individual, familial, and neighborhood level variables that predicted sexual behaviors among adolescents in Addis Ababa; however, it has several limitations.

The first limitation was the concern that has been raised about the reliability of self-reported data especially the issue that is sensitive like sexual activity. This study needs to consider the possibility that adolescents may not respond to the items truthfully. In addition, adolescents might not fully understand the intent of the questionnaire or might not know how to answer certain questions. In our culture, discussing openly about sexual issues might be considered as a taboo. This might impede adolescents not to disclose their feelings genuinely. In spite of these problems, I used instruments which passed several procedures in adapting into culturally appropriate way during the pilot study time. Based on this, refined instruments were administered to the sample to achieve the highest possible validity. Besides, adolescents were assured of their privacy and the confidentiality of their responses; however, some adolescents might not be responding in the way consistent to what really they are. During the administration of the questionnaires; there were assistant data collectors together with the main researcher to explain unclear and confusing vocabulary to some of the participants. Cleland et al. (2004) note in their introduction to a special issue of sexually transmitted infections that considered issues of research design that carefully collected self report data continue to provide essential insights in research on sexuality, despite their short comings. Hence, I must try to acknowledge as a researcher the difficulties in using self-report data when undertaking analyses related to adolescent sexual behaviors.

The second limitation was the issue of generalizability of the findings to other age group adolescents. The findings of this study were only limited to those adolescents who were between 16 and 21 inclusive. In other words, caution should be used when trying to generalize study findings to other adolescents out of the studied participants' age group and adolescents of other parts of the country.

The third limitation of this study was that the nature of the study was cross-sectional and correlational. Because of this drawing causal inference is impossible. However, it is possible to make inferences about the association between predictor and criterion variables. It was clear that the current study used to test the mediating effects but this only does not show the direction of relationship is recursive and causal inferences. Therefore, I can only report on relations and associations between predictors and sexual behaviors and any inferences about causal relations or explanations might be speculative.

Fourth limitation of this study was operationalization of neighborhoods in Addis Ababa situation. In this research, neighborhood was operationalized based on the localities and "safars" together with their corresponding Kebeles, and the participants' response where they reside and asking the way how CSA conducted census decennially. The researcher still puts his reservation that operationalizing neighborhoods in this study might not be sufficient and future research should try to operationalize neighborhoods in Addis Ababa so that researchers conducting their research using cluster of neighborhoods may not face difficulty like the present researcher faced.

The final limitation of this research was the use of adapted instruments in collecting the data which were developed and validated in other cultures. This might pose the essence of developed and validated culturally appropriate instruments to use in collecting the data, though the present researcher tried to adapt and validate the instruments appropriate to the culture of the

respondents. Still the researcher acknowledges the use of originally and culturally developed and validated instruments to collect the data.

Implication for future research

This study recommends that future research should continue to investigate the direct influence of residing in neighborhoods characterized by disadvantage on adolescents' likelihood of engagement in sexual activity. Particularly, in most parts of Addis Ababa, there are large numbers of slum areas that may impede the adolescents' parents' capacity to supervise and monitor their children.

Future research should also examine by adding other familial level variables such as parental-adolescent communication and to what extent neighborhood characteristics might be associated with these familial factors to predict adolescent sexual behaviors.

Future research should extend the work of this study by further examining the mediating roles of parental factors in the relationship between neighborhood characteristics and adolescents' sexual behaviors. This is crucial to stretch programs to assist families if their role is hampered by some of the characteristics of the neighborhood they reside. It is quite evident that there are neighborhood factors which assist and consolidate the role of parents to supervise and monitor their children. Thus, future research should continuously examine which factors do have positive impact on parents' roles of administering their families and which neighborhood factors influence the parents' roles not to effectively manage their family consistently. Identifying these factors is important to stretch intervention strategies.

Future research should extend this work as well by examining the associations of adolescent substance use, and other delinquent behaviors to predict adolescents' engagement in sexual activities. Besides, future research should examine the association of parental risk factors

like parental substance use and adolescents' sexual behaviors. This might help to find out how parents' risky behaviors are transmitted to their children and in turn those behaviors might be translated into their adolescents that may push them to engage in risky sexual activity.

