

Adolescent Social Networks and Sexual Practices

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

In Social Work & Social Development

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Addis Ababa University

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Abstract

This study examines adolescent social networks and sexual practices (and how they differ among males and females of different ages) among ninth-grade students in two high schools in Addis Ababa, Ethiopia. Social exchange theory and group socialization theory guide the study. Other theories that the study utilizes are the theory of homophily, balance theory, the theory of self-interest, and the theory of early sexual practices. Up to now, there has been no systematic research in Ethiopia or the rest of Africa on the relationship between adolescent social networks and sexual practices. Mixed-methods research guides the study, which consists of two parts. Study A generated data from a 264-item survey of 167 respondents, to which parametric and nonparametric statistics (using a consistent alpha of .05) are applied. Study B used 10 critical cases to generate qualitative data. Critical cases are study participants selected based on their capacity to provide reliable data of interest. UCINET 6.0 was used to draw social network diagrams, and qualitative data were transcribed and subjected to content analysis. Friendship, immediate family, extended family neighborhood, and religious networks are key components of social network analysis. Friendship and family networks are two priority networks among adolescents. The family network is the most stable type and the friendship network is the most popular. The friendship network plays two important functions: information sharing and problem solving. Adolescents' like having school friends who are of the same gender, and out-of-school friends of the opposite gender. Adolescent friendship networks are the primary means for finding sexual partners. Peer influence and personal curiosity are the primary factors related to adolescent sexual debuts. Male adolescents equate sexual practices with self-actualization and adventure, while female adolescents equate sexual practices with love and emotional attachment.

The adolescents' own homes and their friends' houses are the most popular settings for first engaging in sexual activity. Female survey respondents reported having more than one boyfriend, whereas male adolescents had a single girlfriend. The hypothesized associations between adolescent-parent communication and age of sexual debut were not found to be significant. The hypothesized relationships between social network variables and sexual practices were significant, as were correlations between ages at which the respondents first watched live sex and when they first masturbated. These findings concerning adolescents' relationships and reproductive health risk factors give us a better understanding of the role of social networks in adolescent health and sexual activity. Understanding adolescents' social networks is particularly important in light of the looming problem of HIV/AIDS in Ethiopia and Africa. These findings are also important for social work and social development interventions.

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*To my wife and children,
Selamawit Assefa and Dagmawit and Bethlehem Wassie,
and in memory of my mother,
Tewodie Bekele*

Acknowledgements

This dissertation could not have been completed without the support of many people. First, I would like to express my gratitude to Alice K. Butterfield, a professor at Jane Addams College of Social Work, University of Illinois at Chicago, who is the chair of my dissertation committee and my mentor. Without her courageous engagement and enthusiastic support, the study would not have been completed. Her confidence in my intellectual independent functioning gave me the energy to complete this tough journey.

I want to thank Abye Tasse, associate vice president for international affairs at Addis Ababa University, who was a critical reviewer of my dissertation proposal and research. His triple roles as a member of my dissertation committee, dean of the School of Social Work, and a reader of the dissertation made him particularly important to my success completing the research project. My heartfelt thanks go to Deirdre Kirke, a lecturer at the National University of Ireland, and David Ayuku, a professor at Moi University, both of whom served as external reviewers of the dissertation. I am grateful for the serious attention to my scholarship by Dr. Kirke and Lena Dominelli, professor at the School of Applied Social Sciences, Durham University, England, who served on the dissertation committee.

I also wish to thank other the faculty members and visiting professors who contributed to my success: Donna Petras, Valerie Chang, and Rosemary Sarri read and commented on my proposal; Margaret Adamek was member of the committee for the proposal defense; John G. Messer and Larry Kreuger read and commented on the dissertation report; and Bayable Balew, a social work practitioner, also contributed immeasurably in helping me complete the research by reading the report. Thanks to Sonia Elizabeth Fulop, the copyeditor who combined the flesh and bone of the dissertation. She has done an extensive job in correcting the English grammar and

choosing words that helped me improve my ability to communicate the content. I have a deep appreciation for her contribution.

Throughout every part of my PhD journey and this dissertation project, my wife, Selamawit Assefa, my daughter Dagmawit Wassie and my brother in-laws Michael Assefa and Beruhtesfa Ibrahim have been the spices in my life. I do not have the words to express my appreciation for their patience and tolerance when I did not have time to spend with them while I worked on my doctoral studies for the last three years. Thank you, my family members. I am now rejoining you.

Without the interest and full participation of the adolescents in Gedam Sefer who were part of the dissertation project, my dream to obtain the doctorate degree would never have had a chance of becoming reality. I thank all the participants of the dissertation project. I would also like to extend my thanks to the community committee members for their active participation and Mulu Yeneabat, Coordinator of the Gedam Sefer Community University Partnership project for the provision of the necessary resources, including the use of their office and computers.

I will never forget the 87-year-old woman who lives in poverty in Gedam Sefer. She was the reason for my interest in research on social network analysis. I will never forget what she told me: “It is because of my connections to my neighbors that I am able to survive.” Finally, I would like to thank God, who helped me survive throughout the work of this dissertation.

1 INTRODUCTION

1.1 Background and Rationale

The study of social networks and the sexual practices of adolescents is the subject of this dissertation. Social network researchers have worked for nearly a century to understand the nature, characteristics, and functions of social networks of people, organizations, and institutions at large. Social network research began in the early 1930s with the 1934 publication of the pioneering book *Who Shall Survive*, written by Moreno. But even before the publication of that book, John Almack published an article in 1922 that anticipated the development of sociometric measurements related to social networks.

The precursors of social network study, as summarized by Freeman (1996), include the works of Wellman, who wrote on the schoolchild's choice of companions; Chevaleva-Janovskaj, who conducted large-scale observation-based research on group structure; Bott, who developed a systematic method of observation of play activities in nursery schools; Hubbard, who developed a method of researching spontaneous group formation; and Hagman, who conducted research on the friendships of preschool children.

The University of Twente (2004) reports, Barnes coined the term *social network* in his research of a Norwegian Island parish in the early 1950s. Social network analysis is an interdisciplinary field with a long history in various humanistic, behavioral, and physical science disciplines. Sociology, anthropology, statistics, mathematics, electrical engineering, information sciences, education, psychology, and other disciplines have contributed to the theoretical and methodological development of social network research (Duijn & Vermunt, 2006).

Social work research has shown limited interest in social network analysis. "Social workers have been showing some interest in social network analysis for about [only] the last 30

years” (Gray & Webb, 2009, p. 135). MacNair (1998) describes the multilevel use of social network data for social work services: “Using network analysis [it is possible to] establish boundaries of the community as its members perceive it” (p. 23).

In social network research, there are at least two general levels of data: the ego-centered or personal network and the complete or one-mode network (Brass, 1995; Duijn & Vermunt, 2006). Hersberger (2003) explains, “Social network theory examines the social relationships of individuals (ego-centric network) at a micro level and at the macro level, whole networks of communities or groups are studied” (p. 105). Social network analysis shows the connections of actors. It also shows the way in which networks exist among individuals, within groups, or at a larger community level by examining historical evidence. A good example of this kind of network analysis is the social network analysis conducted to explain the dearth of tributes written upon William Shakespeare’s death (Hayes, n.d.). By applying social network methods and techniques, researchers can study the causes of tragedies. For example, network analysis of communications between British scientist and weapons inspector John Kelly and high officials was used to investigate the cause of Kelly’s suicide (Richards, 2005). Social network analysis is also an important tool for investigating terrorist networks and information flow in the military (Svenson, Svensson, & Tullberg, 2004).

Theoretically, social networks make both positive and negative contributions to human life. Through their social networks, individuals assist each other in job search, information exchange, and other social supports. Social networks can also have negative consequence such as the transmission of disease, epidemics, and mob movements (Foth, 2006). Social network

analysts describe relationships as falling on a continuum of positive and negative influence that shapes the individual. “Through their friendship, adolescents learn about what others are doing, anticipate accepted and expected behavior, figure out how to present themselves, and find partners for trying out new behaviors” (Ennet & Bauman, n.d., p. 83). The study of adolescents’ social networks is important for understanding how they behave in school, at home, and in the community at large. Research on adolescents’ social networks suggests that the study of such networks can aid us in understanding youth reproductive health (Musalia, 2006); drug addiction (Ennett & Bauman, n.d.); parent-adolescent relationships (Lerner & Brennan, 1998); and adolescent drinking and sexual activity (Diane, Mary, Gillmore, Hoppe, Gaylord, Leigh, et al., 2003).

Scholars suggest that three social contextual variables contribute to early sexual activity among adolescents. The variables are hostile parental control, negative peer influence, and positive peer influence (Donenberg, Bryant, Wilson, & Emerson, 2003). Both positive and negative peer influence are part of the social network interactions of adolescents. Studies on social networks in Africa suggest that adolescent social networks partly influence early sexual behavior and premarital sex (Djamba, 2003) and contraceptive use (Behrman, Kohler, & Watkins, 2002). They “shape social competencies of individuals in societies” (Harrison, Stewart, Myambo, & Teveraishe, 1997, p. 164). In Ethiopia, such studies have been specific only to adolescents’ reproductive health, adolescent risk behavior, and implications for HIV/AIDS prevention (Astatke, Black, & Serpell, 2000). These studies of adolescent sexual activity do not apply methods and techniques of social network analysis, although researchers have described some network elements that adolescents use to make sexual connections.

Adolescents access information on reproductive health issues in general and on sexual practices in particular mainly through their social network interactions (Hulton, 2001; Nduba & Delnessa, 2004; Wang, 2006). However, only a few systematic studies have tested the influence of adolescent social networks on adolescents' sexual activities (Behrman et al., 2002; Djamba, 2003; Kinsman, Romer, Furstenberg, & Schwarz, 1998; Kuttler & La Greca, 2004).

Up to now, no systematic research on adolescents' social networks and their influence on sexual practices has been conducted in Ethiopia. As a result, youth policy makers, reproductive health activists, community development practitioners, and public health workers in Ethiopia have not paid attention to the importance of social network variables in predicting adolescent sexual practices. The question of what influences adolescents' social networks exert on their sexual debuts and subsequent sexual activity has yet to be answered.

1.2 Purpose and Significance

The aim of the current study is to understand the nature and characteristics of adolescent social networks and the influence of these networks on sexual practices. Understanding adolescents' connectivity with their social environments (friends, families, relatives, neighbors, etc.) is important to social work practice. The specific purposes of this study are to examine:

- a. Social network variables in the adolescents' relationships, such as types of networks, size of networks, specific functions of networks, and social and physical environmental factors that affect the establishment of networks.
- b. Adolescents' sexual practices, with a particular emphasis on the demographic variables that affect the age at which an adolescents make their sexual debuts, the influence of social networks on sexual debut, and physical settings where adolescents experience their sexual debuts.

-
- c. Differences between social network interactions and sexual activity of adolescents by age and gender.

Studies conducted on the social networks of adolescents describe how social network variables such as the network type, size, function, and strength influence behavior such as sexual activities. Some studies provide background information regarding how some elements of social interaction influence the sexual behaviors of adolescents. For instance, a study by Djamba (2003) in Kinshasa, Congo, describes the influence of social networks on premarital sexual activities. This study suggests that the kind of relationships that adolescents establish with their immediate family members, extended family members, and peers predict whether or not they engage in premarital sex. Kirke (2004) studied the relationship between special networks of adolescents and substance use and concluded that teen agers who have similar behavior in substance abuse establish friendship.

It is hoped that this dissertation will ultimately pioneer the systematic study of adolescent social networks and sexual practices in Ethiopia. The findings are important to policy makers and program implementers who are concerned about the social well-being and health of the adolescents in Ethiopia.

1.3 Conceptual Framework

A conceptual framework based on a review of theoretical perspectives and exploratory study guides the study process of this dissertation. This section presents the theoretical perspectives that link adolescent social networks and sexual practices. Two theories are reviewed and used to inform the conceptual framework: social exchange and group socialization theories.

Social exchange theory's origins are multidisciplinary. It originated in structural anthropology (Lévi-Straus), behavioral psychology (Skinner and Bandura), utilitarian economics

(Ricardo and Smith), sociology (Homans and Blau), and social psychology (Thibaut and Kelley) (Witt, n.d.). The main tenet of social exchange theory is that relationships provide mutual gains. “Human behavior is in essence an exchange (Homans, 1961, 12–3), particularly of rewards or resources of primarily material character (wealth) (Cook, 2000; Stolte et al., 2001) and secondarily of symbolic attributes” (Zafirovski, 2003, para. 2). The theory focuses on the exchange of rewards or resources between actors. Behavior is a series of exchanges with a maximization of rewards and a minimization of costs, and reciprocation for rewards received. Social exchange theory explains that both cognitive and normative factors affect relationships. Relationships and participation are important elements of social exchange theory. Power and decision-making processes are also significant elements of social exchange theory. According to the theory, all social activities are associated with rewards, costs, profits, and losses.

Searle (1990) presents five components of social exchange theory. The first is that the theory assumes that it is possible to predict behavior based upon the notion of rationality. This suggests that the more a behavior results in a reward, the more the individual will practice the behavior. Second, relationships are based on reciprocity; that is, each individual in the relationship provides benefits to the other as long as the exchange is equitable and the unit of exchange is important to the respective parties. The third important element is that social exchange is based on a principle of justice. Norms of fairness governs behavior. Fourth, individuals try to maximize their gains and minimize their costs. Cost does not only mean financial expenses but includes time and energy. The final element of social exchange theory is mutual benefit, which means that individuals participate in a relationship for mutual benefit, not due to coercion.

Social exchange theory borrows concept of rewards from behavioral psychology, and the concept of resources from economics. Rewards are defined as the “pleasure, satisfactions and gratifications a person enjoys from participating in a relationship” (Sabatelli, 2007, para. 1). Satisfaction alone does not maintain the relationship. In a given relationship, gains must be comparable to all other possible outcomes of other possible relationships. The lowest level of satisfaction in a relationship should outweigh the highest level of satisfaction that a person could receive from other possible relationships.

According to the theory, trust is an important element of relationships. “Trust refers to the belief on the part of individuals that their partner will not exploit or take unfair advantage of them” (Sabatelli, 2007, para. 9). There is also commitment in relationships. Commitment involves the willingness of individuals to work for the continuation of their relationships. Dependency and power are inversely related, while resources and power have a positive linear relationship. Individuals who have less interest in a given relationship exert greater power on their partner. When there is a strong relationship, there is high dependence and one individual has less power over his or her partner. According to social exchange theory, three forms of power exist in relationships (Griffin, 1994). The first form of power is reflexive control. This reflects the person’s ability to reward him- or herself for the outcome of personal behavior. It is similar to becoming one’s own friend. The second form of power is fate control. This is the ability to affect the other person’s behavioral outcomes regardless of what the other person does. The third form of power is behavior control. This is the ability to change the other person’s behavior through a change in one’s own choices. When the preference of a person is changing from x to y due to the influences of the other person, who acts as a behavior change agent, the latter person is exercising the power of behavior control.

Social exchange theory predicts that individuals minimize cost and maximize rewards within their relationships. According to this theory, when agents perceive outcomes to be greater, they disclose more about themselves. The theory emphasizes that “the viability of social exchange rests on the assumption that human beings recognize each other’s life situation, notice each other’s needs and in some ways are likely to engage in reciprocity” (Lane, 2001, para. 4). Witt (n.d.) presents eight basic assumptions of social exchange theory: (1) people who are engaged in interactions are rationally seeking to maximize profits; (2) most gratification among humans is located in others; (3) people have access to information about social, economic, and psychological aspects of interaction, which allows them to consider more advantageous alternatives; (4) people are rational and calculate the best possible means to compete in rewarding situations; (5) people are goal oriented in a freely competitive system; (6) exchange occurs within cultural norms (7); social credit is preferable to social indebtedness; and (8) the more deprived the individual feels in terms of an act, the more value he or she will assign to it.

The unit of analysis in social exchange theory is dyads and small groups. Levels of analyses are also applicable to the analysis of social networks. A dyad in a social network is the relationship between two actors, called nodes, through connection lines called ties. The study of small groups in social network analysis refers to the investigation of a group’s complete network so that the researcher clearly knows the demarcation of the group’s boundaries. Overall, the conceptual understanding of social exchange theory and the methodological approaches used in its study of human relationships are valuable instruments for studying the social networks of adolescents.

As mentioned above, social network analysis emphasizes group interaction. In a network, the minimum number of nodes is two persons or units. A single person or entity cannot establish

a network. Since the study of social networks deals with groups, group socialization theory can also guide social network research. Judith Rich Harris (1995) developed group socialization theory in a study of adolescents' personality and socialization processes outside the home environment. This theory posits that environment shapes behavior. "An important element of [group socialization] theory is the idea that behaviors learned in one context are not automatically dragged along to other contexts" (Marshall, n.d., para. 10). Adolescents learn different behaviors in different contexts. If adolescents have to adapt a behavior that they learn in one context to another context, they modify it in such a way that the behavior fits in the new environment.

The theory uses six elements and 16 assumptions to explain the process of group socialization. The six elements are (1) context-specific socialization and personality development; (2) source of outside-the-home socialization; (3) transmission of culture via group process; (4) between-group processes that widen differences between groups; (5) within-group processes that widen differences among individuals; and (6) assimilation and differentiation (Harris, 1995).

For each element, there are a number of assumptions. Context-specific socialization and personality development make three assumptions, one of which suggests that adolescents learn how to behave differently at home and outside the home. Source of outside-the-home socialization makes four assumptions, one of which is that individuals have the ability to identify with more than one group. Another assumption is that when they are outside the home, adolescents identify with the peer group with whom they share characteristics such as age and gender. The transmission of culture via group process makes three assumptions, one of which is that culture emanates from the parents' peer group to the adolescent's peer group, but not

directly from parents to adolescents. Nevertheless, sometimes it does. Another assumption is that adolescents transfer the home culture to peer culture only if the majority of the peer group participates in this culture transfer. The between-group process posits two assumptions: the inherent nature of in-group favoritism, and of out-group hostility. The fifth theoretical component, within-group process, assumes that two socialization processes explain status hierarchy within the group and social comparison within the peer group: assimilation and differentiation. Carrigan (1999), quoting Harris, describes this as “us [against] them dynamics” (p. 2). The theory explains that adolescents are members of many relevant categories of “us” that are different from many categories of “them.” Because of this us-against-them distinction among adolescent groups, “any small difference between them gets larger” (Carrigan, 1999, p. 2).

Group influence is more prevalent during adolescence than in early childhood or later adulthood. During childhood, individuals adopt their parents’ norms, and during adulthood, they give preference to their immediate family, including their spouse and children. Personality developed during the adolescent period has a great influence in later life. Harris (1995) asserts that personality “does not change much during adulthood. The . . . personality acquired in . . . adolescent peer groups persist[s], with little modification, for the remainder of the life span” (p. 474). This suggests that group socialization during adolescence has a great impact on personality development, which may include social network formation and sexual behavior.

The two theories have many elements in common that can be adapted to the study of social networks of adolescents and their sexual practices. Both theories focus on relationships and group formation. The theories emphasize the intention of benefits and reciprocity in personal relationships. These elements also exist in social network analysis. Therefore, the theories of group exchange and group socialization were selected to guide this study.

1.4 Definitions of Concepts

Two categories of conceptual definitions are presented here. The first group is related to social networks, and the second group to adolescent sexual activity.

1.4.1 Concepts Related to Social Networks

Betweenness of Actors: This is one measure of the centrality of an actor in a social network.

Betweenness is the measurement of “a particular point [that] lies between the various other points in a graph” (J. Scott, 2000, p. 86).

Dyads: A dyad in a social network is a relationship between two actors, called nodes, through connections called ties.

Network Bridge: A bridge is “a line that does not itself lie on a [network diagram/sociogram] but that may connect two or more” sociograms. Bridgers are “the points that are intermediaries or waverers between two or more cyclic components, but which are not members of any of them” (J. Scott, 2000, pp. 105–106).

Network Centrality: This is a position at which a node is located at the centre of all possible network connections. This has two features. One is out-degree centrality, which shows activity of individuals and refers to the number of times an individual addresses another. The second is in-degree centrality, which refers to the number of times an individual receives communication.

“Actors who have more ties have greater opportunities because they have choices. This autonomy makes them less dependent on any specific other actor, and hence more powerful”

(Hanneman & Riddle, 2005, p. 155). Betweenness and closeness are two types of centrality measures. According to Igarashi, Takai, and Yoshido (2005), “betweenness centrality describes frequency with which an actor falls between pairs of other actors on the shortest or geodesic paths connecting them” (p. 8).

Name Generator: This is the actor (node) from whom network data are generated.

Sociogram: A sociogram is a diagram analogous to those used in spatial geometry. Individual actors are represented by points, and their social relationships to one another by lines. A sociogram allows researchers to visualize the channels through which information flows from one person to another and through which one person influences another person (J. Scott, 2000).

Social Network: Social network refers to a set of objects, or nodes, and a mapping or description of the relationship between the objects. “In the language of social network analysis, the people or groups are ‘actors’ and the communications are ‘ties’” (Rupnik, 2006).

Social Network Density: This is the sum of ties divided by the number of possible ties in a network. The density of a network gives a hint of the speed at which information travels among the nodes and the extent to which actors have social capital and/or are limited by social constraints (Hanneman & Riddle, 2005).

Social Network Size: Social network size is the number of members in a social network.

Weak Ties versus Strong Ties: Within social networks, weak ties are more powerful than strong ties. Information is far more likely to be diffused through weak ties, while strong ties support local cohesion (Singh, 2007). A weak tie refers to a connection of a person who has many connections but it is not strongly attached to any of them. Strong ties are the opposite. The originator of the theory of weak versus strong network strength is Granovetter (1973).

1.4.2 Concepts Related to Adolescent Sexual Activity

Adolescence: This is a time when one moves from the immaturity of childhood into adulthood. There is no single clear age demarcation that denotes the end of childhood and the beginning of adolescence. Rather, experts think of the passage from childhood into and through adolescence as composed of a set of transitions that gradually unfold and that touch upon many aspects of the individual’s behavior, development, and relationships. These transitions are biological, cognitive, social, and emotional (Krapp & Wilson, 2005, para. 1).

Early Sexual Practice: This is a sexual practice of any kind that is engaged in when one is below the age of legal marital consent as stipulated in the Federal Democratic Republic of Ethiopia, Revised Family Law. Article 7 says, “Neither a man nor a woman who has not attained the full age of eighteen years shall enter into marriage.”

Parenting Practice: Parenting practice means the adolescent-parent relationship and communication in relation to adolescents’ academic performance, parents’ positions regarding their children’s voices in the house, the freedom (or lack thereof) that parents give their children to commune with other adolescents, and the type of measures that parents take (advice, verbal discipline, physical punishment, avoidance, etc.) when the adolescent makes a mistake. It involves how parents act as role models to their adolescent children; whether adolescents are allowed to learn certain skills at home, such as shopping on their own; how money is controlled; and whether adolescents are still treated as children.

Predictor: A predictor is a variable (or an actor) that has the potential to influence the occurrence of another variable or act. For example, a social network variable may influence or predict sexual practices.

Sexual Debut: Sexual debut is an individual’s first engagement in any type of sexual practice.

1.5 Operational Definitions of Concepts and Terms

Some of the operational definitions of concepts and terms are specific to the current study.

Academic Achievement: Academic achievement is measured by one’s ability to transition from one grade to the next grade and by cumulative grade point average.

Adolescents: Adolescents are school-going youths of both genders between 16 and 19 years old.