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Appendix A

Original English Version

ADDIS ABABA UNIVERSITY

COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES

SCHOOL OF PSYCHOLOGY

SELF-REPORT QUESTIONNAIRE

Directions: I am doing a study on youth behaviors. I need your help to understand the factors which made a difference in whether youth participate in risky behaviors or choose to participate in protective behaviors. I hope this result of the study will help to prevent youth from making unwise decisions and experiencing severe consequences because of risky behaviors. Please answer the questions HONESTLY by circling or indicating which response applies to you. **Your name should not be anywhere on your answer sheets and no one (you know) will ever see your answers. It will be used for University research purpose only. Thank you for the willingness to complete this questionnaire.**

❖ **The special name of your residence or neighborhood----- Kebele-----**

1. **Gender:** What is your sex?
A. Female B. Male
2. **Age:** What is your current age -----?
3. Which of the following best describes your living arrangement?
A. I live with both biological parents
B. I live with my mother and step father
C. I live with my father and step mother
D. I live with my mother only
E. I live with my father only
F. I have other living arrangements
4. Which of the following best describes your father's (step father's) highest level of education?
A. Less than 9th grade

- B. High school incomplete
 - C. High school complete
 - D. College/vocational student
 - E. College/vocational diploma
 - F. University degree or above
5. Which of the following best describes your mother's (step mother's) highest level of education?
- G. Less than 9th grade
 - H. High school incomplete
 - I. High school complete
 - J. College/vocational student
 - K. College/vocational diploma
 - L. University degree or above graduate

6. Self-esteem Scale:

		Strongly disagree	Disagree	Agree	Strongly agree
11	I take a positive attitude about myself.				
42	On the whole, I am satisfied with myself				
63	I am able to do things as well as most other people				
74	I feel that I have a number of good qualities				
85	I certainly feel useless at times				
96	I feel I'm a person of worth, at least on an equal level with others.				
17	I wish I could have more respect for myself				

7. Religiosity Scale

		Strongly disagree	Disagree	Agree	Strongly agree
11	My religious faith is extremely important to me				
22	I pray daily				
33	I look to my faith as a source of inspiration				
44	I look to my faith as providing meaning and purpose in my life				
55	I consider myself active in my faith or church				
66	My faith is an important part of who I am as a person				
77	My relationship with God is extremely important to me				
88	I enjoy being around others who share my faith				
99	I look to my faith as a source of comfort				
101	My faith impacts many of my decisions				

8. Substance use Questionnaire

		Never	Rarely	Sometimes	Usually	Always
1	How often have you chewed Khat in the past 90 days?					
2	How often have you chewed Khat in					

	your life time?					
3	How often have you smoked Shisha in the past 90 days?					
4	How often have you smoked Shisha in your life time?					
5	How often have you drunk alcohol in the past 90 days?					
6	How often have you drunk alcohol in your life time					
7	How often have you smoked cigarette in the past 90 days?					
8	How often have you smoked cigarette in your life time?					
9	How often have you used other drugs like Cannabis in the past 90 days?					
10	How often have you used other drugs like Cannabis in your life time?					

9. Family Socio-Economic Status item (family income).

1. Which of the following best approximates your family's average monthly income?
 - A. Below 500 Br
 - B. 500-1000 Br
 - C. 1001-1500 Br
 - D. 1500-2000 Br
 - E. 2001-3000 Br.
 - F. Above 3000 Br

10. Perception of Parental Monitoring Scale.

1	How often do your parents or guardian know where you are when you are not in school?	Never	Sometimes	Usually	Always
2	Is it important for your parents or guardian to know where you are all the time?	Not important	A little important	Fairly important	Very important
3	How important is it for your parents or guardian to know who your friends are?	Not important	A little important	Fairly important	Very important
4	Do your parents or guardian make you come home at a certain time at night?	Never	Sometimes	Usually	Always
5	Do your parents or guardian expect you to call home if you are going to be late or if you are going to be someplace other than you had planned?	Never	Sometimes	Usually	Always
6	How often do you really go to the place that you tell your parents or guardian you are?	Never	Sometimes	Usually	Always
7	Do your parents or guardian punish you if you break the rules?	Never	Sometimes	Usually	Always

11. Family Cohesion subscale

		Not true	Sometimes true	Usually true	Always true
11	I'm available when others in my family want to talk to me.				
22	I listen to what other family members have to say, even when I disagree.				
33	Members of my family ask each other for help.				
44	Members of my family like to spend free time with each other.				
55	Members of my family feel very close to each other.				
66	We can easily think of things to do together as a family.				
77	There is very little group spirit in our family.				
88	We really get along well with each other				
99	There is plenty of time and attention for everyone in our family.				

12. Neighborhood Disorganization

	Items	Strongly disagree	Disagree	Agree	Strongly agree
11	There is a lot of crime in your neighborhood				
22	A lot of shisha,khat/ other drugs selling goes on in your neighborhood				
33	There is too much alcohol use in your neighborhood.				
44	There are lots of people receiving public assistance in your neighborhood				
65	There are lots of street fights in your neighborhood				
76	There are many old or plastic houses in your neighborhood				
97	There is a lot of graffiti in your neighborhood				
18	People move in and out of your neighborhood often.				

13. Neighborhood Collective Efficacy

	Items	Strongly disagree	Disagree	Agree	Strongly agree
11	People around here are willing to help their neighbors				
22	This is a close-knit neighborhood.				
33	People in this neighborhood can be trusted				
44	People in this neighborhood generally don't get along with each other				
65	Parents in this neighborhood know their children's friends				
76	Adults in this neighborhood know who the local children are				
87	There are adults in this neighborhood that children can look up to.				
98	Parents in this neighborhood generally know each other.				
19	You can count on adults in this neighborhood to watch out that children are safe and do not get in trouble				

14. Sexual Behavior

14 .1. Categorical Sexual activity

14.1.1. Have you ever had sexual intercourse?

A. Yes B. No

If yes to question 14.1.1, answer questions number 14.1.2., 14.2 and 14.3.and

If no to question 14.1.1, could you please select one or more reasons why you chose abstinence from the following options? And then stop here.

- a) I don't want to have sexual intercourse, b) I'm not ready, c) Someone in my family would disapprove, d) Some of my friends would disapprove, e) Most students in my school don't have sexual intercourse, f) My friends don't have sexual intercourse, g) Because of my religious or spiritual beliefs, h) I don't want to get a sexually transmitted infection, i) I don't want to get pregnant/cause a pregnancy, j) No one has asked me to/haven't had the chance, k) I'm waiting until I meet the right person, and l) I'm waiting until I get married.

14.1.2 How old were you when you had sexual intercourse for the first time -----?

14.2. Condom use

14.2.1. The last time you had sex, did you use a condom?

A. Yes B. No

14.3. Protective and Risky Sexual Behaviors

11	If you had sex in last 90 days, did you use condom?	Never	Rarely	Half the time	More than half the time	Always
22	If you had sex in the past, did you use condom?					
33	Did you ask your most recent sexual partner how many people he/she had sex with?	Yes	No			
44	Did you ask your most recent partner if he/she always used a condom?	Yes	No			

76	During your life, with how many people have you had sexual intercourse?	1	2	3	More than 3
87	During the past 3 months, with how many people did you have sexual intercourse?	0	1	2	More than 2
18	How many times did you have sexual intercourse in the past?	1-3 times	4-8 times	9-12 times	13 times or more
19	Did you drink alcohol or use drugs before you had sexual intercourse the last time?	Yes	No		
110	Had you ever had sex with an unknown partner (with someone you just met)?	Yes	No		

Appendix B

አዲስ አበባ ዩኒቨርሲቲ

የሥነ ጥናትና ሥነ ባሕርይ ጥናት ኮሌጅ

የሥነ ልቦና ጥናት ትምህርት ክፍል

ራስን መግለጫ መጠይቅ

መግለጫ፡- ወደ የዚህ ጥናት ተሳታፊ፣ ጥናቱ፣ በወጣቶች ሥነ ባሕርይ ላይ የሚደረግ ሲሆን፣ ዋነኛ ትኩረቱም ወጣቶች ራሳቸውን ለአደጋ በሚያጋልጡ ነገሮች ውስጥ ለመሳተፍና በአንጻሩ ደግሞ ራሳቸውን ከአንደኛው አይነት ሁኔታዎች ተጠብቀው ለመቆየት የሚያበቃቸው መሰረታዊ ምክንያቶች ምንድን እንደሆኑ ማጠናና መረዳት ነው። ጥናቱ ሲጠናቀቅ፣ ወጣቶች፣ ብስለት በጎደለው ውሳኔ ራሳቸውን ለአደጋ በሚያጋልጡ ሁኔታዎች እንዳይሳተፉና አንዳች ጉዳት እንዳይደርስባቸው የሚያስችሉ የመፍትሄ አቅጣጫዎችን በመጠቀም ሚና ይኖረዋል ብሎ አጥኝው ያምናል። በመሆኑም፣ ይህንን መጠይቅ በምትሞላ(ይ)በት ወቅት በሙሉ ፍቃደኝነትና የኔነት ስሜት በተሞላበት መለኪያ ምላሽ ነው ብለህ(ሽ) የምታስበ(ቢ)ውን አማራጭ የያዙ ሆሂያትን በማክበብ ትመልስ(ሽ)ልኝ ዘንድ በአክብሮት እጠይቃለሁ።