Adolescent-Parent Communication: This is face-to-face discussion between adolescents and their

parents (as parents are operationally defined here) on issues of academics, relationships with friends, reproductive health, selection of boy- and girlfriends, money management, selection of social network members, and future plans.

Friends: Friends are individuals who are listed as being close to the survey respondent. In Study A, a friendship network consists of no more than five persons, excluding the respondent. In Study B, friends are all the persons whom the interview participant defines as friends.

Knowledge of Social Networks/Sexual Practices: This is a measure of participants' responses to the list of the types of social networks and sexual practices used in this study.

Network Generator: A network generator is the actor (node) from whom network data are generated. In this study, an adolescent who provides data about his or her connections with other network members is the network generator.

Parents: For this dissertation, parents are defined as caregivers of adolescents involved in the study. These can be biological parents, extended family members, or adoptive parents.

Sexual Practices: Sexual practices refers to intimate kissing, watching sex videos and looking at pornographic pictures, watching others have sexual intercourse, fondling the sex organs of another person, masturbation, and sexual intercourse with an individual of the opposite gender.

Social Network Form/Type: Types of social networks are differentiated from each other in terms of the individuals with whom they are established: family members, relatives, friends, neighbors, or persons with the same religious affiliations.

1.6 Research Questions

The study proposes seven research questions and collected and analyzed data to respond to these research questions. The descriptive analysis in Study A and the content analysis used in

Study B were used to respond to the first three questions. The remaining four research questions were examined through hypothesis testing. The research questions are as follows:

- 1) What knowledge and perceptions do adolescents have regarding types and functions of social networks?
- 2) How are adolescents engaged in different types of social networks?
- 3) How do adolescents define sexual activities?
- 4) How are adolescents' sexual debuts associated with social network variables such as the types, sizes, and functions of friendship and family networks?
- 5) How does the age at which an adolescent has his or her sexual debut correlate with his or her initiation into another type of sexual behavior, and how is this affected by the adolescent's gender?
- 6) How does adolescent-parent communication influence whether or not the adolescent has a boy- or girlfriend?
- 7) Do demographic and social network variables predict the age at which an adolescent makes his or her sexual debut?

1.7 Research Hypotheses

Hypotheses were developed for the last four research questions and converted to null hypotheses for statistical tests (see section 4.2). The research hypotheses are as follows.

- 1) Adolescents' sexual debuts are strongly associated with the types, sizes, and functions of their family and friendship networks.
- 2) The age at which an adolescent has his or her sexual debut is positively correlated with engagement in another type of sexual behavior, and this is affected by gender.

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- 3) Adolescent-parent communication on issues such as academic matters, reproductive health, selection of friends, membership in social networks, and selection of boy- and girlfriends has a positive association with whether or not an adolescent has a boy- or girlfriend.
 - 4) Demographic and social network variables predict the age adolescent makes his or her sexual debut.

2 LITERATURE REVIEW

The purpose of this chapter is to present a review of literature related to the study of social networks and sexual practices. The chapter starts by discussing how the concept of theory has been defined by Payne (2005); Dejong, Sullivan, and Monette (1998); and other scholars. This is followed by discussion of selected theories (social exchange theory, balance theory, theory of self-interest, theory of homophily, social learning theory, social cognitive theory, group socialization theory, ecological theory, and theory of early sexual practices) and research concerning social networks and sexual practices. An integrated approach used by some researchers interested in the study of social networks and sexual practices is analyzed. The chapter ends with the research questions and hypotheses that emerge from the literature review and concludes with a summary.

2.1. Why Is Theory Important?

It is necessary to; briefly, discuss the concept of theory before specific theoretical backgrounds that support the current study are presented. Payne (2005), in his book *Modern Social Work Theory*, defines theory as “an organized statement of ideas about the world” (p. 5). His definition lacks clarity. Does it mean that all organized ideas can be called theories? Are there specific parameters that organized ideas must meet in order to be called theories? This is not clear in Payne’s writing. Other scholars give more sufficient definitions of theory. Dejong et al. (1998), quoting Homans (1964), describe theory as “a set of interrelated propositions or statements, organized into a deductive system, that offers an explanation of some phenomenon” (p. 26). Theory can take three possible forms: models, perspectives, and explanations. Models describe what happens during practice. Perspectives are values and views about the world.

Explanations describe “why an action results in or causes particular consequences” (Payne, 2005, p. 5).

The two major functions of theories are to guide research and practice and to facilitate the integration of observations made by researchers and practitioners. Pedersen’s (2007) review of 107 articles that focus on defining theories summarizes six broad categories of the functions of theories in social work and other disciplines: explanation (also described by Payne, 2005), prediction, provision of order, advancement of knowledge, guidance or research development, and description.

Three of these functions apply to this dissertation project. The first function is theory’s role in explaining why social networks are associated with certain sexual activities. The second function is theory’s use in reviews of existing knowledge; this in turn contributes to our understanding of the field of studies related to social networks and sexual practices. The third function is the selection of theoretical models, perspectives, and explanations that direct the research process by guiding the development of research questions, the formulation of hypotheses/assumptions, and the devising of analytic techniques based on data from the field.

The review of the literature for this study requires integrated analysis of two broad fields of theories: social network analysis and the analysis of human behavior. This is helpful for understanding the important features and components that cause interactions between social networks and sexual activity in human behavior.

2.2 Theories of Social Network Analysis

Social network analysis is a set of theories, methods, and techniques that are used to understand social relationships and how these relationships influence individual and group behavior. Social network analysis is also a “research technique that focuses on identifying and

comparing the relationships which exist between individuals, groups and systems in order to model the real-world interactions” (Ramalingam, 2006, p.15).

Theories of social network analysis developed from theories in sociology, anthropology, economics, communication, social psychology, and many other disciplines (Valente, Gallaher, & Mouttapa, 2004). Social psychologists and sociologists have used social network analysis to identify actors in important roles or positions within a network, and several indices have been developed to describe the nature of social networks (Igarashi et al., 2005). Social network theories focus on the social context and the behavior of the actors in the relationship (Durland & Fredericks, 2005). Social network theories view social relationships in terms of nodes and ties. Nodes are used to represent actors such as individuals, groups, and organizations within the network, and ties are the relationships between the actors.

The goal of social network analysis is to understand the interactions that take place between people irrespective of their personal attributes. The theory’s main emphasis is the meaning of people’s interactions. Ethier (n.d.) says that “one of the reasons social networks are studied is, by understanding the map that connects one individual to others, one can evaluate the social capital of that individual” (para. 3). Social networks provide a sense of belonging, self-esteem, and support at the individual, group, and community levels. Both formal and informal networks are sources of social capital.

Cattell (2001) defines social capital as “encompass[ing] features of social life, and trust that enable participants to act together more effectively” (p. 1502). Cattell emphasizes the different dimensions of social capital outlined by researchers. Borrowing from Coleman and Jacobs (1961), he defines social capital in terms of its structure and relational and functional elements. Social capital refers to “networks which provide basis for trust, co-operation and

perceptions of safety” (Cattell, 2001, p. 1502). Storberg and Gubbins (2007) associate social capital with values that one can gain through networks, such as solidarity, information, and support. It is one of the four generic types of capital identified by Bourdieu, the other three being economic capital, cultural capital, and symbolic capital (Swartz, 1997). Bourdieu viewed acquaintances and networks as major components of social capital.

Theories of social network analysis are also devoted to the study of the reputation of network members, power and stability within groups, groups as dynamic systems, social networks and personal health, and intelligence (Ethier, n.d.). “There are multiple schools of thought upon which network scholars base to their explanation why people create, maintain, dissolve and possibly reconstitute network ties, and who is likely to form ties to whom” (Katz, Lazer, Arrow, & Contractor, 2004, p. 312).

Within the general theory of social network analysis, there are dozens of specific theories that aim to understand network systems and different forms of human interactions. Four specific social network theories provide background on the current study of adolescents’ social networks: social exchange theory, balance theory, the theory of self-interest and the theory of homophily. The rationale for the use of each of the four theories is discussed below.

2.2.1 Social Exchange Theory

The social exchange theory of social networks offers a primary framework for the study. Zafirovski (2003), borrowing from Homans (1961), states, “The key tenet of social exchange theory is that human behavior is in essence an exchange of rewards or resources particularly of material character or secondarily of symbolic attributes” (para. 2). It is an exchange of rewards, costs, and resources between actors (Sabatelli, 2007). Rewards are defined as satisfaction or gratification accrued due to the relationship (Thibaut & Harold, 1959). Resources are any

commodity, material, or symbol that helps someone assist another person through the process of relationship (Foa & Foa, 1980). Sabatelli (2007), borrowing from Blue (1964), describes costs as “punishments experienced, the energy invested in a relationship, or rewards foregone as a result of engaging in one behavior or course of action rather than another” (para. 1). The basic assumptions of social exchange theory are as follows. Social behavior is a series of exchanges. Individuals attempt to maximize their rewards and minimize their costs. When individuals receive rewards from others, they feel obligated to reciprocate (Sprecher, 1998).

In social exchange theory, one must examine resources and costs in order to understand the interactions between actors. Concepts related to social exchange theory include satisfaction, outcomes, comparison levels, relationship stability, norms regulating exchange relationships, trust and commitment, and exchange dynamics (Sabatelli, 2007). Satisfaction in exchange relationships is the direct function of outcomes, as opposed to other sources of satisfaction. Outcomes are calculated in terms of the rewards obtained from a relationship minus the costs incurred during the relationship. Comparison levels refer to the disparity between the actor’s previous experience and current satisfaction with the relationship.

Stability cannot be measured by the mere presence of relationships. It is the function of the minimum outcome of a relationship and those of potential alternative relationships. When the outcome of a relationship exceeds or at least equals those of the potential alternative relationships, stability increases (Thibaut & Harold, 1959). In some cases, even though the relationship is less rewarding, stability may be unaffected due to a lack of alternative relationships. This kind of relationship is known as a non-voluntary relationship (Sabatelli, 2007). Relationship stability is unaffected when dependency increases in the relationship. Dependency on a relationship can be affected by both internal and external factors, including

feelings of obligation and indebtedness that develop when the psychological cost of terminating the relationship increases. Examples of external factors are community pressure and material or economic conditions that enhance dependency and constrain the breakup of the relationship despite the fact that the relationship is not as rewarding as it was expected to be by the actors (Levinger, 1982).

Exchange relationships between actors can be also affected by the normative and cognitive orientations of the actors. Normative orientations are views of acceptable behavior in relationships. Cognitive orientation is the beliefs, values, and relationships that an individual associates with various types of exchange relationships (McDonald, 1981). Norms of fairness, distributive justice, and reciprocity are parts of cognitive orientation.

Trust is an important variable in a relationship. Trust is maintained when a partner in a relationship believes that the other actors are being fair and there is no exploitation. Trust is important in relationships because it helps the actors be less calculating in establishing relationships (McDonald, 1981). Commitment distinguishes social and intimate exchange from economic exchange. Commitment involves the willingness of individuals to work for the continuity of the relationship. Commitment develops within relationships when network members experience large and sustainable rewards (Sabatelli, 1999). The last element in social exchange theory that merits mention is exchange dynamics, or the patterns of power and decision making that exist in a relationship (Huston, 1983; Zafirovski, 2003, 2005).

2.2.2 Balance Theory

Balance theory was developed by Heider in 1946. Later, in 1958, he wrote four relationship balances, which are described by Khanafiah and Situngkir (2004):

- 1) My friend's friend is my friend.

-
- 2) My friend's enemy is my enemy.
 - 3) My enemy's friend is my enemy.
 - 4) My enemy's enemy is my friend. (p. 1)

Heider shows the relationship between three things: the perceiver, another person, and the object that determines the balance of the relationship between the two persons. Balance theory is used to analyze systems consisting of two or three persons or two persons and an object, in which any two of these entities are related to each other by either positive or negative sentiments, or not related at all (Cartwright & Harary, 1956). The object can be a person, an object, a perception, or an attitude toward the objective or subjective world. According to Katz et al. (2004), "Balance theory posits that if two individuals were friends they should have similar evaluations of an object" (p. 316). Newcomb (1961) identifies three psychological states in a network: balance, imbalance and, non-balance.

The core of Newcomb's theory concerns two persons A and B, and their joint relation to some object, X, as that relation is perceived by one of them. With A, as Ego, there are three variables: (1) A's attraction towards B; (2) A's attitude towards X; (3) A's perception of B's attitude towards X. Given such relevance, there is then . . . a balance among the above three variables. (Curry & Emerson, 1970, p. 217)

In a balanced state, the cognitive element is accepted as it is; in an imbalanced state, modification is attempted by one or more of the actors in order to accept cognitive elements; and in non-balanced state, indifference leads to either acceptance or rejection of a cognitive element [by the disagreed actors] (Cartwright & Harary, 1956, para. 7). Balance theory is relevant to the study of friendship development (Newcomb, 1961) and conformity (Brown, 1965). According to Katz et al. (2004), balance theory explains the past better than it predicts the future.

More importantly, the agent/object about which actors develop certain feelings tries to control the other individuals' feelings and the perceptions they develop about that particular agent.

Two individuals can develop three possible balance states regarding their perception of a particular agent. The first balance state occurs when two people develop similar positive perceptions of the agent and communicate these feelings to each other. The second balance state occurs when two people both develop unfavorable feelings about the agent and communicate these feelings to each other. The third balance state occurs when one of the individuals develops a positive feeling and the other develops a negative feeling about the agent. This state of feelings creates disagreement between them. Nakanishi, Nakazawa, Ishida, and Takanashi (2008) examine how balance theory views three situations. "The first condition is that the agreeing agent agrees to both subjects' opinion. The second is that the disagreeing agent disagrees with both of their opinions. The third is that the unfair agent agrees to one subject's opinion but disagrees with the other subject's opinion at once" (para.7). This explains the validity of balance theory in two person's interactions regarding an object/agent under three different sets of circumstances.

Khanafiah and Situngkir (2004) explain that "in the relation of three people or [a] triad . . . , balance state occurs when all sign multiplication of its sentiment relation charges positive. In this way, a balance state will occur when there are sentiment relations with signs all positive . . . or two negatives and one positive" (p. 2). In the three people's relationship, a maximum of four patterns of balance and another four patterns of imbalance can occur. Table 2.1, adopted from Khanafiah and Situngkir (2004), describes the state of balance of three people's interactions.

Table 2.1: Balance-Imbalance States of Three People's Interactions

1-2	1-3	2-3	Relation characteristics
+	+	+	Balanced
+	+	-	Imbalanced
+	-	+	Balanced
+	-	-	Balanced
-	+	+	Imbalanced
-	+	-	Balanced
-	-	+	Balanced
-	-	-	Balanced

Source: Khanafiah & Situngkir (2004).

In structural relationships, the balancing state of dyads may cause changes in the whole social structure. When we know the initial pattern of all dyadic relations, we can determine whether the formed triads are balanced or not.

2.2.3 Theory of Self-Interest

The theory of self-interest can be traced back to the work of sociologists such as Coleman (1988). According to this theory, dyads form relationships in order to fulfill their personal preferences and desires. While each actor tries to maximize self-interest, the effort to maximize such self-interest is constrained by the interests of the other actor. Individuals consider the creation of ties an investment in the accumulation of social resources, which scholars call social capital (Katz et al., 2004). Quoting Bourdieu and Acquaint (1992), Katz et al. (2004) define social capital as the “sum of the resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (p. 113).

2.2.4 Theory of Homophily

The theory of homophily argues that people who are similar have more contact than do people who are dissimilar. Monge and Contractor (2003) and Byrne (1971), as cited by Yuan

(2006), provide two explanations why the theory of homophily is important to the study of the social interactions of dyads, groups, and communities. These explanations are called the similarity attraction hypothesis and theory of self-categorization. According to Blau (1977) and McPherson and Smith-Lovin (1987), the study of group homogeneity and dyadic relations are long term interest of sociologists. Homophily describes the idea that networks form among those with similar interests and characteristics. It is similar to the proverb “Birds of a feather flock together” (Katz et al., 2004, p. 316). Brass (1995) observes, “Similarity is thought to ease communication, increase predictability of behavior, and foster reciprocity” (p. 15). Behrman et al. (2002) describe this as “a preference for network partners with similar characteristics that appears to be a ubiquitous feature of social structure” (p. 716). Homophily is studied based on similarities in age, gender, education, status, social class, and occupation (Katz et al., 2004). The theory that individuals with similar characteristics form a group is a special feature of social network analysis.

The study of homophily varies in focus and interest. According to McPherson, Smith-Lovin, and Cook (2001), “researchers have studied homophily in relationships that range from closest ties of marriage . . . and the strong relationships of ‘discussing important matters’ . . . and friendship . . . to the more circumscribed relationships of career support at work . . . to mere contacts . . . , knowing about someone . . . or appearing with them in a public place” (p. 418). Some researchers describe homophily based on the relative frequency of “in-category and out-category ties.” Others take the position that homophily is the deviation by some groups of people from what the “baseline model of random assortment would predict” (McPherson et al., 2001, p. 419). Other researchers use the concept of homophily simply to distinguish different types of relationships that exist between dyads without examining the attributes that facilitate the

formation of their interactions. It has been suggested that a homophilous network consists of dense relationships. The theory of homophily posits that “as density increases, the number of transitive triads in a network also increases. Thus there are some empirical grounds for associating increased homophily with transitivity” (Louch, 2000, p. 51).

Similarity in behavior among adolescent groups is considered the important characteristic that leads to the establishment of relationships. In addition to patterns of behavior, “sex, age, religion and, education also strongly structure our relations with others” (McPherson et al., 2001, p. 429). An important area of interest in the study of homophily is the factors that cause it. One of the sources of homophily is space. People living in geographic proximity establish their relationships more easily than those who live in different places. Other characteristics such as similar occupations, schooling, and hobbies make it easier for individuals to assimilate and form similar habits, behavior, and practices, or more probable that they will do so. Homophiles interaction is one source of romantic relationships among adolescent groups. The similarity or homophily of partners in romantic relationships occurs “by *selection* or assortative pairing; that is, individuals have long been hypothesized to be attracted to those who are similar to each other” (Furman & Simon, in press).

There is empirical evidence that adolescent boys and girls who date each other have characteristics such as religion, ethnic background, academic performance, and age in common. Another suggestion of empirical studies is that friendship homophily is the primary source of romantic homophily. The two homophilous relationships are distinct from one another during the middle and later years of adolescence (Furman & Simon, in press).

2.3 Theories of Human Behavior

Like the theories of social network analysis, there are different theories of human behavior that contribute to our understanding of sexual practices. The human behavior theories analyzed for the present study are social learning theory, social cognitive theory, group socialization theory, ecological theory, and theory of early sexual practices.

2.3.1 Social Learning Theory

Bandura's social learning theory posits that people learn from one another via observation, imitation, and modeling. The theory explains human behavior in terms of the continuous reciprocal interaction between cognitive, behavioral, and environmental influences. The theory is related to social development theory, which also emphasizes the importance of social learning. Social learning theory explains human behavior in terms of modeling. In order for modeling to be effective, some necessary conditions must be present. Some of these conditions are attention, retention, reproduction, and motivation. Elements of attention are distinctiveness, sensory capacities, arousal level, and perceptual set. Retention is remembering that to which attention is paid. Reproduction is all about regenerating images that include physical capabilities and the self-observation of reproduction. This is to mean, the place of someone in a social group measured by the ability to reproduce to make sure for the continuation of the generation. Motivation is the development of good reasons for the behavior of others to go in the same direction (Thibaut & Kelly, 1959).

2.3.2 Social Cognitive Theory

The main concepts of social cognitive theory that have relevance for sexual decision making are behavioral capacity, expectancies, self-efficacy, and reciprocal determinism. Human functioning is viewed as the product of a dynamic interplay of personal, behavioral, and

environmental influences. The theory emphasizes that “Cognition plays a critical role in people’s capability to construct reality, self-regulate, encode information, and perform behaviors” (Pajares, 2002, para. 2). Personal factors, which reside within an individual, include psychological constructs such as self-efficacy and self-regulation. Environmental factors are characteristics of situations, which reside outside individuals. Behavioral factors are those behaviors performed by an individual (James, 2002). These three sets of factors influence one another, and the interaction can be described as the reciprocity of determinism.

Bandura’s social cognitive theory stands in contrast with socialization theory, which emphasizes the influence of the environment on human behavior. Social cognitive theory, according to Bandura (1986), as explained in Pajares, emphasizes that “What people think, believe, and feel affects how they behave” (quoted in Pajares 2002, para. 6). Pajares’s explanation shows that individuals possess certain capabilities that define what it means to be human. Individuals possess the capacity to create symbols, which leads to self-directiveness and forethought. The theory emphasizes that self-efficacy enhances human accomplishment. Individuals select tasks that they feel they can perform competently. Self-efficacy also influences emotional reactions.

2.3.3 Group Socialization Theory

Group socialization theory is the theory of human behavior and is the leading framework for this study. According to Harris (1995), “group socialization theory posits that within a child’s peer groups the psychological characteristics a child is born with become permanently modified by the environment” (quoted by Bold, Hildreth, & Fannin, 1999, p. 1). According to Harris (1995), group socialization theory has six components: context-specific socialization; outside-the-home socialization; transmission of culture via group process; between-group processes,

which widen differences between groups; within-group process, which widen differences among individuals; and assimilation and differentiation. Each component is dependent on a number of assumptions. Context-specific socialization, for instance, means that individuals learn how to behave differently in different contexts, such as the home environment, school, or the workplace. Ironstrack, Klee, McKay, and Minera (2005) explain that adolescent “behavior at home is different from their behavior outside the home” (p. 2). Harris (1995) describes the transmission of culture via groups as a process during which adolescents “transfer behavior learned at home to the peer group only if it is shared by, and approved by, the majority of the members of the peer group” (p. 467).

These authors describe five phenomena of group behavior: in-group favoritism, between-group contrast, within-group assimilation, within-group differentiation, and self-categorization. In-group favoritism is the choice made by group members to be members of their own group over other groups. Between-group contrasts are the differences between a particular group and other groups but also the group’s effort to widen those differences. Within-group assimilation is the urge among individual members to assimilate to the group norms. Within-group differentiation describes the individual differences that exist within a group. There are scholars who disagree with Harris’s assumption of group socialization theory. Ironstrack et al. (2005) challenge the theory of group socialization, citing Pinker, who “sees the interaction between genes and peers as possible explanation for certain behaviors such as smoking. In addition to the genome and environment, chance offers a [contributing] factor in the child’s development” (p. 4).

2.3.4 Ecological Theory

Ecological theory, also known as the ecological model, is a conceptual framework that positions adolescents' sexual behavior within social and relational contexts such as families, peers, and partners (Donenberg et al., 2003). In their study of adolescent sexual behavior, Aronowitz, Rennells, and Todd (2006) define the environment as multilayered and interactive. According to this theory, an adolescent's social ecology is divided into four categories. The first is the macro-system, followed by extra-familial, familial, and personal ecologies. The macro-system is the place in which adolescents are exposed to information about sex and sexual behavior either formally or informally. Scholars suggest that, for example, formal exposure happens in the school environment and community centers. Informal exposure occurs through interactions with peers, which are suggested to be the primary sources of knowledge about sex.

2.3.5 Theory of Early Sexual Practices

Sex has been given different names and accorded different meanings since antiquity. Historically, there have been two views of sex: one is the view of traditional Chinese, Japanese, and Indian cultures and the Roman Empire, where sex was viewed as erotic, pure, and something that needs to be kept secret. The second is the Western view, which associates sex with confession, similar to criminal behavior in the judiciary system. In Western thinking, sex outside marriage is considered sinful, but this does not make it go away ("The History of Sexuality," 2000). According to Donenberg et al.'s (2003) research on early sexual activity among adolescents, there are three social context variables that motivate adolescents to engage in early sexual practices: parental hostile control, negative peer influence, and positive peer influence.