ማስታወሻ፡- ስምህ(ሽ)ን በየትኛውም የመጠየቁ ክፍል እንድታሰፍ(ሪ) አትጠበቅ(ቂ)ም! አንተ(ቺ)ን ሊያውቅ የሚችል ማንኛውም ሰውም አንተ(ቺ) ያሰፈርካ(ሻ)ቸውን ምላሾች የሚመለከትበት ምንም አይነት አጋጣሚ እንደማይኖር ከወዲሁ ላረጋገጥልህ(ሽ) እወዳለሁ። በመሆኑም፣ የምትሰጣ(ጫ)ቸው ምላሾች ለዚህ ጥናት ፍጆታ ብቻ የሚውሉ መሆኑን እርግጠኛ ሆነህ(ሽ) በአንተ(ቺ) እምነት ተገቢ ናቸው የምትላ(ያ)ቸውን በማስፈር ትተባበረ(ሪ)ኝ ዘንድ በድጋሚ በአክብሮት እጠይቃለሁ። መጠይቁን ለመሙላት ፈቃደኛ ስለሆንክ(ሽ) ላቅ ያለ ምስጋናዬን ከወዲሁ ልገልፅልህ(ሽ) እወዳለሁ።

❖ የመኖሪያ አካባቢያ(ሽ) መጠሪያ ልዩ ስሙ ----- ቀበሌ -----

1. ያታ:- ሀ ወንድ ለ ሴት

2. ዕድሜ:- በአውኑ ወቅት ዕድሜህ(ሽ) ስንት ነው? -----

3. ከሚከተሉት የትኛው አማራጭ የአንተ(ቺ)ን የአኗኗር ሁኔታ ይበልጥ ይገልጻል?

ሀ. የምኖረው ከሁለቱም ወላጆቼ ጋር ነው

ለ. የምኖረው ከወላጅ እናቴና ከእንጀራ አባቴ ጋር ነው

ሐ. የምኖረው ከወላጅ አባቴና ከእንጀራ እናቴ ጋር ነው

መ. የምኖረው ከወላጅ እናቴ ጋር ብቻ ነው

ሠ. የምኖረው ከወላጅ አባቴ ጋር ብቻ ነው

ረ. ከላይ ከተዘረዘሩት አማራጮች ውጭ የተለዩ አኗኗር አለኝ

4. ከሚከተሉት የትኛው አማራጭ የወላጅ ወይም የእንጀራ አባትህ(ሽ)ን የትምህርት ደረጃ ይገልጻል?

ሀ. ከዘጠነኛ ክፍል ያነሰ

ለ. የሁለተኛ ደረጃ ትምህርቱን ያላጠናቀቀ

ሐ. የሁለተኛ ደረጃ ትምህርቱን ያጠናቀቀ

መ. የኮሌጅ/ የቴክኒክና ሙያ ተማሪ

ሠ. የኮሌጅ/ የቴክኒክና ሙያ ዲፕሎማ ምሩቅ

ረ. የዩኒቨርሲቲ ዲግሪ እና ከዚያ በላይ

5. ከሚከተሉት የትኛው አማራጭ የወላጅ ወይም የእንጀራ እናትህ(ሽ)ን የትምህርት ደረጃ ይገልጻል?

ሀ. ከዘጠነኛ ክፍል ያነሰ

ለ. የሁለተኛ ደረጃ ትምህርቱን ያላጠናቀቀ

ሐ. የሁለተኛ ደረጃ ትምህርቱን ያጠናቀቀ

መ. የኮሌጅ/ የቴክኒክና ሙያ ተማሪ

ሠ. የኮሌጅ/ የቴክኒክና ሙያ ዲፕሎማ ሙሩቅ

ረ. የዩኒቨርሲቲ ዲግሪ እና ከዚያ በላይ

6. በራስ የመተማመን ደረጃ ግንዛቤን በተመለከተ

ተ.ቁ	መመዘኛዎች	በጣም አልሰማማም	አልሰማማም	እስማማለሁ	በጣም እስማማለሁ
6.1	ስለራሴ አዎንታዊ አመለካከት አለኝ				
6.2	በአጠቃላይ ሲታይ በራሴ መርካት ችያለሁ				
6.3	የተሻለ ስራ እንደሚሰሩት እንደሌሎች እኔም መስራት እችላለሁ				
6.4	በርካታ ጠንካራ ጎኖች እንዳሉኝ የሰማኛል				
6.5	አንዳንድ ጊዜ የማለጠቅም ሰው እንደሆንኩ እርግጠኛ አሆናለሁ				
6.6	ከሌሎች ሰዎች ጋር እኩል የሆነ ሚና እንዳለኝ ይሰማኛል				
6.7	ለራሴ ከአሁኑ የተሻለ ክብር መስጠት የምችል ይመስለኛል				