Parents usually feel uneasy when their adolescents develop a strong attachment to their peers. De Guzman (2007) states, “Many parents worry that their teens might fall under negative peer influence or reject their families’ values and beliefs, as well as be pressured to engage in high-risk and other negative behaviors” (para. 3). Both positive and negative peer influence expose adolescents to the behaviors their friends engage in. Adolescents, for example, share their previous sexual experience with their peers and encourage them to experiment in behaviors that they themselves already engage in. This is affected by the closeness of a particular friendship and the gender of the adolescent’s friends. In terms of positive influence exerted by peers, Harper, Gannon, Watson, Catania, and Dolcini (2004) suggest, “Same-gender social networks may provide an avenue for delivering and diffusing prevention messages about safer sex to adolescents” (para. 1).

Relationships within the community also affect connectedness and individual adolescents’ capacity for intimacy (Aronowitz et al., 2006). Neighborhood culture can shape the behavior of adolescents either positively or negatively in terms of attitudes about sex and sexual practices. Sarri and Phillips (2004) suggest that the negative impact of the environment on adolescents may stem from the fact that “limited community resources and social disorganization often result in fewer social services, poor schools, lack of recreational opportunities and high unemployment rate” (p. 539). This suggests that determining factors for early sexual activity and consequent risk factors are not at the family and peer levels. The community environment contributes both positively or negatively to adolescent behavior.

2.4 Relevance of the Selected Theories

This study reviews nine theories. Four of these theories are related to social network analysis and the remaining five theories emphasize human behavior. One theory from each

category was selected to serve as a theoretical framework for this study. Seven of the theories are also used to analyze the findings and the results of the study. There appear to be a number of commonalities among the theories of social network analysis that are used to explain adolescent social networks in the current study. Similarly, theories from the human behavior perspective collectively define relational behavior and provide some explanation for sexual practices. There is also convergence between some of the social network and human behavior theories in explaining relationships among adolescents.

There are, however, distinct areas of interest to which each theory gives particular emphasis. Social exchange theory, which is one of the lead theories in social network analysis, focuses on a reward relationship. A relationship established among two, three, or more people is always associated with rewards of material or symbolic types. According to this theory, resources are the center of attraction in any relationship. The initiation of any relationship is preceded by the calculation of reward versus cost. Stability is the direct function of minimized costs in a relationship compared to all other alternative relationships. Accepted norms and cognitive behaviors of individual actors have a central influence in social exchange theory. Trust and commitment are necessary in relationships. Unlike social exchange theory, which focuses on the interactions of the actors themselves, balance theory emphasizes whether two actors evaluate an outside object in a similar manner.

Social exchange theory and theory of self-interest have some characteristics in common. Unlike balance theory, these theories focus on the actualization of the interests of actors. However, one important point at which the theory of self-interest and balance theory converge is that the interest of an individual actor is countered by the interest of another actor.

The fourth important theory used in this study is the theory of homophily. This theory hypothesizes that individual actors must share similar characteristics to establish relationships. Actors of the same or similar ethnicities, gender, religion, and age are attracted to each other. According to theory of homophily, there are clearly measurable variables that actors choose as criteria in identifying others with whom they wish to associate.

Each of these theories has distinct features—for example, the focus of social exchange theory is on rewards, balance theory centers on the actors' similar evaluations of an object, the theory of self-interest focuses on actualization of self-interest, and the theory of homophily proposes that predetermined characteristics foster a sense of belonging among actors.

The second set of theories is related to human behavior. One of these theories is social learning theory. The theory explains that individuals learn behaviors from others. The theory argues that there is a reciprocal interaction between individual personality, behavior, and environment. Like social learning theory, both group socialization theory and social cognitive theory pay attention to the interplay of the personal, behavioral, and environmental factors in human interactions.

Social exchange theory is different from the rest of other theories in that it places a greater emphasis on environmental factors. Social exchange theory is an important theory for this study since one focus of the study is to examine the effects of environment—both social and physical—on adolescent sexual practices and their social interactions. As part of the social environment, the group socialization process shapes the individual.

There exist certain similarities between the theory of homophily and theories of social network analysis and ecological theory. Whereas the theory of homophily holds that similarities

in ethnicity, religion, gender, and age influence relationships, ecological theory is used to study human behavior within the relational context of families, peers, and parents.

Finally, the theory of early sexual practices is directly linked to the findings of the current study. This theory views sex from the modernist and traditional perspectives. The current study accommodates both the traditional and modernist views, as presented in chapter 4 and chapter 5.

It is important to note that all the theories presented in this study converge in a number of ways. The convergence between different social and behavioral theories strengthens our ability to analyze findings. The theory of homophily and balance theory and ecological theory and the theory of early sexual practices are important for analyzing findings and linking the results to the existing body of knowledge.

2.5 Research on Adolescent Social Networks and Sexual Practices

In addition to the efforts made to examine theories of social network analysis and theories of human behavior, research conducted on social networks and adolescent sexual practices in Ethiopia and around the world is reviewed as follows.

2.5.1 Studies on Adolescent Social Networks

Social network research emphasizes the study of groups as dynamic systems and personal health. The use of social network research for understanding group life offers a number of advantages (Katz et al., 2004). First, research on social networks offers a systematic conceptualization and measurement of social ties and their impact. Second, the social network perspective can help researchers integrate the internal workings of a social network groups and the groups' external environments. Third, social network analysis offers techniques for identifying and exploring important features of network members' interactions.

Four analytically and temporally distinct stages need to be considered when one uses a methodological approach to understand the causal relationships between networks and the activities of group members. These four stages are the network that existed before the current network was established, the network in the group formation process, the network while the group is functional, and the network once the group has ceased functioning (Katz et al., 2004).

Studies indicate that social networks assume a variety of functions for adolescents in different settings. For adolescents who have unsuccessful relationships with their parents, close friendship networks provide a sense of belonging and self-worth. Peter and Welsh (2007) suggest, "Peers are more influential in adolescence than at any other time in life" (para. 3). Bryant, Sanders-Jackson, and Smallwood (2006) indicate that social interactive technology has both strengths and weaknesses in influencing adolescents' social networks. In terms of strengths, it supports adolescents in establishing networks in the wider world outside their community, and apart from their previously formed networks. Networks established through social interactive technology do not provide opportunities for adolescents to develop strong ties with network members. However, weak ties are valuable for bridging relationships. The research shows that people "who have more weak ties as part of their social network are likely to have access to greater amounts of information" (Bryant et al., 2006, p. 6).

Some studies that look at the link between social networks and addictive behavior show significant correlations. A study on social networks and heavy drinking in college students by Reifman, Watson, and McCourt (2006) suggests a positive correlation between social networks and drinking. In some cases, individuals networked with heavy drinkers imitate their behavior and become drinkers. Drinkers also select other drinkers as their peers or potential network members. Similarly, Cotterell (2007) states, "Adolescents who regularly attend parties and other

peer outings at clubs, discos and dances adopt drinking patterns at earlier age than the majority of their peers” (p. 179, citing Margulies, Kessler & Kandel, 1977). Other researchers who apply social network methods and analysis have shown that “smokers were over-represented among those defined as isolates (lacking ties to others), and explained their results in terms of selection processes” (Cotterell, 2007, p. 186). However, other researchers criticize this finding because the method of analysis is weak due to its use of NEGOPY, a kind of analysis method that applies a reciprocity network, and this may not be the case for every network interaction. Abel, Plumridge, and Graham (2002), who used cluster analysis, reject the claim that the isolated are more likely to be smokers and suggest that “the loners, who are the true isolates, were less likely to smoke” (quoted by Cotterell, 2007, p. 188).

2.5.2 Adolescent Social Networks in Ethiopia

A study of adolescent risk behavior conducted in Ethiopia by Astatke et al. (2000) suggests that one of the determinant factors for adolescent risk behavior is connectedness that leads to dating and sexual activity. The study points out the influence of peer group members on adolescent sexual behavior. Another study by Rudatsikira, Abdo, and Muula (2007) focuses on the prevalence and determinants of tobacco smoking. This study suggests that “having smoking friends was strongly associated with smoking [by the individual respondents] after controlling for age, gender, parental smoking status, and perception of risk of smoking” (p. 126). Of those whose friends smoked, 30.6% also smoked, whereas only 6.9% of those whose parents smoked also smoked.

A study conducted by Reifman et al. (2006) focuses on the relationship between social networks and negative behavior, and another study by Voorhees, Murray, Welk, Birnbaum, Ribisl, Johnson, et al. (2005) suggests a relationship between social networks and positive

adolescent behavior. The latter research suggests that girls whose peers are involved in physical exercise also engage in regular physical activity. The friendship networks of adolescents also “provide safe venues where youth can explore their identities, where they can feel accepted, and where they can develop a sense of belongingness. Friendship also allows youth to practice and foster social skills necessary for future success” (de Guzman, 2007, para. 1).

Adolescent social networks can foster the development of romantic relationships, which lead to dating and the possibility that an individual will find a permanent partner. A study carried out in Dessie, Ethiopia, suggests that positive peer networks contribute to secure attachments between peers and parents, and vice versa (Shiferaw, Fantahun, & Bekele, 2006). Another study conducted in the same town by Tadele (2006) also suggests that the support of friends helps young men find girlfriends. Studies in Ethiopia and in other parts of the world show that people use social networks to develop both positive and negative behavior and to engage in sexual activity.

2.5.3 Studies on Adolescent Sexual Behavior and Activity

A study conducted by Aronowitz et al. (2006) shows that African American girls were dismayed that their neighbors and aunts reported their sexual activity to their mothers. Mothers were afraid that despite their efforts to talk to their daughters about sex and to teach their daughters about the risks of unprotected sex, their daughters received most of their information about sex from the media, movies, videos, and television. This was confirmed by the girls, who said that they learned “about sex both from formal and informal sources including media, and friends such as those who are pregnant or those [who are] sexually active” (Aronowitz et al., 2006, pp, 117-118).

A qualitative study conducted in Nigeria by Ojo and Fasubba (2005) with parents, schoolteachers, counselors, and students on the sexual behavior of adolescents suggests that youths are receiving more information on sex from their friends and from movies that they watch in secret with their schoolmates. The same study suggests that the amount of information on reproductive health that adolescents received from their parents had declined in time series although the reasons given vary. Parents attributed the problem to poverty, the deterioration of cultural values, and lack of attention from the government and schools. The schoolteachers had similar feelings regarding poverty and cultural deterioration, but adolescents and guidance workers believe that parents pay little attention to the issue. Despite the lack of proper control from parents, adolescents still need control and guidance from parents. Ojo and Fasubba (2005) state that adolescents “confirmed that they would support a firm hand and greater discipline at home and school and . . . [that] family life education is preferred to sex education” (p. 116).

Some studies conducted in Ethiopia suggest that sex education by itself leads to significant delays in the sexual debuts of adolescents between the ages of 13 and 16 years. Finger (2000) suggests, “Sex education can result in young adults delaying first intercourse, or, if they are already sexually active, in using contraception. Virtually all studies conclude that sex education protects adolescents from initiation of earlier sexual activity” (para. 1). Unfortunately, a study by Taffa, Inge-Klep, Austveg, and Sundby (1999) on the effect of parent-adolescent communication on sexual behavior reported that over 60% of adolescents and a high proportion of parents (45%) felt that discussing family life issues such as sex is culturally shameful. Ethiopian adolescents are believed to be afraid to talk to their mothers about becoming sexually active. On the other hand, a case analysis of male informants by Tadele (2006) discusses the

three main reasons why girls refuse to have sex. One of the reasons is that “my mother will not allow me to do such a thing” (p. 65).

Buhi and Goodson (2006) found many factors that motivate adolescents to become sexually active and engage in associated risk behavior. The eight factors used to assess adolescents’ sexual practices and risk behavior are intentions, skills, environmental constraints, perceived norms, self-efficacy, self-standards, emotions, and beliefs/attitudes. Seven of the eight factors are limited to the individual actor. Environmental constraint involves the relationship between the adolescents and their parents and peers. Bonell, Allen, Strange, Oakley, Copas, Johnson, and Stephenson (2006) also examined the association between parenting and sex. Their research focused on the relationship between single parenthood and parental employment and adolescent sexual practices. Adolescents living with single mothers engaged in sexual behavior earlier than those living with both parents. Similarly, adolescents of single employed parents were more likely to be sexually active at a young age than those whose parents were not employed. Although there is no relationship between having a single parent and sexual intercourse among adolescents, this research found that boys with single parents reported engaging in sexual behavior more frequently than girls with single parents.

In Ethiopia, no studies have been carried out that indicated that parents’ marital status has an effect on sexual behavior. Adolescents who live with single parents are different from those who live with both parents in terms of other areas of life. Research conducted in Dessie town shows that “students living with both parents were generally found [by far] better in terms of interpersonal interaction and academic achievement than their counterparts living with one biological parent only, friends or alone. . . . Adolescents [who are] living with both biological parents exhibit the lowest rates of psychological problems” (Shiferaw et al., 2006, p. 52). A

review of the limited literature on Ethiopia indicates that there has not been enough use of social network methods to analyze adolescent sexual activity.

2.6 Integrated Studies on Social Networks and Sexual Practices

Many studies that focus on adolescents' behavior try to include social networks as predictors of sexual practices. These studies look at the influences of social networks on human sexual behavior in general, and adolescents' sexual practices in particular. According to Regnerus (2005), "Research on coital debut suggest that sexual decision-making is 'strongly bound to social context,' with school peers playing a critical role in 'creating a source of normative behavior'" (p. 5), which is a source of social influence.

Studies of community-level perceptions of reproductive health and family planning have used social network analysis. A study conducted in Kenya by Musalia (2006) on gender, children, and family planning suggests that the presence of younger children in the household affects the social networks of women more than those of men. Women with younger children have less connection with others and get limited information on family planning. Men have more access to social network contacts because they have higher levels of education and their social networks are mainly those established in school. This research indicates that social networks are generally developed at a young age while an individual is still in school. The argument made by Musalia is that when women have more access to education, they will have more good social network interactions and fewer burdens in bearing more children since they will have less pressure and able to make their own choice on the number of children they want to have. "Schools have been known to be great networking avenues in which people make both short- and long-term friendships" (p. 170).

Two factors that have an influence on adolescents' sexual behavior are the family environment and close friendship. Close friendships among adolescents emerge from school interactions. Schools are a source of friendship, but also the context for adolescents' first sexual experiences. Aalsma, Fortenberry, Sayegh, and Orr (2006), in an assessment of the degree of closeness between adolescents' families and friends and the adolescents' sexual partners in relation to condom use, found that "Social network closeness—both friend and family—with the primary sex partner were associated with relationship intimacy. Relationship and close intimacy were negatively related with use of condoms" (p. 177). They report the positive and negative impacts of social networks on sexual practices. A study by Wang (2006) conducted in rural China explains how parents' familiarity with their adolescent children's dating partners facilitates sexual debuts and sexual relationships. However, the research focused only on the outcomes of parents' intimacy with the boy- and girlfriends of their adolescent children. The study did not show how the adolescents themselves become involved in a sexual relationship before their parents came to know their boy- or girlfriend.

Social networks provide the opportunity for people to become intimate friends, share resources, and support each other. The level of closeness among individuals influences their sexual behavior. Studies show that closeness and peer influence are factors that determine the future sexual relationship of adolescents. A two-wave study of high school adolescents by Longmore, Manning, and Giordano (2005) reveals the influence of intimacy on self-identity. Conducted among U.S. adolescents, this study suggests that adolescents' self-identities are associated with sexual practices. In terms of the social nature of self-identity, adolescents identify themselves based on their peers and friends, who are members of already established social networks

A close friendship leads to the identification of potential sexual partners, which leads to sexual behavior. Marston and King (2006) state, “Individuals might see sex as something that could strengthen a relationship or as a way to please a partner” (p. 1583). A limitation of this study is that the authors did not indicate whether there are differences in the perception that sexual engagements strengthen social relationships between males and females.

The current body of knowledge does not allow one to take a position on whether the above findings apply to the way in which adolescents in Ethiopia establish social networks and become sexually active. It is not clear whether adolescents in Ethiopia practice sex to strengthen relationships or to please a partner. This is a subject that is investigated by the current study. An alternative view comes from studies that show that female adolescents often become sexually active due to economic needs or coercion from either boyfriends or older adults at home and in the neighborhood. Delano (1998) reports that “Sexual exploitation of young people is frequently facilitated by their lack of economic power and absence of job opportunities. In Addis-Ababa, an estimated 30 percent (about 30,000) of prostitutes are women ranging from 12–26 years of age” who joined the sex industry due to economic constraints. “The number of adolescent females engaged in informal prostitution may be far greater” (para. 15). Another study conducted in Dessie supports this finding: “The first thing girls consider in response to a proposed relationship is money” (Tadele, 2006, p. 54).

2.7 Summary

This chapter introduced social network and human behavior theories. A review of theoretical perspectives indicated that both social network analysis and the study of sexual practices have broad theoretical bases. This chapter outlined the theoretical foundations for the study of adolescent social networks and sexual practices and presented a summary of the

empirical studies conducted in both areas of interest. The literature review will inform the effort to integrate research approaches adopted by researchers around the world who have conducted studies on adolescent social networks and sexual practices. The design and implementation of a systematic study of adolescent network relationships that attempts to redress the lack of knowledge of adolescent social networks and sexual practices in Ethiopia and look at the predictive power of networks on sexual practices requires the use of critical thinking. The following research questions emerge from a review of the literature.

- 1) What do adolescents know about the types and functions of social networks, and what are their perceptions of the types and functions of social networks?
- 2) How are adolescents engaged in different types of social networks?
- 3) How do adolescents define sexual practices?
- 4) How are adolescents' sexual debuts associated with social network variables such as the types, sizes, and functions of friendship and family networks?
- 5) How does the age at which an adolescent has his or her sexual debut correlate with his or her initiation into another type of sexual behavior, and how is this affected by the adolescent's gender?
- 6) How does adolescent-parent communication influence whether or not the adolescent has a boy- or girlfriend?
- 7) Do demographic and social network variables predict age at which an adolescent makes his or her sexual debut?

The first three research questions were treated in the descriptive report in Study A, and the content analysis in Study B. The answers to the last four research questions were subjected to statistical analysis through testing of the null hypotheses of the following hypotheses.

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- 1) Adolescents' sexual debuts are strongly associated with the types, sizes, and functions of their family and friendship networks.
 - 2) The age at which an adolescent makes his or her sexual debut is positively correlated with the engagement in another type of sexual behavior, and this is affected by gender.
 - 3) Adolescent-parent communication on issues such as academic matters, reproductive health, selection of friends, membership in social networks, and selection of boy- and girlfriends has a positive association with whether or not an adolescent has a boy- or girlfriend.
 - 4) Demographic and social network variables predict the age at which an adolescent makes his or her sexual debut.

3 RESEARCH METHODOLOGY

In order to examine the influence of adolescent social networks on sexual practices, data were generated from two studies conducted in sequential order. Study A used the survey method and Study B used the case study method. The exploratory study conducted prior the commencement of the major dissertation project became the basis for the undertaking of Studies A and B, as described below.

3.1 Exploratory Study

The main objective of the exploratory study was to generate concepts, terms, and ideas related to adolescent social networks and sexual practices. Focus group discussions and individual semi-structured interviews were the two methods of data collection employed. Twenty-five school-going adolescents (11 males and 14 females) were involved in focus group discussions in three separate sessions. Four additional adolescents (two males and two females) were involved in the individual interviews. The adolescents who participated in the exploratory study were from the same school-based population, as were the participants taking part in the later components of Study A and Study B. Three major issues were covered by the focus groups and individual interviews: (1) adolescent friendships and other social networks, (2) adolescent sexual practices, and (3) the interaction between adolescent friendships, social networks, and sexual practices.

The exploratory study revealed that adolescents define a social network as a relationship established by more than two persons who have positive feelings about one another. Of the network types listed, the friendship network was the most popular. Other network types identified by exploratory study were family, neighborhood, religious, and workplace/professional networks. The exploratory study also generated information on adolescent sexual behaviors.

Adolescents in the exploratory study defined sexual activities as kissing, watching sex videos, watching others have sex, masturbation, fondling of the sex organs of another person, and sexual intercourse. The participants reported that family networks were free of any type of sexual engagement, and sexual engagement can take occur in friendship networks.

The exploratory study indicated that the age at which sexual debuts occurred was 12–13 years of age. Some external factors such as watching of sex videos, unusual styles of dressing, and a longtime attachment may turn social network relationships into sexual relationships. In most cases, unplanned sex can be a negative outcome of social network interactions for female adolescents. The exploratory study guided the development of the survey questionnaire and the case interview checklist and grounded the choice of theories to guide the study process.

3.2 Methodological Stance

To guide the purposeful development of research questions and generate meaningful data, the methodological stance used in this study was mixed-methods research (MMR). A sequential MMR model was utilized. The study followed a qualitative-quantitative-qualitative approach to generate data. First, an exploratory study—the design, data collection, and analysis techniques of which made it qualitative in nature—was conducted. The exploratory study was followed by Study A, which applied quantitative methods. The quantitative survey was followed by Study B, which was predominantly qualitative in its design, data collection, and analysis techniques. Despite its sequential nature in data collection and analysis, the major research questions in the survey project were also included in some ways in the qualitative study.

What knowledge do adolescents have of the meanings, types, and functions of social networks? This research question has both quantitative and qualitative characteristics. This question generated data about adolescents' knowledge and perceptions of the meanings, types,

and functions of social networks. The same question was asked during the case interview to generate information on personal, family, and community factors that affect adolescents' knowledge about social network variables. What are the existing relationships between the social networks of adolescents and their sexual practices? is another research question with quantitative and qualitative elements. This question generated qualitative data during Study B. It also helped to generate quantitative data during Study A.

The philosophical and methodological stance of the study guided the design of the research questions and the development of the research hypotheses as well. The methodology of the study was strongly influenced by the nature of the research topic, which involves two central issues: social networks and sexual practices. The nature of this research topic presents an opportunity to use mixed methods. As part of the decision to use MMR, the following question was asked. Is MMR a mere combination of qualitative or quantitative approaches, or “should or can mixing occur at a research purpose or question or, should it be kept limited to the methods of the study (data, methods of data collection, data analysis stage)?” (Tashakkori & Creswell, 2007, p. 209). The next paragraph discusses the rationale behind the decision to use MMR.

The use of MMR in this study was anchored in an epistemological stance. The epistemological stance was a conscious decision to use the mixed-methods paradigm as a philosophy or methodology to integrate the components of the whole research process, not just as a way to treat qualitative or quantitative data because they appear in the study methods. Social work researchers in the field of social network analysis should methodologically emphasize the study of people's connection (networks) and can use MMR to understand the actors and the mental maps drawn inside their brains.

Human networks are, by definition, large, and complex and rigorous methodological approaches are required to understand them. The associations between and correlates of the size of actors' networks, the network types they prefer, the number of their network engagements, and other network-related variables are measured and analyzed in quantitative terms. The qualitative method is effective in demonstrating the processes and showing how these variables interact. Qualitative approaches and techniques are used to analyze the structure and centrality of an actor in a social network and to measure the quality of relationships.

Similar to the study of social networks, which are complex and difficult to measure using a single data collection technique due to social and cultural influences, the study of sexual practices calls for application of intensive, integrated, and precise methodological approaches. Understanding the networks of individuals is halfway to estimating the characteristics of their sexual engagements. The application of MMR is, therefore, extremely useful for comprehending the complex nature of both social networks and sexual practices. MMR is an appropriate research design, data collection technique, report-writing tool, and data synthesis strategy for this type of study. As mentioned earlier, the actors in social networks, the quantity of relationships these actors form, and other numerically explainable variables can be studied through the quantitative research method. However, the invisible network maps and sexual experiences of the actors and the quality of their relationships cannot be quantified. Therefore, what is important in the study of social networks and sexual practices is understanding actors' beliefs and attitudes about their relationships, which the researcher cannot observe by looking at the person's physical appearance or other physical characteristics. It should be noted, however, that quantitative data and statistical test results are equally important in measuring the beliefs, attitudes, and perceptions of the actors in the study of social networks and sexual practices. To synthesize and

report the outcomes of MMR, graphs, sociograms, and other reporting techniques can be used to display both the qualitative outcomes and quantitative findings (see chapter 4).

MMR has not yet developed its own “practical and theoretical path” (Borkan, 2004, p. 3). It is important to introduce the theoretical concepts of quantitative (or deductive) research and qualitative (or inductive) research. Since the current study follows inductive, deductive, and inductive phases, the study also mixes theoretical approaches.

The number of actors, frequency of interactions among actors, types of social and sexual practices, and relationships or associations between variables can be deductively investigated through the use of a sample statistic to generalize the population parameters. Based on such inferences, it is possible to link findings of the study to the existing body of knowledge and theory in the area of social networks and sexual practices. In the current study, findings are linked to the theoretical frameworks of social exchange and group socialization theories. Findings are further linked to balance, homophily, self-interest, and early sexual practices theories. This is the deductive nature of the study.

Knowledge of the subjective conditions of the actors provides a basis for understanding each actor’s thoughts, and thus it is possible to know what the actors believed about the social interactions that are important in their lives. At this stage, knowledge is built from the perspectives of the individual cases. Here the PI used what Oka and Shaw (2003) call “analytic induction” (para. 5). Based on the findings from a case or group of cases, a working hypothesis can be developed to explain the results. This is the inductive nature of the study.

The synthesis of both deductive and inductive conceptual approaches supports the argument that MMR is more useful than a single study method for studying social networks and sexual characteristics. The use of MMR minimizes the polarization of data obtained from the

quantitative and qualitative approaches through synthesis and cements them as the body of knowledge in social network and sexual practice research. Since social network research integrates all relational, attribute, and ideational data (J. Scott, 2000, p. 3), the MMR approach is better than either quantitative or qualitative methods alone for generating rich data. Social network analysis assumes that every actor is interdependent, and this implies that the relational and interdependent nature of actors can be easily understood when a combination of qualitative and quantitative methods is used.

The philosophical base behind the methodology of this research is recommended by critical social science. The work of Pierre Bourdieu is usually mentioned in the argument that critical social science methodology is appropriate in the study of social networks. Bourdieu demystifies both positivist and interpretative approaches in research and argues that “social science research [methodology] must be reflexive (i.e., study and criticize itself as well as its subject matter) and is necessarily political” (Neuman & Kreuger, 2003, p. 83). Thus, a philosophically critical social science research study must attempt to reveal the underlying source of social relationships. Furthermore, it provides the freedom for researchers to use both deductive and inductive approaches. The critical thinking paradigm is the methodological road map upon which this study is based in relation to the application of MMR and mixed deductive and inductive approaches.

3.3 The Role of the Principal Investigator

The PI was actively involved during all three stages of the dissertation project (exploratory study, Study A, and Study B). In the exploratory study, the PI worked as a focus group facilitator, interviewer, and data analyst. The main job of the PI in Study A was designing the survey questionnaire, conducting the pretest, training schoolteachers to administer

questionnaires, recruiting a data collection coordinator, and overseeing the data collection process.

The PI designed the questionnaire, entered the data, coded data, and analyzed and interpreted the results for Study A. In Study B, the PI was involved in all the stages of instrument design, interviewing, data transcription, analysis, and report writing. The PI was both the interviewer and note taker during Study B. Participants in Study B did not give permission for another person to be present to take notes or facilitate interviews.

For both Study A and Study B, the PI recruited study participants from two high schools. The administrators of the two high schools gave the PI access to the complete list of students in grade 9 and permission to use the lists to generate the necessary data for Study A and Study B.

3.4 Research Design: Mixed-Methods Research

The PI was required to make subjective decisions throughout the research process. For example, the decision of what to study (the topic), the decision on the level of alpha (0.05% instead of 0.01% or 0.1%), and the conclusions drawn and interpretations made based on the collected data were based on the PI's subjective experience, normative procedures, personal interest, and judgment. In contrast, the PI was able to generate the qualitative facts of social networks and sexual practices from adolescents from concrete and quantifiable cases. The qualitative data are presented in sociograms and matrices. These two methods of data collection, processes, analysis, and report writing enabled the PI to use MMR. According to O'Cathain, Murphy, and Nicholl (2007), "a mixed methods study has the potential to produce knowledge that is unavailable to a qualitative study and a quantitative study undertaken independently" (p. 147).

Johnson and Onwuegbuzie (2004, p. 17); B. S. Scott, Bergeman, Verney, Longenbaker, Markey, and Bisconti (2007, p. 243); and Collins, Onwuegbuzie, and Jiao (2007, pp. 267–268) provides similar definition to MMM. Johnson and Onwuegbuzie (2004, p. 17) present the formal definition of MMR, which is:

the class of research, where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study.

Philosophically it is the third wave or third research movement. Its logic of inquiry includes the use of induction (discovering of patterns), deduction (testing of theories and hypothesis) and abduction (uncovering and relying on the best of a set of explanations for understanding one's results).

The main principle of MMR is that it uses different strategies to design research questions and collect data (in this case, the exploratory study, Study A, and Study B) in such a way that the methods' strengths complement each other and their weaknesses do not overlap or magnify each other. There are four MMR perspectives (see Creswell & Tashakkori, 2007). These perspectives are the method perspective, the methodology perspective, the paradigm perspective, and the practice perspective. These perspectives are not mutually exclusive. Based on the nature of this study, the PI chose to follow the methodology perspective. The main tenet of this perspective is that research methods cannot be separated from the entire process of the research. The methodology perspective of MMR focuses on "the entire process of research from the philosophical assumption, through the questions, data collection, data analysis, and on to the interpretation of findings" (Creswell & Tashakkori, 2007, p. 304). The researcher applies MMR starting with the writing of the proposal and up to the completion of the research project. To develop the research questions, specify the objectives of the study, and formulate the

assumptions/hypotheses, the process involved a serious search for studies in which both quantitative and qualitative methods are used. Studies such as those conducted by Bernardi, Keim, and von der Lippe (2007); Christ (2007); Collins et al. (2007); Lee and Greene (2007); Parmelee, Perkins, and Sayre (2007); and B. S. Scott et al. (2007) were informative. Based on a review of the MMR literature and the characteristics of the current dissertation project, the PI selected mixed methods.

This research took place in three phases. Initially, an exploratory study was done to develop the survey instruments and case study interview checklists. In the second phase, Study A, a survey was administered, and quantitative data generated and analyzed. The third phase, Study B, was a case study informed by the exploratory and survey studies. In summary, the overall study design passed through qualitative, quantitative, and the qualitative stages. The research began with a small but essential qualitative study, followed by the major quantitative study, and ended with a rigorous qualitative study. The MMR design involved triangulation, which seeks the convergence of results; complementarities, which are used to elaborate on and clarify the results; and development, in which the findings generated from the use of one method are used to inform the findings generated by the use of the other method.

Collins et al. (2007) noted some of the limitations associated with the use of MMR. These include the sampling procedures used in quantitative methods and problems related to using qualitative methods to capture the lived experiences of participants; challenges associated with validity, reliability, and dependability, which are more pronounced in qualitative research; questions involving the appropriateness of triangulation, comparison, and consolidation of large amounts of data from the quantitative research with small amounts of data from the qualitative research; and the use of qualitative versus quantitative methods by different researchers and the

subsequent problems that arise in comparing and contrasting the data from these studies, as well as the difficulty involved in persuading policy makers and other stakeholders of the value of mixed methods.

The PI took a number of practical steps in order to address these challenges and ensure the credibility and trustworthiness of the research. The first step was using a large sample size randomly drawn from a normally distributed population. The selection of critical cases that would allow for the generation of qualitative data was another step taken to minimize the challenges related with representation. Qualitative data collection went up to the stage of data saturation, or the point of redundancy.

There are two types of MMR: concurrent and sequential MMR. This study followed a sequential model, in which qualitative and quantitative approaches are mixed across the stages of the research process. The quantitative approach used a survey method, and the qualitative approach a critical case study method. The rationale for the use of the survey is that, as Carrington, Scott, and Wasserman (2005) write, “in the absence of archival records, surveys are often the most practical alternatives: they make much more modest demands on participants than do diary or observation, for example” (p. 10). The current study focuses on adolescents’ egocentric networks. Egocentric studies are often conducted on larger populations through sampling. The nature of the study called for the use of survey methods to collect data. In egocentric studies, resource considerations usually make face-to-face interviews impossible.

On the other hand, the survey method may introduce disingenuousness in respondents’ responses, and findings rest heavily on the presumed validity of self-report (Carrington et al., 2005). To reduce the risk of disingenuousness and enhance the validity of self-response data, a face-to-face in-depth case interview called a critical case study was used. The critical case

method is less resource intensive than other methods of qualitative study. Another reason for choosing the critical case study is that it allows researchers to investigate detail and hidden information. This reduces the disingenuousness of data. The critical case study method also provides an opportunity for researchers to investigate a phenomenon within its real-life context (Wikipedia, 2004), for example, by generating detailed qualitative data on an individual's social networks and sexual practices.

In summary, the study utilizes MMR at all stages of the study process and in the sequential application of the quantitative and qualitative techniques of design, data collection, analysis, and reporting. The study is also cross-sectional—that is, the study population was drawn from two high schools. Data gathered through the survey and case studies were generated from ninth-grade students, who were selected for two reasons. The first reason was their age category. About 95% of ninth-grade students in the targeted high schools were between 15 and 19 years of age. The second reason was that ninth-grade students were in the higher grade level of high school during the survey, in contrast to tenth-grade students, who were in their final year of high school and left school after taking the National School Leaving Certificate Examination. There was reasonable evidence that ninth-grade students would understand the questions on social networks and sexual practices. Since the survey questionnaire was self-administered, it was important to select older adolescents in high school. Similarly, ninth-grade students have better communication skills and are better able to provide ideas during the exploratory study than students in grades 8 and 7, who were also involved in the exploratory study.

3.5 Data Sources Used to Develop Research Tools for Studies A and B

Two sources of information were used to prepare the survey questions for Study A and the critical case study checklist for Study B. The extensive literature review on studies conducted

in Ethiopia, the rest of Africa, and other parts of the world offered a look at survey questions designed by other researchers. This literature review informed the PI as to where the gap in knowledge is and was used to generate a number of questions for the current study. In April 2008, the exploratory study with high school students from the schools where the major project was later carried out provided information that informed the design of the survey questionnaire for Study A and the checklist for Study B.

3.6 Scope and Delimitation of the Dissertation Project

The dissertation project was conducted in Addis Ababa, Arada Sub-City, in a neighborhood called Gedam Sefer. The PI has had a special interest in the Gedam Sefer community since his engagement as member of a participatory action research team that is active in the community. The physical targets of the study were two junior and senior high schools in Gedam Sefer. The geographic area has two junior and senior high schools, five elementary schools, and limited health facilities that serve the 22,000 people living in Gedam Sefer (Eco-City Development Study, 2004). Adolescents in Gedam Sefer have limited access to basic social services such as playgrounds, recreation centers, and library services. There are serious social problems related to health risks among adolescents. Open prostitution is common, and easy access to potential sex customers and youth temperament motivate adolescents to become sexually active (Eco-City Development Study, 2004; Nduba & Delnessa, 2004). The project targeted adolescents who were in ninth grade during Study A and Study B.

3.7 Study A: The Survey

3.7.1 Population and Sample

The first methodological concern in this survey was how to find a sample that would represent the population. The sample determination depends on “the sample frame, the sample size and the specific design of selection procedures” (Fowler, 2002, p. 11).

The population of the study was all 597 ninth-grade students at Bethlehem and New Era junior and senior high schools. The sample frame for the study was 347 students between 16 and 19 years old (141 from Bethlehem and 206 from New Era). The gender composition of the sample frame was 175 male and 172 female students. The sample frame consisted of 100 male and 106 female students at New Era, and 75 male and 66 female students at Bethlehem. In order to determine a representative sample size for the survey and draw a sample from an unspecified population, a standard formula developed by Kurtz (1983) was applied. The PI applied the correction factor adjustment formula described in box 3.1 in order to draw the actual sample size from the finite student population.

Box 3.1: Correction Factor Adjustment Formula Used to Draw Sample Size

$$n = \frac{n_0 N}{n_0 + (N-1)}$$

Where:

n_0 = is a sample size drawn from unknown population named $P(1-P) \times Z^2/E^2$

n = is a sample size drawn from finite population

N = population size

$$n = \frac{[P(1-P) \times Z^2/E^2] N}{[P(1-P) \times Z^2/E^2] + (N-1)}$$

Since no studies had been conducted on adolescent social networks and sexual practices in Ethiopia, there were no basic statistical facts such as population mean, standard deviation, or

variance for the study population. The following assumptions were adopted from Kurtz (1983) in order to draw the representative sample size.

- In order to obtain the maximum sample size, and based on the assumption of maximum heterogeneity or maximum variation sampling, the estimate of the population (p) was assumed to be 50% (.5).
- The maximum allowable error (E) was assumed to be 5% = .05.
- The standard normal value corresponding to the desired level of confidence (z), or a confidence interval of 95%, was assumed (z = 1.96).

Based on these assumptions, the unknown population was calculated as $n_0 = 0.5 \times (1-0.5) \times (1.96^2 \div 0.05^2) \times 100 = (0.5-0.25) [\times (3.74 \div 0.86)] = [0.25 \times (3.74 \div 0.86)] \times 100 = 384$. Using the correction adjustment factor formula, the PI calculated the sample size (n) as 183 students. School and gender stratifications were made in order to draw a proportionate sample from both schools and from both genders. Of the total sample, eight students refused to participate in the study. Of 175 students who were willing to be involved in the survey, 167 of them (95%) responded to the survey questionnaire on July 1, 2008. The gender and school stratifications of survey respondents are presented in tables 3.1 and 3.2.

Table 3.1: Gender Stratification of the Survey Sample

	<i>n</i>	
Population (N = 347)		
Male	175	50.4
Female	172	49.6
Sample (N = 167)		
Male	76	45
Female	91	55

Table 3.2: School Stratification of the Survey Sample

	New Era		Bethlehem	
	<i>n</i>	%	<i>n</i>	%
Population (<i>N</i> = 347)				
Male	100	29	75	21
Female	106	31	66	19
Sample (<i>N</i> = 167)				
Male	45	27	31	18
Female	58	35	33	20

3.7.2 Sample Determination

In order to draw the sample, the PI entered the data from the list of students between 16 and 19 years old from the total ninth-grade student population into Microsoft Excel. The study population was then sorted based on school, gender, and age. The stratifications based on school and then by gender were necessary “to reduce sampling error, chance variation between a sample and a population it represents” (Grinnell, 2001, p. 212).

A systematic random sampling technique was used to choose the sample. A table of random numbers, used to select the first sample, after which a systematic random sample was drawn from the remaining sample elements. This was done until the last element was selected. The use of the systematic random sampling technique gave each student in the sample frame an equal chance of being selected for the study sample.

3.7.3 Survey Administration

A number of steps were taken before the survey was administered. Permission to conduct the study in the school environment was secured from the necessary school authorities. Next, the

exploratory study was conducted. The survey questionnaire was developed based on these results and the literature. The questionnaire was pretested and analyzed before being used in Study A.

Pretesting of the questionnaire led to important changes in the survey instrument. A question on masturbation was added after pretesting, as well as another question on the role of social networks in reducing adolescents' work burden at home, and a question on molestation was removed. Other questions about ethnic origin and religious beliefs were omitted. The study population was drawn from a heterogeneous community in Addis Ababa where more than 90 ethnic groups and over 6 religions are represented (Central Statistical Authority, 2007). Adolescents who took the questionnaire pretest commented that in such highly heterogeneous ethnic and religious community, the influences of ethnic origin and religious background on adolescent social networks and sexual practices may be minimal. Therefore, religion and ethnicity were not variables in the study.

After the questionnaire and the list of respondents were finalized, a discussion meeting was held with potential respondents. The purpose of the meeting was to ascertain their willingness to participate in the survey and explain the need for them to complete and sign the consent and assent forms before the questionnaire was administered. Consent forms for parents and the assent forms for students were distributed to 175 students who came to the meeting and were willing to participate in the survey. The consent and assent forms were presented on the same sheet of paper and translated into Amharic, the official language in Ethiopia, with the help of professional translator to maintain the meaning of technical concepts and terms. The forms were put together to make sure that both parents and the student read both forms and signed them. Those respondents who were 19 years old were required to sign the consent form; their parents' signatures were not needed.

The administration of the questionnaire took place in classrooms. Separate classrooms for male and female adolescents were used to reduce any potential fear of the opposite gender that might arise in response to intimate questions about their sexual activity. The PI trained two teachers at each school to administer the questionnaire. Female teachers administered the questionnaire to female respondents, and male teachers to male respondents. One MSW student from Addis Ababa University was employed to coordinate the questionnaire administration, which took place at the same time for both schools. “A self administered survey [is] found to increase the response rate of sensitive questions relative to other data collection methods” in social network research (Lange, Agneessens, & Waeye, 2004, p. 360). This was found to be true in this study, as no question was left unanswered.

3.7.4 Data Collection

The survey questionnaire consisted of four major sections and a total of 48 main questions and 264 items. The first set consisted of nine items on school friendships and nine items on out-of-school friendships. The next nine questions addressed social network 107 items. The first two questions were about the respondent’s knowledge of social network types and functions of friendship networks. The remaining questions asked about the respondent’s membership in social networks, the size of the networks to which he or she belonged, and the kinds of networks to which the respondent preferred to belong. The last two questions were about network strength and centrality of an actor in a social network.

The third set of questions consisting of 117 items addressed sexual practices. The first question asked about the respondent’s knowledge of different types of sexual practices, and the next four questions asked whether or not the respondent had (at the time of the interview) or had had in the past a girl- or boyfriend. The final four questions in this section focused on the

respondent's sexual experience, including the age at which he or she made his or her sexual debut, the factors that influenced that sexual debut, and location of the sexual debut.

The last set of 11 questions dealt with the socio-demographic information of respondents and their parents/guardians. Respondents were asked their sex, age, place of residence, educational level, and future educational plans. The last two questions asked about the respondent's communication with his or her parents and the methods of discipline used by his or her parents.

3.7.5 Measurement

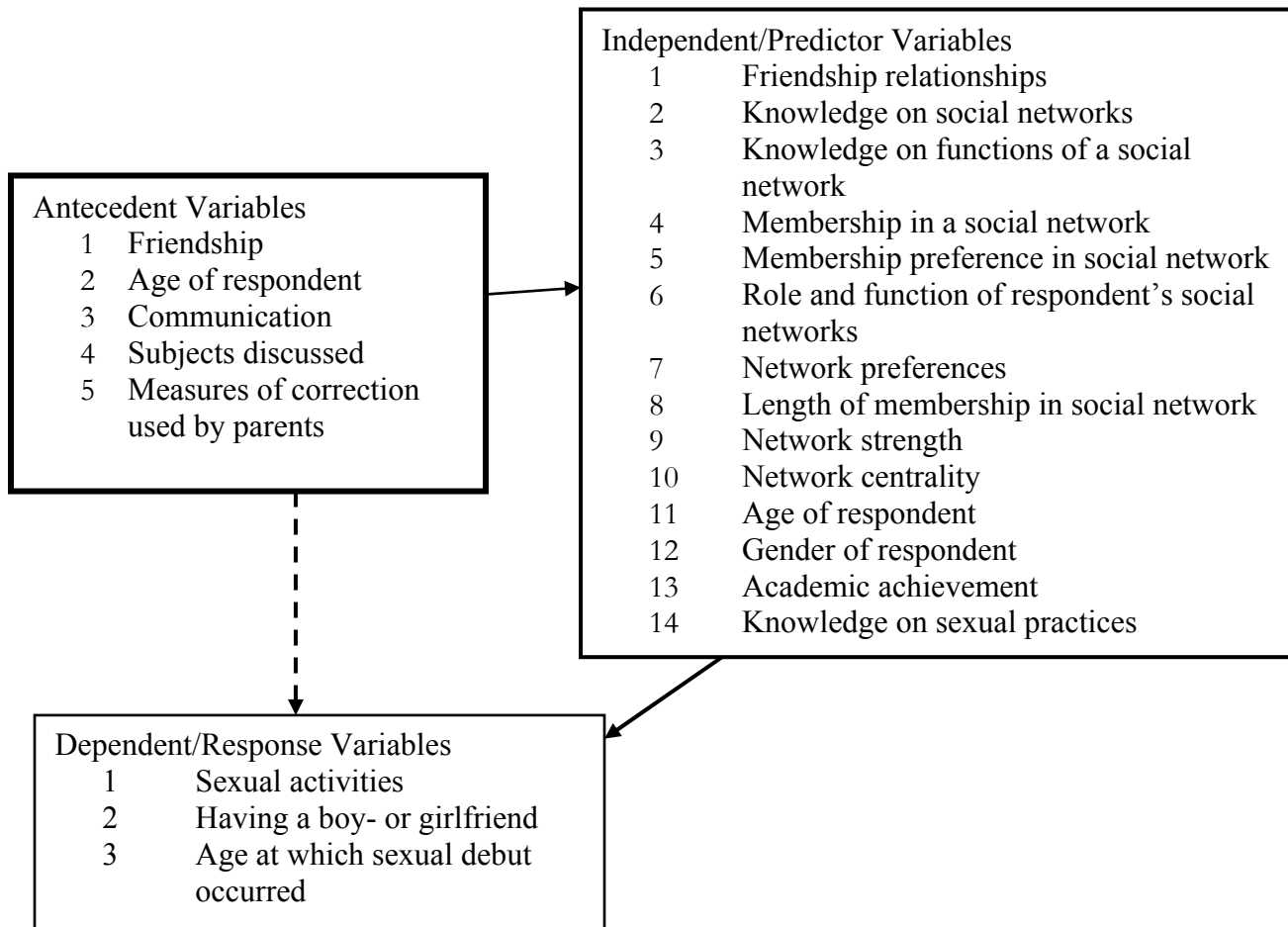
3.7.5.1 Measurement Items

There were 264 possible answers in the survey questionnaire, 209 (79%) of which were at the nominal level of measurement, 17 (6%) of which were at the ordinal level, and 38 (15%) of which were at the interval level. In order to decide whether there were significant differences between the responses for each variable, the PI used a goodness-of-fit test. As Elliott and Woodward (2007) report, "A goodness-of-fit test is used to ascertain whether the distribution of observed counts in the various categories of a categorical variable matches the expected distribution of counts under a hypothetical model for the data" (p. 143). The goodness-of-fit test used a nonparametric chi-square test at the optimum level of 5% of sampling error. Accordingly, 32 (12%) variables were rejected from further statistical analysis based on the goodness-of-fit test. Of the rejected variables, 25 nominal-, one at ordinal-, and six interval-level measurements. Finally, 232 variables (186 [80%] nominal variables, 16 [6%] ordinal variables, and 32 [14%] interval variables) were ready for analysis using inferential statistics.