7. የሃይማኖተኛነት ደረጃ

ተ.ቁ	መመዘኛዎች	በጣም አልሰማማም	አልሰማማም	እስማማለሁ	በጣም እስማማለሁ
7.1	ሃይማኖቴ እጅጉን ጠቃሚዬ ነው				
7.2	በየዕለቴ እፀልያለሁ				
7.3	ሃይማኖቴ የጥንካሬዬ ምንጭ ነው				
7.4	ሃይማኖቴ ህይወቴ ትርጉምና ዋጋ ያለው እንዲሆን ያግዘኛል				
7.5	በሃይማኖቴ ትጉህ ነኝ ብዬ አስባለሁ				
7.6	እንደሰው እንድቆጠር ሃይማኖቴ ትልቁን ድርሻ ተወጥቷል				

7.7	ከአምላኪጋር ያለኝ ግንኙነት እጅጉን ጠቃሚዬ ነው				
7.8	በሃይማኖቱ ከሚመስሉኝ ጋር መሆን ያስደስተኛል				
7.9	ሃይማኖቱ ምቹ ኑሮ እንድኖር ያስችለኛል				
7.10	ሃይማኖቱ በአብዛኛዎቹ ውሳኔዎቹ የራሱ ተፅዕኖ አለሁ				

8. አነቃቂ (አደንዛዥ) ዕዎችን መጠቀምን የሚማለከቱ መጠይቆች

ተ.ቁ	መመዘኛዎች	በፍፁም	አልፎ አልፎ	አንዳንድ ጊዜ	በአብዛኛው	ሁልጊዜ
8.1	ባለፉት ሦስት ወራት በምን ያህል የጊዜ ሂደት ጫት ቅመሃ(ሻ)ል?					
8.2	በህይወትህ(ሽ) በምን ያህል የጊዜ ሂደት ጫት ቅመሃ(ሻ)ል?					
8.3	ባለፉት ሦስት ወራት በምን ያህል የጊዜ ሂደት ሽሻ አጭሰሃ(ሻ)ል?					
8.4	በህይወትህ(ሽ) በምን ያህል የጊዜ ሂደት ሽሻ አጭሰሃ(ሻ)ል?					
8.5	ባለፉት ሦስት ወራት በምን ያህል የጊዜ ሂደት የሚያሰክር መጠጥ ጠጥተሃ(ሻ)ል?					
8.6	በህይወትህ(ሽ) በምን ያህል የጊዜ ሂደት የሚያሰክር መጠጥ ጠጥተሃ(ሻ)ል?					
8.7	ባለፉት ሦስት ወራት በምን ያህል የጊዜ ሂደት ሲጋራ አጭሰሃ(ሽ)ል?					
8.8	በህይወትህ(ሽ) ለምን ያህል ጊዜ ሲጋራ አጭሰሃ(ሻ)ል?					
8.9	ባለፉት 3 ወራት በምን ያህል የጊዜ ሂደት አደንዣሻር ዕዎችን (ለምሳሌ-ካናቢስ)ተጠቅመሃ(ሻ)ል?					
8.10	በህይወትህ(ሽ) በምን ያህል ጊዜ አደንዣሻር ዕዎችን (ለምሳሌ-ካናቢስ ተጠቅመሃ(ሻ)ል?					

9. የቤተሰብን ማህበረ-ኢኮኖሚያዊ ደረጃ (የቤተሰብን ገቢን) የሚመለከቱ መጠይቆች

9.1 ከሚከተሉት አገሮች የትኛው የቤተሰብ(ሽ)ን አማካይ የወር ገቢ ይበልጥ ይገልፀዋል?

ሀ. ከ500 ብር በታች

ለ. ከ 500-1000 ብር

ሐ. ከ1001-1500 ብር

መ. ከ 1501-2000

ሠ. 2001-3000 ብር

ረ. ከ 3000 ብር በላይ

10. ሰለ ወላጆች የቁጥጥር ሁኔታ ያለ አተያይ

10.1	ከትምህርት ቤት ውጭ በምትሆን(ኝ)ባቸው ጊዜያት የት እንዳለህ(ሽ) ወላጆች/አሳዳጊዎች)ህ(ሽ) ምን ያህል ያውቃሉ?	በፍፁም	አንዳንድ ጊዜ	አብዛኛውን ጊዜ	ሁል ጊዜ
10.2	በማንኛውም ሰዓት የት እንዳለህ(ሽ) ወላጆች/አሳዳጊዎች)ህ(ሽ) ማወቃቸው ይጠቅማቸዋል?	አይጠቅማቸውም	በትንሹ ይጠቅማቸዋል	ይጠቅማቸዋል	በጣም ይጠቅማቸዋል
10.3	የጓደኞችህ(ሽ)ን ማንነት ወላጆች/አሳዳጊዎች)ህ(ሽ) ማወቃቸው ይጠቅማቸዋል?	አይጠቅማቸውም	በትንሹ ይጠቅማቸዋል	ይጠቅማቸዋል	በጣም ይጠቅማቸዋል
10.4	ወላጆች/አሳዳጊዎች)ህ(ሽ) ሲመሽ በተገደበልህ(ሽ) ሰዓት ወደ ቤት እንድትገባ(ቢ) ያደርጋሉ?	በፍፁም	አንዳንድ ጊዜ	አብዛኛውን ጊዜ	ሁል ጊዜ
10.5	ወላጆች/አሳዳጊዎች)ህ(ሽ) ወደ ቤት እመለስበታለሁ ብለህ(ሽ) ካሰብክ(ሽ)ው ሰዓት ብትዘገይ(ዩ) ወይም እውልበታለሁ ባልከ(ሽ)ው ቦታ ባትውል(ዩ) በስልክ እንድታሳውቃ(ቁያ)ቸው ይጠብቃሉ?	በፍፁም	አንዳንድ ጊዜ	አብዛኛውን ጊዜ	ሁል ጊዜ

10.6	ለወላጆች/አሳዳጊዎች)ሀ(ሽ) እውልበታለሁ ያልከ(ሽ)ውን ትክክለኛ ቦታ ምን ያህል ገልፀሀ(ሽ) ትናገራ(ሪያ)ለሀ(ሽ)	በፍፁም	አንዳንድ ጊዜ	አብዛኛው ጊዜ	ሁል ጊዜ
10.7	ወላጆች/አሳዳጊዎች)ሀ(ሽ) የቤታችሁን መተዳደሪያ ደንብ ብትጥስ(ሽ) ይቀጡሃ(ሻ)ል	በፍፁም	አንዳንድ ጊዜ	አብዛኛው ጊዜ	ሁል ጊዜ

11.በቤተሰብ አባላት መካከል ያለን የመቀራረብ ደረጃ የሚመለከቱ መጠይቆች

ተ.ቁ	መመዘኛዎች	ትክክል አይደለም	አንዳንድ ጊዜ	በአብዛኛው	ሁል ጊዜ
11.1	የቤተሰቦቹ አባላት እኔን ማናገር በሚፈልጉበት ጊዜ ያናግሩኛል				
11.2	የቤተሰቦቹ አባላት ሃሳብ ሲሰነዝሩ የምቃወመው ቢሆንም እንኳ ጆሮ ሰጥቼ አዳምጣለሁ				
11.3	የቤተሰቦቹ አባላት እገዛ ሲሹ እርስ በርስ ይፈላለጋሉ				
11.4	የቤተሰቦቹ አባላት የእረፍት ጊዜያቸውን በጋራ የማሳለፍ ፍላጎት አላቸው				
11.5	የቤተሰቦቹ አባላት በመካከላቸው ጥብቅ ግንኙነት እንዳለ ያምናሉ				
11.6	የቤተሰቦቹ አባላት ነገሮችን በጋራ የመስራት ባህል አዳብረዋል				
11.7	የቤተሰቦቹ አባላት የመተጋገዝ ልማዳቸው አናሳ ነው				
11.8	የቤተሰቦቹ አባላት ተደጋግፈው መኖር የሚችሉ ናቸው				
11.9	በቤተሰቦቹ ውስጥ አንዱ ለሌላው በቂ ትኩረትን የሚሰጥበት ጊዜ አለው				