The research project used three categories of variables: dependent variables, independent variables, and antecedent variables. A dependent/response variable plays an outcome role. The

independent/predictive variable plays an antecedent or causal role in a relationship (Knoke & Bohrnstedt, 1994). An antecedent variable comes before the dependent variable. There were three dependent, 14 independent, and five antecedent variables. The interconnections of the variables are presented in diagram 3.1.

Diagram 3.1: Types of Variables



The predictor variables exert an influence on sexual practices, whether or not the respondent had (or had had) a boy- or girlfriends, and the age at which the respondent made his or her sexual debut. The antecedent variables influence both the independent and dependent

variables. Some variables treated as predictors at one stage became antecedent variables at another stage. An example of this is the age of the respondents.

The individual adolescent, who is called the ego in social network studies, was the unit of analysis. Data were generated on the ego's networks through questions about his or her social and sexual relationships.

3.7.5.2 Statistics

As noted by Weinbach and Grinnell (1991), "statistics involves methods for designing and carrying out research studies, describing collected data, and making decisions, predictions, or inferences about phenomena observed within the data" (p. 12). The complex nature of social network and sexual behavior variables requires the use of different types and levels of statistics. Both descriptive and inferential statistics were used to measure variables.

According to Rosenthal (2001) and Knoke and Bohrnstedt (1994), descriptive statistics are concerned with and present data based on the study sample. To summarize the characteristics of the sample, the mean is used to describe data at the interval measurement level. The mode is used to describe variables at all levels of measurement, and the median is used to describe variables at the ordinal measurement level. Standard deviation and variance are also used to measure variables at the interval level.

Inferential statistics were used to determine whether it is possible to make generalizations about the characteristics of the population based on the data collected from the sample. The chi-square, Pearson's coefficient correlation, and Spearman's rank order correlation tests were applied to test variables and make certain generalizations and conclusions about the population under study.

3.7.5.3 Statistical Tests

In order to design the study, the way the sample is drawn, the normal distribution of the population, and the levels of variable measurement must be considered, as these together determine the most appropriate statistical test to employ. The sample drawn is assumed to be taken from a normally distributed population. The method of sampling is based on probability, which enhances the possibility that the one sample element will be independent of the other sample element. Since measurements consist of nominal-, ordinal-, and interval-level variables, both parametric and nonparametric statistical tests were applicable.

Chi-square is an appropriate statistical test for nominal- and ordinal-level variables and is the most popular nonparametric test in social work. Many social work research variables require a yes-or-no response, which encourages the use of chi-square as a statistical test. In this study, the chi-square test was the simplest way to determine if a significant relationship exists between the observed sexual practices (dependant/response variables) and social network interactions (predictor variables). The chi-square test is not used when the cross-tabulation results are a two-by-two table and one or more cells have an expected value of less than 5 or a table that is larger than two-by-two but more than 20% of the cells have expected values of less than 5. The data for the current study generated 32 variables at the interval level of measurement. One of the parametric tests or Pearson or Spearman's correlation coefficient can be used to statistically measure the relationship between one of the interval variables and other variables at the nominal, ordinal, or internal levels of measures.

Correlation coefficient (r) "provides a numerical indicator of both the strength and the direction of relationships" (Weinbach & Grinnell, 1991, p. 138). Pearson's correlation coefficient is a useful instrument for testing hypotheses—that is, for testing for the possibility of

a significant relationship among interval-level variables and other variables at the nominal or ordinal levels. This test is also applicable when the independent variables are at the interval level of measurement. Spearman's rank order correlation coefficient is also used to test hypotheses when the test variables are at the ordinal level. Both bivariate and multivariate correlation tests are applied because the single and multiple correlations test the study hypotheses.

The regression test "focuses on prediction" (Rosenthal, 2001, p. 146). The regression test in this study examined the relationship between demographic and social network variables as predictors and sexual practice variables as outcome variables. For example, the relationship between one or more of the sexual practices (dependent variables) and social network type, size, and density (independent variables) was examined through regression analysis. The simple linear regression tests were used to measure the linear relationships between the predictor and outcome variables.

A powerful research design helps to reject a null hypothesis (H_0), which may have an adverse effect and lead to rejection of a true or alternative hypothesis (H_1). Maximizing statistical power is a means of ensuring that a true H_1 hypothesis is accepted. The power of a study is determined by the sample size, the effect size, and alpha level (Schauber & Edge, 1999), but in order to increase the statistical power of each test, precaution must be taken regarding the measure of strength of the actual relationship (the measure of association) among the dependent and independent variables; the predetermined rejection level, which is a minimum of 0.05 critical levels; and the size of the sample (Weinbach & Grinnell, 1991).

3.7.6 Validity and Reliability of Instruments

3.7.6.1 Validity

Validity “refers to the accuracy of the measure: Does it accurately measure the variable that it is intended to measure?” (Dejong et al., 1998, p. 106). This concern relates to the ability of the survey instrument to operationally measure sexual practices or social networks, because these concepts were nominally defined. To improve the validity of the data collection instruments so that they could measure the variables precisely, two important steps were taken.

The first step was to enhance the quality of the questionnaire. The exploratory study conducted in April 2008 provided a means of generating important information about sexual practices and social network appropriate for the study population. The questionnaire pretest was a second step, and this improved the content of the questionnaire. Arranging for the use of separate classrooms for male and female respondents during questionnaire administration minimized the possibility that responses would be untruthful due to the fear of pressure from friends of the opposite gender. The use of a self-administered questionnaire also contributes to the generation of valid data. The response to 88% ($n = 232$ of 264) of the variables was evaluated statistically and was determined to be valid for analysis by a goodness-of-fit test at a nonparametric level (chi-square test). The repeated use of the study’s instruments will further support validity in future studies.

3.7.6.2 Reliability

Reliability refers to the consistency or stability of a study instrument. In order to ensure reliability, exploratory research was used to generate questionnaire items based on the thoughts of members of the study population. Terms, concepts, and themes were generated through exploratory study. To ensure reliability, survey instruments developed and applied by other

researchers in the field of social network analysis and in the study of sexual practices were referenced, and a few survey questionnaire items developed by Walker (2004) were adapted and used in the study. The pretest of the questionnaire was the third measure taken to ensure reliability. Based on the comments from adolescents who participated in the pretest and subsequent analysis, some items were revised, added, or deleted. This improved the internal consistency of answer choices and therefore improved the reliability of data generated. The survey instrument passed through peer review by two academics and one practitioner in the field of adolescent studies and sexual practice. The peer review provided important input that allowed the PI to improve reliability and the presentation of the questionnaire.

3.7.7 Analysis for Study A

As a first step in data analysis, raw data from the questionnaire were entered into SPSS 16.0. Prior to data entry, a codebook was developed, with predefined labels and values assigned to each answer choice. A codebook is a reference guide for designing the data entry, the actual data entry, protecting the quality of the data through data cleaning, and recoding for analysis and report writing. Statistical computations were run in order to analyze data. Data interpretations and analysis were based on the questionnaire design, research questions, and hypotheses. This included descriptive statistics and frequency tables for each question. After the frequency tables were carefully read and examined, some data were recoded for selected questions. These questions related to the size of school friendship networks, knowledge and perceptions of different forms of social networks and their functions, and respondents' engagement in their social networks.

3.8 Study B: The Critical Case Study

3.8.1 Rationale for the Use of the Critical Case Study

There are six types of case studies: illustrative, exploratory, critical, program implementation, program effect, and cumulative case studies (Lynn, 1991). For this dissertation, the critical case data collection technique was selected to generate qualitative data on adolescent social networks and sexual practices. The critical case study method is “an empirical inquiry that investigates contemporary phenomena within the real-life context, especially when the boundaries between phenomena and context are not clearly evident” (Yin, 2003, p. 13).

The critical case study was used to systematically generate in-depth information on adolescents’ social networks and sexual practices. According to Cohen and Crabtree (2006), critical case sampling is “the process of selecting a small number of important cases. Such cases are likely to ‘yield the most important information and have the greatest impact on the development of knowledge’” (para. 1). The other advantage is that this sampling technique “permits logical generalization and maximum application of information to other cases” (Mertus, 2002). This is also a technique of “choosing settings, groups, and/or individuals based on specific characteristic(s) because their inclusion provides the researcher with compelling insight about a phenomena of interest” (Collins et al., 2007, p. 272).

The critical case sampling technique strengthens the aggregate-level data generated through the survey. Critical case study sampling and its interview technique also reduce the potential for inaccurate data due to respondents’ inability to understand questions, and the failure of respondents to respond correctly to certain questions if do not want to reveal information or if they give answers that they feel are expected or acceptable.

3.8.2 Case Selection Criteria

To select participants, a purposive and critical case selection technique was used. The primary goal was to identify critical cases for in-depth interviews. The population from which critical cases were selected was the same population from which the sample for Study A was drawn. Criteria for the selection of participants were the same as that for the selection of survey respondents; however, in addition, critical case participants were adolescents considered by those who took the survey to be initiators of interactions with their friends. Six students (three males and three females) were randomly selected from the list of ninth-grade students at both schools. These students were asked to name other ninth-grade students who were popular among their peers. In the initial interview important factors that adolescents might consider in choosing a popular student, such as the student's relationships with other students, were discussed. Other factors were initiation of or participation in school-based social activities that strengthen ties among students, such as anti-AIDS clubs and anti-sexual abuse clubs, and other forms of activities in which a student might be the center of attention or in a position to influence the communication patterns of his or her peers. These were the three basic reference points given to the six students from each school who were involved in the selection of potential critical cases. Each student was asked to provide information on popular students and to provide the names of one popular male student and one popular female student his or her school. Eight students (two males and two females from each school) with the highest votes were identified as critical cases. Each of the eight students was asked if he or she was interested in participating in an interview, and all eight students agreed to be interviewed.

The interview process continued until the data reached “theoretical saturation” (B. S. Scott et al., 2007, p. 246). At the tenth interview, data saturation occurred, as no new dimensions of ideas emerged.

3.8.3 Interviews

Original concepts generated from the exploratory study, the discussion prior to the administration of the survey questionnaire pretest, and the preliminary analysis of Study A were used to develop the interview. The survey data indicated that two types of networks, namely, friendship and family networks played a prominent role in adolescents’ sexual practices. The concentration of case interviews generated qualitative data on adolescents’ friendship and family networks in relation to their sexual practices. Nine questions on social networks and eight questions on sexual practices were developed. One question on the case informants’ socio-demographic data was added to the end of each interview.

3.8.4 Data Collection

Data collection procedures included making appointments with each individual case after consent forms were signed by parents, and telephone calls were made to parents to ask permission to interview the critical case students. Each case was interviewed, probed, and encouraged to discuss his or her social networks and sexual practices as well as those of the members of his or her social networks. The interview questions described above guided the interview process and led to additional discussion during each interview session with each critical case.

To make the interview process friendly and interactive, note taking was minimized. Although it would have been useful to have a note taker, a third person was not included in the interview sessions because the adolescents felt they were able to talk more freely about sex with

one person than with two people. With the permission of the interviewees, the PI used tape cassettes to record the interviews. The partnership coordinator at the Gedam Sefer Community-University Partnership office granted permission for the interviews to be conducted in a room at the Gedam Sefer Community-University Partnership office.

3.8.5 Data Validity and Reliability

The consistency of comments provided by participants suggests that the data are trustworthy. In order to analyze the findings from the case study, each participant was asked to verify the truthfulness of data generated from the interviews. First, a preliminary analysis was discussed with each participant. In a second phase, all interviewees were brought together in an all-male or all-female group to review the aggregated report, which summarized results in order to protect the anonymity of each respondent. This included a serious discussion of the results with critical case participants. This enhanced the ecological validity of the critical case study (Schmuckler, 2001). Beyond ensuring the trustworthiness of the outcomes, sharing the aggregate data helped individual respondents feel confident that the information they provided would remain confidential.

3.8.6 Data Analysis

Data analysis started on the day of the critical case interview. As first step of analysis, data transcription began at the end of the interview sessions with each critical case. From the transcription of the 10 critical cases, a 185-page document was produced. "Data analysis consists of examining, categorizing, tabulating, testing, or otherwise recombining both quantitative and qualitative evidence to address the initial proposition of a study" (Yin, 2003, p. 109). The proposition of this study was: If adolescent sexual practices are influenced by their involvement in social networks, then the study of adolescents' social networks will provide us with a better

understanding of the possible predictors of sexual practices. Data generated from the case interviews are reported in chapters 4 and 5. The unit of analysis in the case is each individual adolescent who participated in the in-depth interviews.

The analysis follows a case description strategy. According to Yin (1994), this is “a descriptive framework for organizing the case study” involving “analysis organized on the basis of description of the general characteristics and relations of the phenomenon in question” (p. 4). Data analysis from case interviews followed the following steps.

As mentioned above, the first step was data transcription. Transcription took place immediately after the interview with each critical case. Amharic words without an equivalent in English appear in the transcription in Amharic. The second step was to establish “open coding” (Pandit, 1996) or to identify themes based on the raw qualitative data. The third step was the construction of conceptual models based on the themes that emerged from the raw data. Based on the conceptualization of analysis techniques described by Lewis (1995), at this stage of the critical case analysis, trends and patterns that reappear within a single case interview or among different case interviews were computed. Two major themes were identified: the nature of friendship and family networks, and the sexual practices of participants.

In the critical case analysis, words repeatedly mentioned by different interviewees were compared in the discussion of both social networks and sexual practices. Comments made by more than one interviewee about a particular issue were considered particularly significant. This provided an opportunity to identify issues concerning adolescents’ knowledge and experience. Close attention was also given to “explanations that do not fit with the author’s overall [proposition] theory” (Kitzinger, 1995, Para. 1). Findings from the survey and case study are

synthesized and discussed in chapter 5. Social and sexual network data were analyzed and displayed through sociograms computed by UCINET.

3.9 Protection of Human Subjects

This dissertation is probably one of the few studies that bring two sensitive issues—the issue of connectivity and the issue of sex—together. Different measures were used to maximize the protection of the rights of study participants. Protecting the confidentiality of information provided by participants in Study A and Study B was important. The questionnaire distributed to Study A participants had no personal information identifiers. In Study B, participants were not asked for their names during interviews, and cassettes were labeled Case 1, Case 2, Case 3, and so on. Participants in Study A and Study B were clearly informed of the objectives of the study and the associated benefits and possible risks of participation in the study. Parents and study participants signed the consent and assent forms, respectively, and were informed of the benefits and risks in advance (see appendix C).

Individuals who did not show interest and were unable to sign the assent form were not included in the study. This does not affect the study since only five adolescents refused to sign the assent form. Those adolescents who participated in the individual interviews and did not want to discuss various aspects of their personal lives were informed of their right not to do so, and this was respected. A referral to school counselors for adolescents who may have felt frustrated and encountered psychological and emotional problems during the study was arranged in advance, and each participant was made aware of this prior to his or her participation. Two female adolescents who participated in study B and one male adolescent who participated in study A requested and received counseling services.

3.10 Methodological Limitations

“Social network research depends on the reliability of self report [and] the accuracy of reporting on alters” (Clair, Schensul, Raju, Stanek, & Pino, 2003, p. 89). The potential limitations of the current study relate to the topic of the study, data collection methods, and existence of extraneous variables. There are some limitations related to the sensitivity of the research topic and the target group selected for the study. Study A “relies on ‘self report’ data that depend on participants to truthfully and accurately report on their social network characteristics and sexual practices, [which] does not always happen” (Doyle, 2006, p. 3). A number of other factors can affect reliability, including memory and the informant’s interest in the individuals about whom information is reported.

The study may also suffer from certain limitations that are related to the quality of the study design. There is no adequate way to fully protect against weakness in data caused by responses that are disingenuous or respondents’ attempts to provide answers that they see as being expected or acceptable. Specific limitations of the study include uncontrollable variables that may lead to early sexual debut, for example, puberty, family economics, and parental demographic factors.

3.11 Summary

This chapter discussed the main components of the research methodology: study design, data gathering, analysis, and report writing. This study is a mixed-methods research study, also known as the third paradigm of research methodology, as it is a synthesis of quantitative and qualitative methods. The MMR approach uses a sequential model in which the application of one type of research method follows the application of the other method from the beginning of study design through data collection to data analysis and report writing.

A survey (Study A) and a critical case study (Study B) were two important components of the study. Study A addressed the wider part of the research project because it used a large sample size and a large number of questions. Study A used a self-administered questionnaire to generate data from a sample of 167 adolescents and employed descriptive and inferential statistics to analyze and report quantitative data. From the descriptive statistics, central tendencies (mean, median, and mode) and measures of dispersion (variance and standard deviation) were computed. Parametric and nonparametric statistics were used to test relationships and associations. Chi-square and Spearman's rank order correlation, two nonparametric tests, were applied. Pearson's correlation coefficient, a parametric test, was also used. Simple linear regression tests were applied to measure the power of demographic and social network variables to predict the sexual debuts of adolescents. Since the majority of the variables were at the nominal level of measurement, chi-square was the most frequently used nonparametric test in the analysis of the quantitative result. SPSS 16.0 was used to enter quantitative data and run different types and levels of statistical computations.

Study B gathered detailed qualitative information through interviews of 10 critical cases. Critical cases were identified from the same sample frame from which survey participants were selected. This expanded insight into and provided a deeper understanding of adolescent social networks and sexual practices. Different practical steps generated data from the case interviews. A critical case selection technique based on the peer judgment of popular adolescents was used to select individual cases. Following data transcription, analysis was done based on theme categorization, and UCINET was used to present data in the form of sociograms and matrices.

A serious effort was made to protect human subjects from unnecessary risks associated with their participation. Major limitations of the study include inaccurate data and the possibility interviewees gave answers that they believed to be expected or acceptable.

4 FINDINGS

This chapter focuses on data interpretation, data analysis, and the results of Study A and Study B. The first section analyzes quantitative data generated from Study A. The second section analyzes qualitative data generated from Study B. Data from Study B were used to triangulate and complement the results of quantitative data analysis and to make the analysis in the qualitative section stronger and more meaningful. To present descriptive data and run hypothesis testing in Study A, both descriptive and inferential statistics were used. From descriptive statistics, mean, median, mode, standard deviation, and skewness are reported. From inferential statistics, chi-square test, Pearson's correlation coefficient, Spearman's correlation coefficient, and regression tests were applied. For hypothesis testing in Study A, chi-square, Pearson's correlation, and regression tests were used. Chi-square statistics were used to test the first and the third hypotheses. Pearson's correlation coefficient test was used to test the second hypothesis. Regression tests applied to determine predictable relationships between the dependent and independent variables.

For Study B, theme development and case description strategies were used to analyze social network and sexual practice issues. Relationships between adolescent social networks and their sexual practices are examined. The chapter concludes by summarizing the major findings of Study A and Study B.

4.1 Descriptive Findings (Study A)

4.1.1 Independent and Control Variables

Social networks, demographics, and educational level were used as both independent and control variables. Friendship relationships, knowledge of social networks and sexual practices, engagement in social networks, network preferences, roles and functions of networks, length of

membership in a network and the strength of relationships in a network, the centrality of an actor in a network, age, gender, and academic achievement were independent/predictor variables in the statistical analysis. Statistically significant differences in social network and demographic variables serve as controls in hypothesis testing.

This section describes the social network and demographic variables (age, gender, academic level, friendships, social network relationships, and knowledge of sexual practices). Descriptive and inferential statistical tests were employed to analyze the data. Univariate, bivariate, and multivariate statistics were also applied to test relationships between the independent and dependent variables. From the descriptive statistics, percent, frequencies, mean, median, and mode were calculated. Standard deviations and skewness measure dispersions. From the inferential statistics, chi-square, Pearson's correlation coefficient, and regression tests were applied. Variables with the characteristics of nominal-level measurements were tested by chi-square statistics. Pearson's correlation coefficient and regression tests were used to measure the relationships between variables at the interval level.

The PI generally used chi-square and Pearson's correlation tests for descriptive data. The PI made this decision in order to explore relationships between social network and sexual practice variables despite his knowledge of the potential for type 1 errors. These tests are necessary to explore relationships between variables, not to test hypotheses. Thus, the PI decided to risk the possibility of type 1 errors since this type of analysis would enhance understanding of this new area of study in Ethiopia.

4.1.1.1 Sample Demographic and Social Profiles

The sample was stratified by school, gender, age, place of residence, educational level, and future life plans. Table 4.1 summarizes the central tendencies for the sample age distribution

by gender. Mean, median, and modal ages of male and female respondents are significantly different from the aggregated mean age for both genders.

Table 4.1: Mean, Median, and Mode of Age of Sample by Gender

	Gender	
	Male (<i>n</i> = 76)	Female (<i>n</i> = 91)
Mean	17.33	17.02
Median	17.00	17.00
Mode	17.00	16.00

School and gender specific data show that 62% (*n* = 103) of respondents were from New Era School, and 38% (*n* = 64) were from Bethlehem School, the two high schools in the Gedam Sefer neighborhood of Addis Ababa. Fifty-five percent (*n* = 91) were females and 45% (*n* = 76) are males. Age of the sample is reported in a single-year interval. The youngest respondent was 16 years old and the oldest was 19 years old. Twenty-six percent (*n* = 43) were 16 years old, 44% (*n* = 73) were 17 years old, 19% (*n* = 32) were 18 years old, and 11% (*n* = 19) were 19 years old. The descriptive statistics show an overlap between the mean, median, and modal values of the sample ages. Mean, median, and mode are 17 years old. The higher frequency of 17-year-old students may affect the values of the central tendency. A gender-specific mean value shows a slightly higher figure than the sample mean for both genders. Gender-specific median and mode overlap with the sample median and mode. The overlap of values of central tendency indicates that the sample is representative of a population with a normal age distribution (Rea & Parker, 1992). The sample standard deviation as a measure of dispersion was 1.00 standard deviation from the mean. This also shows the sample distribution around a normal curve distanced only one standard deviation from the mean.

In order to gather information on the academic history of the sample, four questions on academic issues were included in the survey. The questions were about academic rank in the last

semester prior to questionnaire administration, history of being held back a year, withdrawal from school, and enrollment in schools other than the respondent's current school. Table 4.2 presents respondents' academic history by gender.

Table 4.2: Gender and Academic History

	Male		Female		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Grade point rank						
1–3	11	15	5	6	16	10
4–6	4	5	8	8	12	7
7–9	14	19	15	17	29	18
10 and higher	45	61	62	69	107	65
Total	74	100	90	100	164	100
History of being held back a grade						
Yes	11	15	11	12	22	13
No	63	85	79	88	142	87
Total	74	100	90	100	164	100
History of withdrawal						
Yes	5	7	14	16	19	12
No	69	93	76	84	145	88
Total	74	100	90	100	164	100
Enrollment in a different school						
Yes	24	32	21	23	45	27
No	52	68	70	77	122	73
Total	76	100	91	100	167	100

Ninety-eight percent ($n = 164$) of the sample reported their academic history. The descriptive statistics indicate that 35% ($n = 57$) of the sample were ranked at lower than 10 during the last semester prior to the administration of the questionnaire. Thirteen percent ($n = 22$) reported having been held back a grade at least once. Twelve percent ($n = 19$) had withdrawn at lower grade levels. Twenty-seven percent ($n = 45$) reported enrollment in schools other than that in which they were currently enrolled.