12. ከጎረቤት ነዋሪዎች ጋር ያሉ አለመጣጣሞችን የሚመለከቱ መጠይቆች

ተ.ቁ	መመዘኛዎች	በጣም አልሰማማም	አልሰማማም	እስማማለሁ	በጣም እስማማለሁ
12.1	ከጎረቤቶቼ ጋር በርካታ የሚያቃቅሩ ነገሮች አሉብን				
12.2	ከጎረቤቶቼ መካከል አደንዛኝ ሰዎችን፣ የሚያሰክሩ መጠጦችን፣ የሚሸጡ ሰዎች አሉ				
12.3	ከጎረቤቶች መካከል የሚያሰክሩ መጠጦችን፣ አደንዛኝ ሰዎችን የሚጠቀሙ ሰዎች አሉ				
12.4	ከጎረቤቶቼ መካከል የሌሎችን እርዳታ የሚሹ ሰዎች አሉ				
12.5	በጎረቤቶቼ መካከል በተደጋጋሚ ጊዜ የሚስተዋሉ ግጭቶች አሉ				
12.6	ከጎረቤቶቼ መካከል ባረጁና ከኅላስቲክ በተሰሩ መጠለያዎች የሚኖሩ ሰዎች አሉ				
12.7	በጎረቤቶቼ የቤቶች ግድግዳ ላይ የተከተቡ ፅሁፎችን ማየት የተለመደ ነው				
12.8	በጎረቤቶቼ መኖሪያ የሚገቡ የማወጡ የተለያዩ ሰዎችን ማየት የተለመደ ነው				

13. በጎረቤቶች መካከል ያለን አጠቃላይ ትስስርን የሚመለከቱ መጠይቆች

ተ.ቁ	መመዘኛዎች	በጣም አልሰማማም	አልሰማማም	እስማማለሁ	በጣም እስማማለሁ
13.1	የአካባቢያችን ሰዎች ጎረቤቶቻቸውን ለመርዳት ፍላጎት አላቸው				
13.2	በአካባቢያችን ጥሩ የሆነ ጉርብትና አለ				
13.3	ጎረቤቶቼ መታመን የሚችሉ ሰዎች ናቸው				
13.4	በአጠቃላይ ሲታይ ጎረቤቶቼ አብሮ የመኖር ልማድ የላቸውም				
13.5	በጎረቤቶቼ የሚኖሩ ወላጆች የልጆቻቸውን ጓደኞች ያውቃሉ				
13.6	በጎረቤቶቼ ያሉ ጎልማሶች የመንደራችን ታዳጊ ልጆች ለይተው ያውቋቸዋል				
13.7	የጎረቤቶቼ ታዳጊ ልጆች አብነት ሊያደርጓቸው የሚችሉ ጎልማሶች በአቅራቢያችን አሉ				
13.8	በጎረቤቶቼ የሚገኙ ወላጆች እርስ በርስ ይተዋወቃሉ				
13.9	በአካባቢው የሚኖሩ ጎልማሶች ልጆች ላይ ችግር/አደጋ እንዳይደርስባቸው ክትትል ያደርጋሉ ብሎ መውሰድ ይቻላል				

14. ያታዊ ባህሪን የሚመለከቱ መጠይቆች

14.1. ያታዊ ባህሪን መነሻ ያደረገ ምደባ

14.1.1 ከአሁን በፊት የግብረ ሥጋ ገንጥነት አድርገህ (ሽ) ታውቃ (ቂያ) ለህ (ሽ)?

ሀ. አዎ

ለ. አላውቅም

ማስታወሻ፡ ለጥያቄ ቁጥር 14.1.1 መልስህ(ሽ) “አዎ” ከሆነ በቀጥታ ወደ ጥያቄ ቁጥር »14.1.2»፤ «14.2»፤ እና «14.3» በማምራት ለቀረቡት ጥያቄዎች መላሽ አቅርብ(ቢ)። መልስህ(ሽ) “አላውቅም!” ከሆነ ግን ከሚከተሉት አማራጮች የትኛው/የትኞቹ (ከአንድ በላይ መምረጥና ማመልከት ይቻላል) ምክንያቶች ከድርጊቱ እንድትቆጠብ(ቢ) እንዳገዘህ(ሽ) በማመልከት በዚህ ምላሽ ማቅረብህን አጠናቅቅ(ቂ)።