Gender-specific reports on academic history indicate that male respondents ($n = 74$) showed better academic achievement than female respondents ($n = 90$). Thirty-nine percent ($n = 39$) of male respondents reported academic rankings of 1 through 9 during the previous semester compared to 31% ($n = 28$) of female respondents. For each gender, 11 respondents reported having been held back a grade. Fourteen female respondents had withdrawn at least once from school, compared to five male respondents. The report on academic history looks exaggerated. Since this was a self-administered questionnaire, sample respondents may have reported their wishes rather than actual grade point rank. A high proportion of sample respondents reported very high grade point rank—39% ($n = 29$) of males and 31% ($n = 28$) of females reported academic rankings of 1 through 9. In contrast, grade point ranks reported by the 10 case study participants in Study B were much lower. Therefore, answers from the self-administered questionnaire on grade point achievement require validation; for example, the students' academic records could be examined.

Place of residence was one of the social variables in the survey questionnaire. Sample respondents were asked to indicate in which of Addis Ababa's sub-cities they lived. Respondents lived in eight of the Addis Ababa's 10 sub-cities. Forty-four percent ($n = 74$) lived in Arada Sub-City. Arada is the sub-city where the schools selected for the study are located. Gulele, a sub-city to the northwest of the schools, was the home of 34% ($n = 57$) of the sample's respondents. Seventeen percent ($n = 17$) of sample respondents resided in Addis Ketema Sub-City. After Arada and Gulele sub-cities, Addis Ketema is the closest to the schools selected for the study. Twelve percent ($n = 19$) lived in the remaining five sub-cities.

Table 4.3 presents the distribution of sample respondents' future life plans based on gender.

Table 4.3: Plans for the Future by Gender

Gender	Future plan	Frequency	%
Male (<i>n</i> = 76)	Technical training	14	18
	College/university	48	64
	Get a job	14	18
Female (<i>n</i> = 91)	Technical training	10	11
	College/university	72	79
	Get a job	9	10
	Stay at home	0	0

A high proportion of sample respondents (86%, *n* = 144) reported that they wished to continue their education after completing high school. Eighty-three percent (*n* = 120) of the 144 sample respondents aspired to pursue a higher education. Seventeen percent (*n* = 24) aspired to get technical training. Fourteen percent (*n* = 23) planned to get a job upon completion of high school. Female sample respondents were more likely than male respondents to desire to pursue higher education. The higher frequency of females in the sample may influence the future life plans that they reported.

Analysis of the demographic and social factors of sample respondents provides the basis for a detailed examination of other independent variables related to friendships, social networks, and knowledge of sexual practices. Each of these variables is described, interpreted, and analyzed in the subsequent sections.

4.1.1.2 Relational Variables

Relational variables were organized in two groups: friendships and social network relationships. There are situations in which friendships and other social network relationships merge and are considered synonymous concepts. Here, the analysis treats the two relational

categories as independent variables. In the social network analysis, friendships are considered to be a special form of relationship among sample adolescents. Friendships are an antecedent variable for the detailed analysis of the complex nature of adolescent social networks.

4.1.1.2.1 Friendship Variables

The literature reveals a number of different forms of friendships, including best friends, close friends, and casual friends. Terms and phrases such as *pals*, *mates*, and *our crowd* are often used (Cotterell, 2007). This research looks specifically at the concept of best friends. Best friends are friends who have intimate relationships in which different forms of interactions take place. An analysis of the concept of best friends provides background for further analysis of various kinds of adolescent social networks and sexual practices. Cotterell (2007) describes adolescents as “happy, relaxed and uninhibited” with their friends (p. 75). This statement is explained by the group socialization theory. According to this theory, group influence during the adolescent period is more prevalent than in early childhood or later adulthood. Friendship is an antecedent variable for other forms of relationships and is one of the predictor variables for sexual practices.

School and out-of-school social settings where sample respondents reported making friends are sources of data on friendship-related variables. In order to generate information on friendships, respondents were asked: “Do you have school friends?” Ninety-three percent ($n = 156$) of the sample respondents had school friends, and 73% ($n = 122$) had out-of-school friends. Other friendship-related variables include number of friends, gender of friends, age of friends, density of the friendship network, frequency of communication, and position of the respondent in the friendship network.

Respondents were asked to report information about a maximum of their five best friends; these could be either school friends or out-of-school friends. Sixty-three percent ($n = 98$)

who had school friends reported that their friendship networks consisted of three or more individuals. The friendship networks of 51% ($n = 63$) of those who reported having out-of-school friends consisted of three or more individuals.

The gender composition of friendship networks is as follows. Of those with school friends, 73% ($n = 114$) had female school friends. Of those with out-of-school friends, 75% ($n = 92$) reported having female out-of-school friends. Sixty percent ($n = 92$) of those with school friends had male school friends, while 75% ($n = 91$) of those with out-of-school friends had male out-of-school friends. Respondents reported looking for various characteristics when they chose school friends. A larger number reported choosing female school friends (73%) than male school friends (60%).

Male respondents having fewer female school friends than did female respondents. In contrast, female respondents reported a higher proportion of males among their out-of school friends than did males. This finding does not support the social network theory of homophily, which posits that social network relationships are promoted when individuals are of the same gender.

Age is an important variable that has a significant influence on the friendships that an individual establishes. Respondents were asked to report the ages of their five best friends. Tables 4.4a and 4.4b present the ages of sample respondents and of their school friends as well as their out-of-school best friends.

Table 4.4a: Ages of Sample Respondents and Their School Friends

Friends' ages	Age of respondent				N	%
	16	17	18	19		
8–11 years	2	13	1	0	16	10
12–15 year	26	37	13	5	81	52
16–19 years	7	27	12	6	42	27
20–23 years	5	1	4	7	17	11
Total	40	68	30	18	156	100

Table 4.4b: Age of Respondents and Their Out-of-School Friends

Friends' ages	Age of respondent				N	%
	16	17	18	19		
8–11 years	2	4	0	3	9	7
12–15 years	11	19	8	3	41	34
16–19 years	11	14	12	4	41	34
20–23 years	10	8	8	5	31	25
Total	34	45	28	15	122	100

Of the 156 respondents who had school friends, 62% ($n = 97$) had one or more friends 15 years of age or below. This is interesting when one considers that the youngest sample respondent was 16 years old. The respondents' other school friends fall in the same age categories as the respondents themselves only with one year older. The oldest sample respondent was 19 years old, and the age of the oldest school friend was reported to be 20 years. Forty-one percent ($n = 50$) had out-of-school friends 15 years old or younger. Ages of the remaining out-of-school friends ranged from 16 to 22 years. There appeared to be many instances in which the respondents were older than their best friends. This finding is still in contrast to the theory of homophily, which suggests that "contacts between similar people occurs at a higher rate compared to those people who are dissimilar" (Yuan, 2006, para. 4).

Seventeen-year-old respondents had more friends than other respondents who were 15 years old and younger (17 was also the median and mode age in this study). One reason for this

may be the high frequency of respondents who were 17 years old. It is also possible that this is an age at which adolescents begin to assert their freedom from their families by joining friendship networks. However, there is no solid evidence to support these possible explanations.

Female respondents' ages were significantly related to those of their school friends, $\chi^2 (n = 88) = 13.077, df = 9, p < 0.01$. The age of the female sample respondents and age of out-of-school friends showed no significant relationship, $\chi^2 (n = 73) = 5.967$.

The quality or strength of a friendship can be measured through behavior- and emotion-related factors such as the level of "attachment, social integration, reassurance of worth, reliable alliance, nurturance and guidance" (Cottrell, 2007, p. 80) that friends offer one another. One way of measuring the strength of friendship is by asking a question about the degree to which individuals and their best friends know each other and care for one another.

Of the respondents who had school friends, 91% ($n = 141$) knew that at least two of their five best friends knew each other and cared for one another. Eighty-one percent ($n = 99$) of respondents with out-of-school friends reported that at least two of their five friends knew and supported each other. School friendships involve more caring than out-of-school friendships. Reciprocity and mutual support are important factors that strengthen the ties between friends. This important finding confirms group socialization theory.

Another variable is the frequency of communication among best friends. Communication is an important element in friendships and other intimate relationships. The mean number of days per week on which respondents communicated with their best friends was 4.13 with school friends and 3.48 with out-of-school friends. The difference between school and out-of-school friends may indicate the importance of physical proximity to communication. Frequency of

communication, degree of closeness, and the strength and intensity of the friendship have a direct impact on friendship attachment and intimacy.

The respondents' descriptions of their communications with friends indicated that younger respondents communicated more frequently with school friends, between four and seven days per week, than the older respondents (those 18–19), who communicated one to three days per week. Younger sample respondents also showed stronger attachment to their school friends. The age of sample respondents and the frequency of communication with out-of-school friends have a linear relationship. The frequency of communication was lower among 16- and 17-year-old respondents than among 18- and 19-year-old respondents.

Pearson's correlation test was used to measure the relationship between the sample respondents' age and gender and the frequency of communication between school and out-of-school friends. There was a statistically significant inverse relationship between age of the respondents and frequency of communication with best friends from school ($r = -0.160$, $p < 0.05$). The relationship is very negligible; age and frequency of communication covaried only 3% of the time (r^2).

The channels that sample respondents used to communicate with school and out-of-school friends are important variables to measure. Respondents were asked to choose the channel of communication they used most frequently with school and out-of-school friends: face-to-face communication, telephone (either land lines and mobile phones), mobile text messages, Internet messages, and written memos. The most commonly used channel of communication was face-to-face communication, which was chosen by 75% ($n = 117$) of respondents. The mobile telephone was reported to be the most frequently used mode of communication employed by 53% ($n = 65$) of respondents for communication with out-of-school friends.

The centrality of the respondent was measured by his or her capacity to control the channel of communication. Sample respondents were asked to report how strongly they control the information flow among their best friends. They were also asked how many of their friends (none, a few, most, or all) provide them with information prior to sharing it with other persons. Eighty percent ($n = 124$) of respondents with school friends stated that at least one of their school friends shares information with them before sharing the same information with others. Similarly, 80% ($n = 97$) of those with out-of-school friends stated that at least one of their out-of-school friends shares information with them before sharing the same information with others. A qualitative report from Study B indicates past experience and the reputations of the respondents and their friends can be used to confirm this.

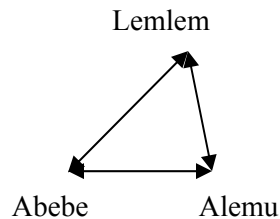
Gender has a significant impact on the flow of information among friends. A nonparametric statistical test showed an inverse association between gender and the information flow among best school friends, $\chi^2 (n = 156) = 10.79, df = 3, p < 0.05$. The Cramer's V of -0.225 indicates that there is a weak to moderate inverse association between gender and the ability to influence the flow of information. This might be explained by the fact that a female adolescent may not pressure her male friends to share information and a male adolescent may not pressure his female friends to share information with him. However, the study did not find a statistically significant relationship between gender and the information flow among out-of-school friends. Results from Study B show that gender is not a factor that affects the establishment of out-of-school friendships and the consequent flow of information among friends. A possible explanation for this is that gender heterogeneity occurs more in out-of-school friendship networks than in school friendship networks.

4.1.1.2.2 Sample Social Network Variables

Social network variables were knowledge of the types and functions of social networks, social network engagement, and types of social networks to which the respondents preferred to belong. The network variables of friendship, family, extended family, neighborhood, and religious social networks were taken into consideration in the analyses of respondents' knowledge of and engagements in network relationships.

An introductory network diagram was displayed in the questionnaire to illustrate the concept of social network interactions among three individuals (see figure 4.1). Survey respondents were asked to look at the illustration of symmetrical (two-directional) connection among three individuals before responding to questions about their knowledge of social networks and their engagement in their own social networks.

Figure 4.1: Social Network Connections among Three Individuals



Questions with five possible answers (“strongly agree,” “agree,” “undecided,” “disagree,” “strongly disagree”) followed. The questions were recoded during analysis to reduce the five possible answers to three (“agree,” “undecided,” and “disagree”).

The majority of the sample respondents (84%, $n = 141$) agreed that friendships are part of a broader social networks system. Thirteen percent ($n = 21$) disagreed, and the remaining 3% ($n = 5$) were undecided. About half of the sample respondents (51%, $n = 85$) agreed that family relationships are part of a social network, while 36% ($n = 60$) disagreed, and 13% ($n = 22$) were undecided. Less than half of the respondents (44%, $n = 73$) agreed that relationships with

extended family members are part of social network relationships, while 37% ($n = 62$) disagreed. The number of undecided respondents was higher for this question (19%, $n = 32$) than for the previous questions.

The fourth type of relationship discussed was relationships formed in a religious context. Thirty-eight percent ($n = 63$) agreed that this type of relationship is part of social network systems, but 46% ($n = 77$) disagreed. The remaining 16% ($n = 27$) were undecided. The last question asked about relationships with neighbors. Despite the common belief in Ethiopia that relationships among neighbors form an important part of the social fabric, only 63% ($n = 105$) agreed that the relationships among neighbors are part of the broader social network structure; 26% ($n = 43$) disagreed.

It is possible that the demographics and individual characteristics of sample respondents influence their perceptions of these issues. The relationship between the age of the sample respondents and the frequency and type of communication with parents was statistically analyzed. The Spearman's correlation coefficient showed that there was a statistically significant correlation between age of the adolescents and belief that family relationships are part of social network structures ($r = -0.172, p < 0.05$). This shows that as adolescents get older, they come to value their relationships with family members less. Those who discussed academic matters with extended family members perceived these relationships to be part of the social network ($r = 0.277, p < 0.01$). However, discussion of academic matters was negatively correlated with the perception that relationships formed in a religious context are part of social network structure ($r = -0.160, p < 0.05$). In contrast, discussion of reproductive health issues between adolescents and their parents positively correlates with the perception that relationships formed in a religious context are part of social networks ($r = 0.168, p < 0.05$).

Respondents across all ages and socioeconomic categories appeared to have the perception that friendships are the most important social network, a perception based on the functions of social networks. From a list of 10 possible functions, they were asked to indicate the functions of a friendship network. Their responses are shown in table 4.5.

Table 4.5: Respondents’ Knowledge of Possible Functions of Friendship Networks

Function of friendship	Always		Sometimes		Never		I do not know.	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Allow adolescents to share information	87	52	74	44	--	--	6	4
Help adolescents solve problems	99	59	63	38	--	--	5	3
Help adolescent girls reduce the work burden at home	44	26	61	36	31	19	31	19
Allow adolescents to share happiness or sorrow	95	56	56	33	11	7	6	4
Allow adolescents to show competence and fitness	61	37	68	41	15	9	23	13
Help adolescents reduce antisocial behavior	59	35	77	46	11	7	20	12
Allow adolescents to support each other academically	77	46	73	44	8	5	9	5
Allow adolescents to share resources	35	21	40	24	61	37	31	18
Help adolescents build self-confidence	93	56	49	29	15	9	10	6
Help adolescents find boy- or girlfriends	51	31	51	31	22	13	43	25

The majority of respondents (59%, *n* = 99) believed that the primary function of a friendship network is to help members solve problems. The second primary function of a friendship network was to share happiness or sorrow.

The data on the possible functions of social networks were recoded to produce two categorical variables: agree (for which the two variables of “yes, always agree” and “yes, sometimes agree” were merged) and disagree (for which the two variables of “never agree” and

“I do not know” were merged). The first two were positive responses, the third was a negative response, and the fourth indicated the absence of a clear understanding of the functions of a friendship network. The merged response categories still represented a dichotomy between positive and negative responses. Ninety-eight percent ($n = 162$) agreed that one of the functions of a friendship network is to help members solve problems, while 96% ($n = 161$) agreed that one of the functions of a friendship network is information sharing, and 90% ($n = 151$) reported that friendship networks allow members to share their happiness and sorrow. Eighty-one percent ($n = 150$) chose the functions of competence development, reduction of socially undesired behavior, sharing of resources, and reduction of the work burden at home. Only 61% ($n = 102$) reported that the function of a friendship network is to allow one to look for a boy- or girlfriend. Table 4.6 below summarizes the recoded responses of sample respondents on the possible functions of a friendship network.

Table 4.6: Sample Respondents’ Knowledge and Perception on Friendship Network (Recoded Result)

	Yes, I agree.		No, I do not agree.		Total
	<i>n</i>	%	<i>n</i>	%	
Allows adolescents to share information	161	96	6	4	167
Helps adolescents solve problems	162	97	5	3	167
Help adolescent girls reduce the work burden at home [105	63	62	37	167
Allows adolescents to share their happiness or sorrow	151	90	16	10	167
Allows adolescents to demonstrate their competence and fitness	150	90	17	10	167
Helps adolescents reduce antisocial behavior	150	90	17	10	167
Allows adolescents to share resources	150	90	17	10	167
Helps adolescents build self-confidence	129	77	38	33	167
Helps adolescents find boy- or girlfriends	102	61	65	39	157

One last analysis was carried out to see how the respondents' knowledge and perceptions of the functions of a friendship network related to their age and gender. Ninety-eight percent ($n = 42$) of the 43 sample respondents age 16 years believed that a friendship network has at least one of the 10 possible functions. Of the 73 respondents age 17 years, 95% ($n = 69$) believed that friendship networks have at least one of the 10 possible functions. All 32 of the 18-year-old respondents believed that friendship networks have at least one of the 10 possible functions. Of the 19 respondents age 19 years, 95% ($n = 18$) believed that friendship networks have at least one of the 10 possible functions.

Respondents across all ages believed that one of the functions of friendship networks is helping members solve problems. Older respondents were more likely to see friendship networks as a means of looking for boy- or girlfriends. Fifty-six percent of 16-year-olds perceived friendship networks to be a means of looking for boy- or girlfriends, but 58% of the 19-year-old respondents had the same perception. However, this was only a difference of 2%.

Gender-based analysis of respondents' perceptions of the functions of friendship network showed both homogeneity and heterogeneousness in terms of responses. Ninety-seven percent of respondents of both genders believed that a friendship network allows members to solve problems. There were differences between male and female respondents' perceptions regarding the use of friendship networks to look for boy- or girlfriends. Of 76 male respondents, 71% ($n = 54$) believed that a friendship network is an important tool for finding girlfriends. Of 91 female respondents, 53% ($n = 48$) believed this. This difference may be attributed to the level of interactions among male and female respondents. The data in this study, as described in section 4.3, indicate that adolescent boys have wider friendship networks than do female adolescents,

who prefer to have a few close friends of the same gender and age, particularly in school friendship networks.

So far, the data presentation has focused on the respondents' knowledge and perceptions of the types and functions of social networks. The next variables measured were network membership, network size, network preferences, network function, length of time in a network, and strength of network interactions.

The survey questionnaire in Study A asked respondents to indicate whether they were members of friendship, family, extended family/kinship, religious, or neighborhood networks. Eighty-nine percent ($n = 148$) of the respondents reported being members of at least one of these social networks. Of the 148 sample respondents who reported being members of any one of the five social networks, 95% ($n = 140$) were members of a family network. Another 94% ($n = 139$) were members of a friendship network. Still another 64% ($n = 94$) were members of a religious social network. Finally, 60% ($n = 88$) were members of a neighborhood social network and 57% ($n = 85$) were members of an extended family network. It is important to remember that one respondent can be a member of more than one type of social network. For example, a person who is a member of a family network can be also a member of friendship network and/or a neighborhood social network.

A comparison of the respondents' knowledge and perceptions of types of social networks and the types of networks of which they were members shows significant relationships in some cases, and non-significant relationships in other cases. For example, while 51% ($n = 85$) of the 167 respondents agreed that family relationships are a social network relationship, 95% ($n = 140$) of the 148 sample respondents were members of family network ($\chi^2 = 10.403$, $df = 4$, $p < 0.05$). Eighty-four percent ($n = 141$) of 167 respondents perceived friendships to be part of social

network relationships, but 94% ($n = 139$) of 148 respondents were members of a friendship network ($\chi^2 = 9.988$, $df = 4$, $p < 0.05$). Thirty-seven percent ($n = 62$) of 167 respondents perceived extended family networks to be a social network, but 57% ($n = 85$) of 148 were members of an extended family network ($\chi^2 = 2.369$, ns).

Cotterell (2007) defines network size as “a measure of the number of actors (nodes) in a network” (p. 44). This study defined social network size as the number of members in a friendship, family, extended family/kinship, religious, or neighborhood network. The survey questionnaire in Study A asked sample respondents to list a maximum of six members of their own social networks to whom they are close. Based on the available data, a separate analysis was conducted for the number of female and male network members reported for each of the five forms of social networks.

Gender homogeneity was higher among school friends than among out-of-school friends. The data showed that the majority of the sample respondents reported desiring close relationships with members of the same gender. For example, 64% ($n = 89$) of all sample respondents reported belonging to a school friendship network with male members. Fifty-six percent ($n = 50$) of the 89 respondents who belonged to school friendship networks with male members were male. Similarly, of the 96 sample respondents who belonged to a school friendship network with female members, 69% ($n = 66$) were female. Female respondents preferred to establish networks with female family members; 64% ($n = 65$) of 102 respondents who reported establishing social networks with family members reported this preference.

For extended family/kinship networks, female respondents had no gender preference. For religious and neighborhood social networks, the majority of sample respondents reported establishing relationships with those of the same gender. These are the two types of social

networks in which culture and tradition are significant (this is discussed in Study B). Thus respondents preferred establishing friendship, religious and neighborhood social networks with individuals of the same gender. The case results in Study B supported the survey finding. One of the case informants in Study B reported, “When members of my friendship network are the same gender, it is easy to share secrets related to my romantic relationships, body changes due to puberty, or even conflicts between my parents.” On the other hand, females did not have a gender preference for family and extended family/kinship networks. However, this finding contradicts the information from case interviews. During case interviews, five cases (four females and one male) reported that they preferred to establish close family and extended family/kinship relationships with those of the same gender. The conflicting data from survey and case study results suggest that further study may be required. Use of the same methodology and target group may help clarify findings.

Responses indicated that for friendship and family networks, which the majority of the sample respondents (94% and 95%, respectively) reported favoring, networks consisting of one to three persons were preferred. While male respondents had larger extended family/kinship networks, female respondents had larger religious networks. In the Ethiopian context, females attend religious services more regularly than males. Table 4.7 below shows the number of females and males in the respondents’ social networks.

Table 4.7: Number of Female Members in Respondents' Networks.

Network type and size	Respondent's gender				Total
	Male		Female		
	<i>n</i>	%	<i>n</i>	%	
Friendship networks					
Number of female network members					
1-3	23	35	42	65	65
4-6	7	23	24	77	31
Number of male network members					
1-3	30	54	26	46	56
4-6	20	61	13	39	33
Family networks					
Number of female network members					
1-3	22	34	43	66	65
4-6	15	41	22	59	37
Number of male network members					
1-3	22	34	43	66	65
4-6	15	41	22	59	37
Extended family/kinship networks					
Number of female network members					
1-3	29	43	38	57	67
4-6	20	57	15	43	35
Number of male network members					
1-3	9	38	15	62	24
4-6	16	47	18	53	34
Religious social networks					
Number of female network members					
1-3	13	30	21	70	34
4-6	15	43	20	57	35
Number of male network members					
1-3	20	57	15	43	35
4-6	20	50	20	50	40
Neighborhood social networks					
Number of female network members					
1-3	18	51	17	49	35
4-6	10	36	18	64	28
Number of male network members					
1-3	24	57	18	43	42
4-6	10	53	9	47	19

Social network preference refers to the network to which sample respondents *preferred* to belong, not necessarily the networks of which they were members at the time of data collection. In relation to network preferences, the questionnaire asked the following question: “In which of the following social networks do you prefer to be a member? Please indicate in which networks you always want to be a member, you sometimes want to be a member, and you never want to be a member.” The choices that followed were friendship, family, extended family/kinship, religious, and neighborhood networks. The descriptive results were analyzed for the three most popular social networks.

Ninety-five percent ($n = 159$) of sample respondents preferred family networks, while 140 respondents reported being members of a family network. The second most popular type of network was the friendship network; 92% ($n = 154$) of sample respondents preferred to belong to this type of social network, and 83% ($n = 139$) respondents reported belonging to a friendship network. Neighborhood social networks were the third most popular type of network to belong to; 71% ($n = 119$) of sample respondents preferred to belong to neighborhood networks. However, only 53% ($n = 88$) respondents actually belong to a neighborhood network. Finally, 41% ($n = 68$) of respondents preferred to belong to a religious social network. The survey results indicated that 56% ($n = 94$) of respondents were members of religious social networks. It is possible that parents pressure their children to join religious social networks even if they have no interest in doing so. This kind of relationship is best explained by balance theory, as network members must share similar beliefs and attitudes about the religion in question.

The majority of female respondents (99%, $n = 90$) preferred family networks, as opposed to 89% ($n = 68$) of male respondents. Male sample respondents preferred neighborhood social

networks; 78% ($n = 58$) indicated a preference for this type of network, compared to 66% ($n = 60$) of females.

Younger sample respondents (16–17 years) preferred family, extended family/kinship, and religious social networks. Older sample respondents (18–19 years), in contrast, preferred friendship and neighborhood social networks. One important question asked, “Where do we observe a statistically significant relationship between social network preferences and respondents’ ages?” The relationship between friendship networks and the age of the sample respondents was statistically significant ($r = 0.18, p < 0.05$).

Perceived function of a social network is one of the social network variables that may predict an individual’s sexual debut. Sample respondents were asked to choose from the list to describe nine functions that they perceived friendship networks to have. The function of a social network refers to the benefit that a respondent receives due to his or her membership in the network. Forty-five variable items (five types of social networks and nine possible functions) were presented in a matrix form. Sample respondents were asked to indicate whether or not they believed each type of social network to have each function. The possible functions were facilitating the sharing of information, helping members solve problems, reducing work burden at home for girls, allowing members to share their happiness or sorrow, allowing members to demonstrate competence and fitness, reducing socially undesirable behavior, enabling members to provide academic each other with support, helping members build self-confidence, and helping members find boy- or girlfriends.

Special emphasis was given to friendship and family networks, as respondents indicated that they were the two most popular networks. Likewise, of the nine possible functions of friendship and family networks, more emphasis was placed on the three possible functions of

friendship and family networks : to help members look for boy- or girlfriends, build self-confidence, and reduce antisocial behavior. These were three functions significantly underlined by participants of the exploratory study as important roles adolescent networks play. Table 4.8 shows the number of respondents who belonged to a friendship or family network, and the number of respondents who believed that one of the functions of a friendship or family network is to help members find boy- or girlfriends.

Table 4.8: Role of Friendship/Family Networks in Helping Members Find Boy- or Girlfriends

Type of social network	Network members		Role of network is to help members find boy- or girlfriends	
	<i>n</i>	%	<i>n</i>	%
Friendship	139	83	104	75
Family	140	84	30	9

Most respondents (84%, $n = 140$) were members of family networks, although the difference between the number of family network members and friendship network members (83%, $n = 139$) was negligible. Seventy-five percent ($n = 104$) of the respondents who were members of friendship networks used their networks to look for boy- or girlfriends. In contrast, a much lower number of respondents (9%, $n = 30$) utilized their family networks to look for boy- or girlfriends. Given the cultural barriers that prohibit the discussion of sex in the family environment, the frequency of sample respondents who utilized family networks to look for boy- or girlfriends is important.

It is generally assumed in Ethiopia that adolescents cannot discuss sex with parents and other family members. However, this study's findings contradict this traditional assumption. One of the cases in Study B challenged this assumption, stating that his mother is the person who has

provided him with information on sex. He explained: “My mother is a liberated woman. She knows my girlfriend. I use her mobile phone to call my girlfriend and talk. I am free to talk with my girlfriend about any subject, including sex, even in front of my mother.”

This study describes the influence of the knowledge and perceptions of sample respondents on friendship networks and the actual use of this network to look for boy- or girlfriends. In this regard, the study compares the number of sample respondents who employed their friendship networks to look for boy- or girlfriends with the number of those who actually had boy- or girlfriends. Table 4.9 shows how many actually had boy- or girlfriends and sample respondents’ use of their friendship networks to look for boy- or girlfriends.

Table 4.9: Use of Friendship Networks to Look for Boy- or Girlfriends

Have you used your friendship network to look for a boy- or girlfriend?		Do you have a boy- or girlfriend?	
		Male (<i>N</i> = 76)	Female (<i>N</i> = 91)
Yes	104	58 (76%)	34 (37%)
Male	47 (45%)		
Female	57 (55%)		
No	35	18 (24%)	57 (63%)

Male sample respondents were more likely than female respondents to employ their friendship networks to find romantic partners. Of those who had girlfriends (*n* = 58), 81% (*n* = 47) used their friendship network. Although more female sample respondents believed that friendship networks can be used to find boyfriends (*n* = 57), a smaller number of them (60%, *n* = 34) were successful in finding boyfriends. As a principle, girls believe their friendship network help them to find boyfriends.

It is important to note here that the majority of sample respondents (84%, *n* = 140) were members of a family network. However, family networks play a less significant role than

friendship networks in assisting adolescents to look for boy- or girlfriends. Only 21% ($n = 30$) of those who belonged to family networks used their family networks to find boy- or girlfriends. High frequency of female sample respondents compared to their male counterparts reported using their family networks for the purpose of finding boyfriends. Of the 34 female sample respondents who reported having boyfriends, 38% ($n = 13$) used their family networks as a means to find boyfriends, whereas 29% ($n = 17$) of the male sample respondents who had girlfriends utilized their family networks to find girlfriends. It is important to note that for the purpose of this study, family members, in addition to parents, include siblings any family members who live in the same household. Female participants reported being close to siblings and talking to them about sex and their romantic relationships. In some cases, boyfriends of adolescent girls utilized the girls' younger siblings as intermediaries, for example, to communicate about when and where to meet.

Another function of two of the social networks (friendship and family) is helping members build self-confidence. Self-confidence is the ability to cope with challenges and build a positive state of mind for living in harmony with others. Friendship networks helped 41% ($n = 57$) of sample respondents develop the skills and mental setup necessary for building self-confidence. Family networks helped 47% ($n = 66$) of sample respondents develop the skills and mental setup necessary for building self-confidence.

There is a significant relationship between gender and the role of family networks in helping members build self-confidence ($\chi^2 = 6.369$, $df = 1$, $p < 0.05$). Family networks provided more opportunities for female respondents (56%, $n = 82$) to build confidence than male respondents (35%, $n = 58$).

Similarly, there was a significant relationship between gender and the role of friendship networks in helping members build self-confidence ($\chi^2 = 8.001, df = 1, p < 0.05$). In contrast to family networks, which offered more support in self-confidence building to female adolescents than male adolescents, friendship networks offered more support in self-confidence building to male adolescents (54%, $n = 63$) than female adolescents (34%, $n = 76$). When they are not in school, adolescent girls stay at home helping their mothers with household chores, and boys go out with their friends. As a result, boys use their friends as role models while girls use their parents as role models to build self-confidence.

Male sample respondents felt that it is easiest to communicate with their peers. Peers act as a source of courage and boost the confidence of adolescents when they try things that they feel are within their capacity. Cotterell (2007) points out that the support of peers in the process of building self-confidence is necessary in a number of ways: "Physical contact is very important to adolescents as a way of expressing attachment and also as a means of identification. Touching [for example] provides feedback: it seems that being able to touch someone else in the group or receive such contact gives adolescents a great feeling of acceptance among their friends" (p. 85).

The family environment is another source of support for building self-confidence. Parents encourage their children to experiment with things on their own. This encourages adolescents to act independently, which becomes a source of self-confidence. Although this may vary from culture to culture, parents assist children in expressing their views.

An important function of a social network is discouraging adolescents from engaging in antisocial behavior. Antisocial behavior is a culturally specific concept. Like the behaviors and practices of other groups of people, the behaviors of adolescents may be deemed socially

acceptable or unacceptable based on a culture's norms, values, and views of what is normal or abnormal. The participants involved in Study B defined antisocial behavior as activities such as deceiving parents, going out to party when they are expected to study, smoking cigarettes, consuming alcohol, using *khat* (a grown locally narcotic), disrespecting elders, harassing girls, and hugging members of the opposite gender before reaching a certain age. Failing to bow when elders pass by, shouting at elders, and not offering their seats to elders on crowded buses are antisocial activities in which adolescents are often accused of engaging.

According to Cotterell (2007), antisocial behavior is "behavior that repeatedly violates established social norms." It may include "cheating, swearing [,] . . . menacing, vandalism, stealing, assault, rape and murder" (p. 121). Some authorities define antisocial behavior only in terms of illegal acts, while others define it as including "delinquent behavior together with non-criminal activity" (Cotterell, 2007, p. 123).

The respondents employed their social networks as a means of avoiding engaging in antisocial behavior. About half of the 139 respondents (49%, $n = 68$) who were members of friendship networks reported that they used their friendship networks to reduce antisocial behavior. Family networks also helped sample respondents avoid engaging in any antisocial activities. However, fewer respondents (25%, $n = 35$) who were members of a family network reported using family networks to do so.

Male respondents reported using their friendship networks to discourage their own engagement in antisocial activities. Forty-five male respondents (not 39, as expected) reported this to be the case, whereas 37 female respondents (not 44, as expected) reported this to be true. Table 4.10 summarizes the actual counts versus the expected counts of respondents who reported using their friendship networks to reduce their engagement in antisocial activities.

Table 4.10: Cross-Tabulation for Sex × Friendship Network Reduces Engagement in Antisocial Activities

Gender	Friendship network reduces engagement in antisocial activity							
	Yes		No				Total	
	Observed	Expected	%	Observed	Expected	%	Observed	%
Male	45	38	32%	19	26	14	64	46
Female	37	44	27	38	31	27	75	54
Total	82	82	59	57	57	41	139	100

The data were produced from the cross-tabulation computed by SPSS. Gender had a statistically significant relationship to the use of friendship networks to reduce or avoid engaging in antisocial behavior ($\chi^2 = 6.283, df = 1, p < 0.05$). The computed outcome of cross-tabulation of gender by function of friendship network for this purpose showed a higher count than was expected for boys. In contrast, for females, the cross-tabulation showed the count to be lower than what was expected.

Friendship and family networks have functions other than helping members find boy- or girlfriends, build self-confidence, and reduce antisocial behaviors, and the three types of social networks (extended family/kinship, religious, and neighborhood networks) that have not been discussed in detail also have various functions. These data are presented in table 4.11.

Table 4.11: Five Types of Social Networks and Their Nine Possible Functions

	Friendship		Family		Extended family		Religious		Neighborhood	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Information sharing	99	40	53	87	8	77	25	69	27	61
Solving problems	69	70	81	59	19	66	26	68	27	61
Reducing work burden at home	37	102	84	56	24	61	32	62	25	63
Sharing happiness/sorrow	64	75	45	95	25	60	32	62	39	49
Measuring competence	97	42	29	111	13	73	34	60	29	59
Reducing antisocial behavior	82	57	42	98	15	70	26	68	29	59
Providing academic support	77	62	58	82	18	67	28	66	25	65
Building self-confidence	57	82	66	4	15	70	33	61	31	57
Looking for boy- or girlfriends	104	35	30	110	17	68	33	61	20	68

Stability in a social network relationship develops as a result of reciprocity and assistance. The more stable the relationship, the better members know each other and the more influence they have over each other. The length of time members have known each other is one of the predictors of sustainability. To measure the length of time that respondents have known the members of their social networks, the questionnaire asked questions that measured responses on an interval time scale. Possible responses to these questions were “less than six months,” “six months to one year,” “one year to two years,” and “more than two years.” In order to produce a frequency table, those categories were recoded to produce three new categories of time measurements, two of which were set with equal interval time scales: “less than one year” and “one year to two years.” The third measurement was more than two years, which is indefinite. Table 4.12 presents frequency distributions of sample respondents’ length of membership in a social network based on recoded categories of time-scale measurements.

Table 4.12: Length of Membership in Various Social Networks

	Friendship		Family		Extended family		Religious		Neighborhood	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Less than 1 year	52	37	28	20	35	41	49	52	38	43
1–2 years	22	16	11	8	20	24	18	19	15	17
More than 2 years	65	47	101	72	30	35	27	29	35	40
Total	139	100	140	100	85	100	94	100	88	100

Most respondents had been members of their family networks for a relatively long period of time, 72% ($n = 101$) for more than two years. Friendship networks were the second most stable social network: 47% ($n = 65$) of the 139 who belonged to friendship networks had been members for more than two years. The most popular social network for young adolescents was the religious network, in which 52% ($n = 49$) of the 94 who reported membership had been members for less than one year. For each of the five types of social networks, the majority of respondents reported their length of membership as either less than one year or more than two years.

The period of time for which individuals are members of a social network and the influence of long-term membership influence other network variables, specifically centrality measures (closeness, betweenness, and bridging) and strength of relationships among members within the network and across networks. This is an important area of social network analysis in general, and in this study in particular. Closeness is an actor’s proximity to the center of the network system. An actor’s position between other two actors is betweenness. Bridging is the ability of an actor to connect two or more network clusters. Social network strength is a measure of the intensity of the relationship among social network members. Network strength is measured by the frequency of contact, the quality of information shared by network members, reciprocity

of benefits, and sustainability of the relationship over a long period. The sociograms drawn by respondents in study B illustrate these concepts (see figures 4.6, 4.7, and 4.8)

In the survey questionnaire, respondents were asked to report their three priority social networks (see table 4.13 below). Some respondents choose two priority networks.

Table 4.13: Three Priority Networks Chosen by Sample Respondents

Type of social network	Priority social networks						Total	
	1 st		2 nd		3 rd			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Friendship	87	63%	36	26%	16	11%	139	100%
Family	86	61%	44	31%	10	8%	140	100%
Extended family/kinship	19	22%	25	30%	41	48%	85	100%
Religious	32	34%	26	28%	36	38%	94	100%
Neighborhood	15	17%	28	25%	45	48%	88	100%

It should be noted that friendship and family networks were predominantly selected by sample respondents for their ability to perform a number of functions, such as to linking them with boy- or girlfriends, helping them build self-confidence, and reducing antisocial behaviors. The friendship network was the first choice of 63% ($n = 87$) of 139 sample respondents. Sixty-one percent ($n = 86$) of 140 chose family networks as their priority network. The majority of the respondents chose the remaining three networks—extended family/kinship, religious, and neighborhood networks—as their third priority network. For example, 48% ($n = 41$) of 85 respondents who were members of extended family/kinship social networks listed this as their third choice. In order to affirm the extent to which actual membership and priority choices corresponded, another question asked how many of the respondents were members of their

preferred social networks. Table 4.14 shows the discrepancies between priority choice and actual membership of the sample respondents.

Table 4.14: Comparative Frequency of Preferred Membership against Actual Membership

Types of social networks	Preferred network	Member of network	% members of preferred network
Friendship	153	139	91
Family	158	140	89
Extended family	129	85	66
Religious	135	94	70
Neighborhood	119	88	74

Comparison of network preference and actual membership shows that friendship and family networks are the networks that respondents were most interested in joining and that they were generally successful in doing so. There is a significant relationship between each of the preferred networks and respondents' membership. For friendship networks, there is a strong association between preference and actual membership ($\chi^2 = 9.583$, $df = 2$, $p < 0.01$).

Discrepancies were observed between adolescents' priority networks, their interest in joining that particular network, and their actual engagement in that social network. A good example is religious social networks, which 68 expressed an interest in joining, 135 respondents ranked as their priority network, and 94 reported membership in religious networks. Such discrepancies may call for an intensive investigation of how adolescents understand social relationships and their intentions to join one particular network over another.

In order to generate data in order to measure the strength of social network interactions between respondents and other network members, participants were asked: "How strong are your relationships with members of your first, second, and third preferred social networks?" The response items were "strong," "average," and "not strong." The majority of the 130 respondents

(90%, $n = 117$) who reported having a priority social network claimed their relationships with other members were strong. A large proportion of the 138 who reported on their second priority social network (70%, $n = 97$) had strong relationships with members of their second-choice network. Forty-nine percent ($n = 66$) of 134 reported average relationships, and 28% ($n = 38$) reported that their relationships were not strong.

What did respondents believe are the qualities of a strong network relationship? Answers were generated from the case interviews in Study B and included information exchange among members, the delivery of high-quality information, the existence of mutual support mechanisms, and provision of a sense of belonging and companionship in times of joy and sadness. Other signs of a strong relationship included network members' ability to share private matters, frequent contact, shared or similar views of the objective world, and tolerance among members in spite of differences.

These findings support explanations given by different social network and human behavior theories. For example, the view of mutual support as a characteristic of strong relationships is consistent with social exchange theory, which says human behavior is in essence an exchange of rewards. The possession of shared or similar views of the objective world is consistent with the balance theory of social network analysis. Tolerance in spite of differences as a measure of relationship strength is consistent with group socialization theory, particularly the element of the theory that explains assimilation of members to group norms.

Another important variable, which is probably the best predictor of sexual practice, is the centrality of an actor in a social network. Centrality involves two important concepts: point centrality and graph centrality. There are two forms of point centrality: local centrality and global centrality. Local centrality refers to direct local connections, and global centrality to a

point that has indirect non-local connections with points outside the environment. There are different measures of point centrality. The degree at which a point is located in a network is an important measure of point centrality. A degree-based measure has two directions of measurement: in-degree and out-degree (J. Scott, 2000). Study B used visual presentations of participants' connections to their local and global networks, in which they located local and global centralities.

Closeness is one measure of the centrality of global points. Scott (2000) notes, "A point with low sum distance is close to a larger number of other points" (p. 86). Another measure is betweenness that measures the existence of a point between two or more points. In a network, there might be more than one concentration or network sub groups, which have what network scholars call peaks. Peaks or figures of subgroups in a network or two different networks are known as bridges. Bridges are central points that connect two or more peaks (Hanneman & Riddle, 2005; J. Scott, 2000).

One can measure closeness, betweenness, and bridges in social networks by estimating the number of network members who make direct contact and share information with centers of interaction in the network system (in this case, the respondents). The presence or absence of direct communication and information sharing is used to measure local and global centrality of an actor in a social network

In order to find out whether sample respondents involved in this study were centers of attraction for information and communication by close friends, questions were asked about how frequently they received information, the number of network members who communicated directly with them, and how influential respondents were in the network. Of the 137 sample respondents who answered these questions, 96% ($n = 131$) described themselves as centers of

communication in their priority social networks: they received primary information from other members before the information was shared with other network members.

For second-choice social networks, 96% ($n = 128$) of the 133 respondents believed that network members shared information with them before sharing it with others. The frequency distribution of information in the third priority networks ($n = 142$) was 83% ($n = 118$) as compared to the communications made and information received by members in the first and second priority networks.

The high frequency distribution of respondents who reported being points of centrality in their networks may generate suspicion that the data are somewhat exaggerated. The survey questionnaire, which was self-administered, may have offered an opportunity for the respondents to choose those under their influence to report here as members of their respective networks. On the other hand, in the processes of choosing close network members, respondents may have disregarded members with influence in their networks.

These possibilities were examined by the case interviews in study B. The discussion with case participants in study B demonstrated that the results from the survey in study A on the point of centrality were somewhat exaggerated. This may indicate that a survey is not the best tool for generating reliable data on points of centrality in a social network analysis.

Findings from the qualitative interview in study B hint that many of the sample respondents may be the center of information flow in their network systems and in a position to control the dynamics in their network systems. However, the PI cannot be certain about the high proportion of sample respondents who reported being points of centrality and the level or degree of closeness and betweenness. What locates sample respondents in the central position of their social networks is an area of interest of this dissertation project. The provision of academic

support among network members was strongly associated with sample respondents who reported being the center of their social networks—that is, 97% ($n = 60$) of the 62 who reported being the center of information also reported providing academic support to the rest of the members of their social networks ($\chi^2 = 19.950$, $df = 3$, $p < 0.01$).

4.1.1.3 Variables Concerning Knowledge and Perceptions of Sex

Variables related to sexual activities were categorized as dependent/responsive variables. However, respondents' knowledge and perceptions of specific types of sexual activities, environmental factors affecting sexual activity, and other variables related to sex had predictive powers. Therefore, knowledge and perceptions of sexual issues, like knowledge and perceptions on social network variables, are viewed here as independent/predictor variables.

Eight types of sexual activities were operationally defined as sexual practices (see chapter 1). Eight question items for questions concerning respondents' knowledge and perceptions of sex were measured by a five-category Likert scale (“strongly agree,” “agree,” “undecided,” “disagree,” and “strongly disagree”). Similar categories of measures were collapsed together for the sake of analysis, so the five categories were recoded and reduced to three categories (“agree,” “undecided,” and “disagree”). The knowledge of sample respondents and their perceptions of different types of sexual activities varied. Ninety-four percent ($n = 157$) of the 167 respondents believed sexual intercourse to be a sexual activity, whereas only 40% ($n = 67$) viewed hugging a member of the opposite gender as a sexual activity. Forty-six percent ($n = 77$) reported that watching sex videos and looking at pornographic pictures are sexual activities. However, almost the same number (43%, $n = 71$) reported that watching sex videos and looking at pornographic pictures are not sexual activities. Twelve percent ($n = 20$) did not know whether masturbation is a sexual practice. None of the respondents was undecided on whether or not to consider sexual

intercourse a sexual activity. Table 4.15 summarizes respondents' knowledge and perceptions of the eight activities defined as sexual practices.

Table 4.15: Knowledge and Perceptions of Various Types of Sexual Activities

	Agree		Disagree		Undecided		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Intimate kissing between members of the opposite gender is a sexual practice.	91	55	59	35	17	10	167	100
Hugging a member of the opposite gender is a sexual practice.	67	40	84	50	16	10	167	100
Watching sex videos or looking at pornographic pictures is a sexual practice.	77	46	71	43	19	11	167	100
Fondling the sex organs of another person is a sexual practice.	94	56	59	35	14	9	167	100
Watching live sex is a sexual practice.	112	67	43	26	12	7	167	100
Masturbation is a sexual practice.	89	53	58	35	20	12	167	100
Sexual intercourse between members of the same gender is a sexual practice.	80	48	75	45	12	7	167	100
Sexual intercourse between members of the opposite gender is a sexual practice.	157	94	10	6	0	0	167	100

The study examined the source of sample respondents' beliefs regarding whether each of the sexually oriented activities is a sexual practice by taking the functions of social networks as an antecedent variable. For example, the role that such networks play in helping members look for boy- or girlfriends is significantly associated with the practice of masturbation ($\chi^2 = 18.71$, $df = 6$, $p < 0.05$).

4.1.2 Dependent Variables

There are three dependent or outcome variables in this study. They are sexual practices, whether or not one has a boy- or girlfriend, and the age at which sexual debut occurred.

4.1.2.1 Sexual Practices

The study used three sets of variables that relate to sexual practices. The first set of variables was sexual engagement (romantic kissing, hugging members of the opposite gender, watching sex videos and looking at pornographic pictures, touching and fondling the sex organs of another person, watching others have sex, masturbating, and having sexual intercourse). The second set of outcome variables related to conditions that lead adolescents to engage in a sexual behavior for the first time. The third set of outcome variables related to sexual practices are the settings in which one engages in a sexual activity. Sample respondents were given references and asked about their knowledge and perceptions of sexual activities, definitions of each sexual activity, how they engaged in sexual activities, age at which their sexual debuts occurred, factors that influence sexual debuts, and the settings where sexual debuts take place.