ሀ. የግብረ ሥጋ ግንኙነት የማድረግ ፍላጎት ስለሌለኝ

ለ. የግብረ ሥጋ ግንኙነት ለማድረግ ዝግጁ ስላለነበርኩ

ሐ. የግብረ ሥጋ ግንኙነት ማድረጌን የቤተሰቦቼ አባላት ስለማይደግፋልኝ

መ. የግብረ ሥጋ ግንኙነት ማድረጌን ጓደኞቼ ስለማይደግፋልኝ

ሠ. አብዛኛዎቹ የትምህርት ቤታችን ተማሪዎች የግብረ ሥጋ ግንኙነት

ስለማያደርጉ

ረ. የቅርብ ጓደኞቼ የግብረ ሥጋ ግንኙነት ስለማያደርጉ

ሰ. ሃይማኖቴ ስለማይፈቅድለኝ

ሸ. በግብረ ሥጋ ግንኙነት አማካይነት ከሚተላለፉ በሽታዎች ለመቆጠብ

ቀ. ማርገዝ/ የእርግዝና ምክንያት መሆን ስለማልፈልግ

በ. አጋጣሚውን ስላላገኘሁ

ተ. የህይወቴ አጋር የማደርገውን ትክክለኛ ሰው ስላላገኘሁ

ቸ. ከጋብቻ በፊት ተገቢነው ብዬ ስለማላምን

14.1.2. የመጀመሪያውን የግብረ ሥጋ ግንኙነት ስታደርግ (ጊ) እድሜህ (ሽ) ስንት ነው-----?

14.2. የኮንደም አጠቃቀም የሚመለከቱ መጠይቆች

14.2.1. የመጨረሻውን የግብረ ሥጋ ግንኙነት ስታደርግ (ጊ) ኮንደም ተጠቅመሃ(ሻ)ል?

ሀ. አዎ

ለ. አልተጠቀምኩም

14.3. ወሲባዊ ጥንቃቄና ተገላጭነት ባህሪያትን የሚመለከቱ መጠይቆች

14.3.1	ባለፉት 3 ወራት የግብረ ሥጋ ግንኙነት አድርገህ ከነበር ኮንደም ተጠቅመሃ (ሻ)ል?	በፍፁም	አልፎ አልፎ	በከፊሉ	በአብዛኛ ው	ሁል ጊዜ
14.3.2.	ከአሁን በፊት የግብረ ሥጋ ግንኙነት አድርገህ ከነበር ኮንደም ተጠቅመሃ(ሻ)ል?	በፍፁም	አልፎ አልፎ	በከፊሉ	በአብዛኛ ው	ሁል ጊዜ
14.3.3.	በቅርቡ በግብረ ሥጋ የተገናኘሃት(ሽው) ሰው ከዚያ በፊት ከስንት ሰዎች ጋር ግንኙነት እንደፈፀመ(ች) ጠይቀሃ(ሻ)ል?	አዎ	አልጠየቅኩም			
14.3.4.	በቅርብ በግብረ ሥጋ የተገናኘኻ(ሽ)ው ሰው ሁል ጊዜም በሚያደርጋቸው ግንኙነቶች ኮንደም እንደሚጠቀም ለማረጋገጥ ጠይቀሃ(ሻ)ል?	አዎ	አልጠየቅኩም			
14.3.5.	እስከ ዛሬ ድረስ ከምን ያህል ሰዎች ጋር የግብረ ሥጋ ግንኙነት አድርገሃ(ሻ)ል?	1	2	3	ከ 3 በላይ	
14.3.6.	ባለፉት 3 ወራት ከምን ያህል ሰዎች ጋር የግብረ ስጋ ግንኙነት አድርገሃ (ሻ) ል?	0	1	2	ከ 2 በላይ	
14.3.7.	እስከ ዛሬ ድረስ ምን ያህል ጊዜ የግብረ ሥጋ ግንኙነት አድርጌያለሁ ብለህ(ሽ) ታሰባለህ/ ታሰቢያለሽ?	1-3	4-8	9-12	13 እና ከዚያ በላይ	

14.3.8.	የግብረ ሥጋ ግንኙነት ከማድረግህ(ሽ) በፊት የመሚያሰክሩ መጠጦችን/አደንዛኝ ፅዳችን ወስደሃ(ሻ)ል?	አዎ	አልወሰድኩም
14.3.9.	በአጋጣሚ ከተዋወቅክ(ሽ)ው ሰው ጋር የግብረ ሥጋ ግንኙነት አድርገህ(ሽ) ታውቃ(ቁያ)ለህ(ሽ)	አዎ	አላደረኩም

ውድ ጊዜህ(ሽ)ን ሰውተህ(ሽ) መጠይቁን ስለሞላህ(ሽ)ልኝ

ክልብ አመሰግናለሁ!

Declaration

I declare that this dissertation is my own work that it has not been submitted before for any degree or examination in any other University, and that all the sources I have used or quoted have been indicated and acknowledged as complete reference.

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Sign.....

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