The first question was related to the respondents' engagement in any of the seven operationally defined sexual activities. Table 4.16 presents the frequency of sample respondents' engagement in the seven sexual activities.

Table 4.16: Sexual Activities in Which Adolescents Have Engaged

	Yes	%	No	%	<i>n</i>
Intimate kissing	89	74	32	26	121
Hugging members of the opposite gender	87	72	34	28	121
Watching sex videos and looking at pornographic pictures	81	67	40	33	121
Sexual intercourse with a member of the opposite gender	54	45	67	55	121
Masturbating	48	40	73	60	121
Fondling sex organs of another person	38	31	83	69	121
Watching others have sex	36	30	85	70	121

Note. There was no data generated on sample respondents' engagement in sexual intercourse with members of the same gender.

Seventy-three percent of the sample respondents ($n = 121$) reported having been engaged in one or more of the sexual activities. Intimate kissing, in which 74% ($n = 89$) had engaged, was the most popular sexual activity. The second most popular type of sexual activity, reported by 72% ($n = 87$) of 121 respondents, was hugging a member of the opposite gender. Hugging, however, was not believed by most respondents to be a sexual activity. The case interviews in Study B argued that hugging a member of the opposite gender is a social experience rather than sexual activity.

The third most popular sexual activity, which 67% ($n = 81$) of respondents reported having engaged in, was watching sex videos and looking at pornographic pictures. Table 4.16 provides evidence that many of the respondents engage in relatively socially accepted sexual activities less risky than sexual intercourse. One can also argue that kissing, watching sex videos, and hugging members of the opposite gender are culturally acceptable and respondents wouldn't hesitate to report them. It is also possible to argue that many of the respondents engaged in other types of sexual activities, such as masturbation and sexual intercourse but did not report them.

Study B generated information regarding respondents' participation in more intimate types of sexual activities, including masturbation and sexual intercourse. Case participants, however, often attributed these sexual activities to others by telling stories in the third person, rather than in the first person.

Thus the small number of respondents who reported having engaged in sexual intercourse does not mean that a small number of them have actually had sex. It is easy to report less "shameful" sexual practices and deny others that are believed to be taboo or are viewed negatively by parents, peers, or schoolteachers.

Only 40% ($n = 48$) of the respondents reported masturbating, contrary to the results reported by other studies. Moore and Rosenthal (1993), for example, report that adolescents masturbate before they engage in other sexual activities such as intercourse. Here masturbation was reported to be less common than sexual intercourse and all other types of sexual activities, except for fondling the sex organs of another person and watching sex.

The case interviews in study B generated similar information. The question asked was "Which sexual activities do you think adolescents report freely, and why do you think so?" Eight of the 10 case informants indicated that adolescents freely report intimate kissing and watching sex videos and looking at pornographic pictures. According to six informants, intimate kissing and watching sex videos are accepted as normal practices by adolescent culture. These activities are considered fun rather than sexual activities. In contrast, masturbation is considered a shameful practice. The male who masturbates is seen as weak and unable to win the heart of a girl. For females, it is unthinkable to talk about it. Two of the male case informants in Study B opined: "How dare females masturbate." Among both genders, masturbation was seen as an unhealthy behavior practiced by those who are deviant from the "normal culture" (Case 4).

A more comprehensive measure of factors influencing sexual behavior was produced by way of a two-point yes-or-no scale for seven possible factors influencing engagement in one or more of the seven sexual activities. The question was “Why do adolescents engage in their first sexual activity?” Seven factors that might have influenced the adolescents’ sexual debuts were identified and matched with the seven sexual activities, which produced 49 cells in a matrix. The seven possible factors/variables were generated from the literature review and the exploratory study. These factors/variables were peer influence, personal curiosity, force, financial gain, to express gratitude, to escape family pressure, relief from depression and frustration.

Peer influence and personal curiosity are two important factors that encourage adolescents to become sexually active. For example, intimate kissing, the sexual activity in which the majority of the respondents were involved, was reported to be initiated mostly due to peer influence, with 38% ($n = 34$) of the 89 respondents reporting that they started kissing due to personal curiosity, and 36% ($n = 32$) due to peer influence. Forty-three percent ($n = 37$) of 87 respondents reported first hugging members of the opposite gender due to influence from their peers. The majority began having sexual intercourse, which is one of the most secret sexual practice, due to personal curiosity: 52% ($n = 28$) of the 54 who had had sexual intercourse did it because of personal curiosity, while 43% ($n = 23$) did so as a result of peer influence. Table 4.17 shows the factors that influence sexual debuts of different types.

Table 4.17: Types of Sexual Debuts and the Factors That Influence Them

	Peers		Curiosity		Force		Financial gain		To express gratitude		To escape family pressure		To get out of depression and frustration		N
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Intimate kissing	36%	64%	30%	70%	7%	93%	0%	100%	6%	94%	5%	95%	9%	91%	89
Hugging a member of the opposite gender	43%	57%	29%	71%	7%	93%	5%	95%	7%	93%	1%	99%	8%	92%	87
Watching sex videos or looking at pornographic pictures	43%	57%	35%	65%	4%	96%	3%	97%	4%	96%	4%	96%	9%	91%	81
Fondling another person’s sex organs	37%	63%	18%	82%	11%	89%	3%	97%	5%	95%	18%	82%	8%	92%	38
Watching others have sex	26%	64%	25%	75%	19%	81%	11%	89%	8%	92%	3%	97%	8%	92%	36
Masturbation	23%	77%	38%	62%	8%	92%	6%	94%	6%	94%	8%	92%	10%	90%	48
Sexual intercourse with a member of the opposite gender	43%	57%	52%	48%	6%	94%	6%	94%	4%	98%	9%	91%	9%	91%	54

Factors that affect sexual debuts were linked to the gender of the respondents. For example, of the 32 sample respondents who reported that their first intimate kiss took place due to peer influence, 50% ($n = 16$) were males. Of the 34 respondents who reported that their first intimate kiss occurred due to personal curiosity, the majority (59%, $n = 21$) were males.

Although the numbers were small, negative family situations and some personal difficulties also influenced initiation into various sexual activities. For example, seven of the 36 sample respondents who watched live sex reported that they watched it for the first time in order to escape family pressure. Three of the 36 sample respondents who watched live sex watched it the first time to get relief from depression and frustration. Financial gain was not reported to be a motive for engaging in sexual activities.

Given that sample respondents engaged in different types of sexual activities, and that the factors mentioned above influenced their sexual debuts, it is important to examine what other factors led them to engage in one or more sexual activities. Their knowledge and perceptions of

the sexual activities described above had an influence on their sexual debuts. Hugging members of the opposite gender had a significance association with the belief that hugging members of the opposite gender is a sexual activity, $\chi^2 (n = 87) = 10.837, df = 4, p < 0.05$. This demonstrates that when one has adequate knowledge about a sexual activity, the motive to put the knowledge into practice is strong. In other words, those adolescents who believed that an activity was indeed sexual showed greater interest in putting their knowledge into practice. Another good example of this is the relationship between knowledge gained from sex videos and pornographic pictures and the actual engagement of respondents in these sexual activities. In other words, knowledge on types of sexual activities gained from watching sex videos became a reason for some adolescents to engaged in sexual activities. The chi-square test showed an association between knowledge that watching sex videos and looking pornographic pictures are sexual activities and engagement in sexual intercourse, $\chi^2 (n = 81) = 11.167, df = 4, p < 0.05$. This indicates that the more adolescents know the existence of these activities, the more they are interested in trying them.

The other important variable was investigated by the question “Where did the sexual debuts of sample respondents take place?” Factors that motivate adolescents to become sexually active and the types of sexual activities in which they plan to engage dictate where sexual debuts occur.

The settings where adolescent sexual debuts take place is an important area of investigation. Study A identified six settings where sample respondents made their sexual debuts: were parents’ houses, friends’ houses, park or recreation centers, bars and hotels, school, and places such as street corners, forests, church surroundings, and the corridors of buildings. Different settings are favored for different types of sexual activities.

Thirty-two percent ($n = 26$) of the 89 sample respondents who had engaged in intimate kissing indicated that it generally occurred for the first time at their parents' houses, while 25% ($n = 22$) reported that the first time they intimately kissed someone, they were at a friend's house. Parks and recreation centers were the most popular places to hug members of the opposite gender for the first time (35%, $n = 30$), followed by schools (30%, $n = 26$). Table 4.18 shows the settings where different sexual debuts were reported to have taken place.

Table 4.18: Settings and Types of Sexual Debuts

	Parents' house		Friend's house		Recreation center		Bar/hotel		School		Other place		Total
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Intimate kissing	32%	68%	25%	75%	20%	80%	6%	94%	10	90%	8%	92%	89
Hugging a member of the opposite gender	12%	88%	15%	85%	23%	77%	9%	91%	30%	70%	0%	100%	87
Watching sex videos or looking at pornographic pictures	22%	78%	23%	77%	33%	67%	9%	91%	0%	100%	12%	88%	81
Fondling another person's sex organs	34%	66%	8%	92%	13%	87%	13%	87%	24%	76%	8%	92%	38
Watching others have sex	17%	83%	11%	89%	33%	67%	14%	86%	11%	89%	14%	86%	36
Masturbation	46%	54%	15%	85%	6%	94%	10%	90%	4%	96%	8%	92%	48
Sexual intercourse with a member of the opposite gender	26%	74%	28%	72%	15%	85%	22%	78%	4%	96%	6%	94%	54

Eleven percent of respondents ($n = 18$) reported first watching sex videos and looking at pornographic pictures in recreation centers. A small proportion (22%, $n = 12$) first had sex at a bar or hotel resulted from watching sex videos/pornographic pictures.

As described in the following pages there are a number of reasons lead sample respondents to choose one type of setting over another for exercising their first sex. Female participants have their first intimate kiss at a hotel or bar, while male respondents have their first sex in their own homes or friends' homes. For example, while none of the male sample respondents had their first intimate kiss at a hotel or bar, five females did.

Male respondents preferred watching sex videos and looking at pornographic pictures for the first time at their own houses, while female adolescents preferred their friends' houses. In Study B, the preferred setting for watching sex videos differed from that reported in Study A. In Study B, male case participants practiced to watch sex vedios and look at pornographic pictures in video houses and female case participants on their mobile phones and at school. Male sample respondents preferred to masturbate for the first time at their own houses, while female sample respondents preferred doing so at their friends' houses. Although members of both genders practiced had sex for the first time at their own houses, male respondents practiced to do so at their friends' houses and at hotels and in bars.

The chi-square test results indicate a statistically significant association between several sexual activities and settings. For example, there was a statistically significant association between the school environment and fondling the sex organs of another person, $\chi^2 (n = 36) = 7.831, df = 3, p < 0.05$. Intimate kissing and the respondents' own homes showed a statistically significant association, $\chi^2 (n = 89) = 7.703, df = 3, p < 0.05$.

When the first kiss occurred by force, there was a significant association between watching sex videos and the school environment, $(\chi^2 = 9.217) = df = 1, p < 0.01$. When respondents had their first intimate kiss in order to express gratitude, the first kiss occurred at school, $(\chi^2 = 13.094), df = 1, p < 0.01$. The chi-square test also revealed statistically significant

associations between factors that affect sexual experience and the types of sexual activities in which respondents were involved.

Table 4.19 shows the statistically significant associations between factors that influence first sexual experiences and the settings where first sexual experiences take place. It is clear that experiencing one's first intimate kiss at school or in a hotel or bar is associated with other sexual activities. For example, there is a statistically significant relationship between having sex for the first time in order to express gratitude and watching live sex, ($\chi^2 = 5.997$), $df = 1$, $p < 0.05$).

Table 4.19: Statistical Significance of Associations between Factors and Settings of Sexual Practices

		χ^2 value	<i>df</i>	Sig. (2-tailed)	Phi value ¹
	First intimate kiss was forced × respondent watched live sex for the first time at school	9.217	1	<i>p</i> < 0.01	0.528
2	Reason for first intimate kiss was to express gratitude × first intimate kiss took place at school	13.094	1	<i>p</i> < 0.01	0.405
3	Reason for first intimate kiss was to express gratitude × respondent watched a sex video for the first time at a bar/hotel	10.800	1	<i>p</i> < 0.01	0.399
4	Reason for first intimate kiss was to escape family pressure × first intimate kiss took place at a bar/hotel	18.240	1	<i>p</i> < 0.01	0.490
5	Reason for first intimate kiss was to get out of depression × fondled the sex organs of another person for the first time in bushes, forest, etc.	13.139	1	<i>p</i> < 0.01	0.622
6	Reason for first intimate kiss was to get out of depression × masturbated for the first time in bushes, forest, etc.	6.319	1	<i>p</i> < 0.05	0.383
7	Reason the respondent hugged a member of the opposite gender for the first time was peer pressure × watched sex video for the first time at a bar/hotel	6.203	1	<i>p</i> < 0.05	0.294
8	Reason the respondent hugged a member of the opposite gender for the first time was curiosity × respondent fondled the sex organs of another person for the first time at parents' house	5.013	1	<i>p</i> < 0.05	0.373
9	Reason the respondent hugged a member of the opposite gender for the first time was curiosity × respondent masturbated for the first time at parents' house	12.229	1	<i>p</i> < 0.01	0.567
10	Reason the respondent hugged a member of the opposite gender for the first time was to express gratitude × first intimate kiss took place at school	8.667	1	<i>p</i> < 0.01	0.334
11	First time the respondent watched a sex video, he or she was forced to × first intimate kiss took place at a bar/hotel	4.984	1	<i>p</i> < 0.01	0.484
12	First time the respondent watched a sex video, he or she was forced to × respondent had sexual intercourse for the first time at a bar/hotel	15.956	1	<i>p</i> < 0.01	0.477
13	First time the respondent watched a sex video, he or she was forced to × respondent had sexual intercourse for the first time at parents' house	5.979	1	<i>p</i> < 0.05	0.356
14	Reason the respondent watched sex video for the first time was curiosity × masturbated for the first time at a recreation center	10.034	1	<i>p</i> < 0.01	0.459
15	First time the respondent had sexual intercourse, it was forced × respondent fondled the sex organs of another person for the first time a bar/hotel	7.793	1	<i>p</i> < 0.01	0.554
16	Reason the first time the respondent had sexual intercourse was to express gratitude × respondent watched others have sex for the first time	5.997	1	<i>p</i> < 0.05	0.489

¹ In a two-by-two table, use of phi as a measure of strength of association is recommended (Craft, 1990).

Engagement in some sexual activities is influenced by multiple factors. Respondents usually hugged a member of the opposite gender for the first time due to peer influence or personal curiosity or to express gratitude. One type of sexual activity that occurred due to a certain type of factor is statistically associated with initiation into other types of sexual activities. For example, there was a relationship between hugging a member of the opposite gender for the first time due to curiosity and fondling the sex organs of another person and masturbation, both of which occurred at parents' houses. Hugging due to curiosity had a statistically significant association with masturbation at parents' houses, ($\chi^2 = 12.229$), $df = 1$, $p < 0.01$).

Two reasons for which respondents engaged in sexual intercourse for the first time were force and to express gratitude. There is a statistically significant association between forced sexual intercourse and fondling the sex organs of another person in bars and hotels, ($\chi^2 = 7.973$), $df = 1$, $p < 0.01$. Having sex for the first time in order to express gratitude was also related to fondling the sex organs of another person in bars and hotels, ($\chi^2 = 5.997$), $df = 1$, $p < 0.01$.

4.1.2.2 Having a Boy- or Girlfriend

Whether or not respondents had a boy- or girlfriend is one of the dependent/outcome sexual variables and was influenced by other factors such as the relationships that existed among respondents to initiate sexual activities. However, having a boy- or girlfriend was not the only factor affecting adolescents' sexual debuts. Respondents were asked to report whether or not they had boy- or girlfriends at two times. The first question asked respondents if they had a boy- or girlfriend at the time of data collection for Study A. The second question asked respondents if they had had boy- or girlfriends in the past even if they did not currently have one. The questions were presented in gender-disaggregated form. Yes-or-no question items presented independently

for each gender were used to generate data on whether or not respondents had (or had had in the past) boy- or girlfriends.

Out of 76 males, 76% ($n = 58$) had girlfriends at the time of the survey. Of the 58 respondents who had girlfriends at the time of the survey, 35% ($n = 20$) had had other girlfriends in the past. Of the 91 female respondents, 37% ($n = 34$) had boyfriends at the time of the survey. Of the 34 who had boyfriends, 53% ($n = 18$) had had other boyfriends before. Thus both female and male respondents had had more than one boyfriend or girlfriend.

Female respondents had more chances than male respondents to meet potential dating partners. However, male adolescents were more likely than female adolescents to develop sexual relationships. This is in contrast to the findings of Cooksey, Mott, and Neubauer (2002). In their study of friendships and early sexual relationships, the authors found no significant difference between adolescent boys and girls in terms of sexual activity. According to the authors, “Approximately one-quarter of 15-year-olds (24% of females and 27% of males) have had sex, and the proportion of young teenagers becoming sexually active has been increasing” (p. 118).

Specific variables influence sexual relationships. Age is one of the factors that influence respondents’ decisions to engage in romantic relationships. Another important factor that may predict whether or not one has a boy- or girlfriend whether or not an individual uses his or her friendship network to find a boy- or girlfriend. For male adolescents, the use of friendship networks to share information had a statistically significant association with having a girlfriend, $\chi^2 (n = 66) = 8.941, df = 1, p < 0.01$. However, there was no significant association between female respondents’ use of friendship networks to share information and having a boyfriend. The role of friendship networks in help building self-confidence among males showed a significant association with the use of the network to find a girlfriend, $\chi^2 (n = 67) = 13.33, df = 1, p < 0.01$.

But no significant association was found between females' use of networks to build self-confidence and use of the networks to find a boyfriend.

In contrast, the use of the family network to look for boy- and girlfriends had a statistically significant relationship with the use of a family network to look for boyfriends by female samples $\chi^2 (n = 82) = 6.081, df = 1, p < 0.05$. Chi-square statistics are important for hypothesizing which social network variables influence sexual behavior for each gender. Friendship networks and some of their functions play a role in helping boys find girlfriends. For female sample respondents, family networks are useful for looking for boyfriends.

4.1.2.3 Age at the Time of Sexual Debut

Age influences a number of sexual variables. The age at which adolescents make their sexual debuts, regardless of the type of sexual activity involved, varies from society to society, depending on puberty and other sociocultural variables. For example, Moore and Rosenthal (1993) report that the age at which one has one's sexual debut is shaped by different cultural outlooks. They describe four social discourses about sex.

The first is the discourse of morality. This is a discourse that concerns the reprehensibility of sex before marriage and is represented by the parent generation and religious institutions. The second is the discourse of desire. This concerns the expression of sexual feelings, which permeate media portrayals of sex but are ignored by parents, schools, and religious institutions. The third is the discourse of danger. "The discourse of danger is communicated more frequently to girls, as the possibility of pregnancy, the emotional pain of abandonment, and the social disgrace of loss reputation" (Moore & Rosenthal, 1993, p. 79). Risking all this for the sake of love is seen as exciting to adolescents. Finally, there is the discourse of victimization. According to the discourse of victimization, women are victims and

men take advantage of their power to use women. Therefore, parents and society should protect girls. These discourses suggest that morals, desire, danger, and power influence decisions made by adolescents regarding their sexual debuts. In addition to what Moore and Rosenthal describe, Gillmore, Archibald, Morrison, Wilsdon, Wells, Hoppe, et al. (2002) state in their study of teen sexual behavior that “prior sexual experience [such as dating, going steady] was related to a higher rate of sexual intercourse, but boys and girls did not differ” (p. 885).

It is important, first, to look at how old adolescents are at the time of their sexual debuts, regardless of what type of sexual activity they engage in. The youngest age at which any of the sample respondents became sexually active was 11 years old. For example, two adolescents reported experiencing intimate kissing at the age of 11 years old. Three respondents started fondling the sex organs of other persons at the same age, and three other respondents started masturbating at the age of 11. The age at which most of the sample respondents first had sexual intercourse was 14 or 15 years old (41%, $n = 121$). These individuals reported that they engaged in a different type of sexual activity before having sex for the first time. For example, the 54 adolescents who reported having engaged in sexual intercourse, 31% ($n = 17$), engaged in sexual activity for the first time when they were 14 or 15 years old. Of those who had masturbated, 44% first masturbated at the age of 14 or 15 years old. Findings of this study are consistent with those of Cooksey et al. (2002), who found that a small proportion (3%) of 11- and 12-year-olds had already engaged in sexual intercourse.

Findings from Study A show that fondling other person’s sex organs seems to be a prerequisite for other sexual activities. Many sample respondents started fondling the sex organs of others at the age of 13 or 14. This may relate to watching sex videos and pornographic pictures, since most of them started these practices at the age of 13 and 14 years old. Intimate

kissing seems a second phase/stage of sexual practice preceded by hugging after which other sexual practices such as watching sex videos, hugging members of the opposite gender, and masturbation follow.

Measures of central tendencies (mean, median, mode) and measures of dispersion (standard deviation and skewness) of the age at which respondents made their sexual debuts are presented in table 4.20. Respondents who reported never having engaged in any sexual activities were excluded from calculations.

Table 4.20: Measures of Centrality and Variability of Sexual Debut

	Intimate kissing	Hugging a member of the opposite gender	Watching sex videos	Fondling the sex organs of another person	Watching others have sex	Masturbation	Sexual intercourse
Total	89 (53%)	87 (52%)	81 (49%)	38 (23%)	36 (22%)	48 (29%)	54 (32%)
Mean age	14.16	14.16	14.30	14.22	14.65	15.03	14.50
Median age	14.00	14.00	14.00	14.00	14.00	15.00	15.00
Modal age	13	13 ^a	14	14	19	15	15
<i>SD</i>	1.959	2.028	2.193	2.296	2.794	2.150	1.920
Skewness	1.231	1.111	.959	1.029	0.504	0.877	0.487

^a Different modes exist. The smallest value is shown.

Mean is a more appropriate centrality measure than mode and median for these particular variables, as they appear to be at the interval level of measurement. There is very little variability for the means across each sexual practice. The minimum mean value was 14.16 years for intimate kissing and hugging members of the opposite gender. The maximum mean value was 15.03 years for masturbation. In order to calculate the mean of means, all mean values were added, and this number was divided by the number of variables. The mean of means was 14.43 years. For each variable, the median and mean almost equal, showing that statistically the distribution of variables around the age of sample respondents falls on a normal curve.

The most frequent values (the mode) show a positive progression, with the modal value of intimate kissing as a sexual debut at 13 years old, and the modal value for sexual intercourse at 15 years. Watching others have sex had a different modal value, with the high frequency observation reported at 19 years.

Variation from the central tendencies indicates a minimum discrepancy in age at sexual debut. The minimum variation among the different variables (sexual activities) had a value of 1.92 standard deviations from the mean age at which respondents reported first having had sexual intercourse. The highest dispersion was for watching others have sex, for which there are 2.79 standard deviations from the mean age at which respondents first engaged in this activity. All the mean values are greater than the median values. This shows a positively skewed distribution of the population from which the sample was drawn. This means that the age at which many of the respondents had their sexual debuts is concentrated around the mean age for sexual debut. On the right-hand side of the distribution curve, the concentration of responses decreases. In contrast, on the left-hand side, the concentration of responses increases.

It is to be expected that a number of factors affect the relationships between sexual activities and the age at which respondents had their sexual debuts. Three variables—gender, friendships, and social network relationships—exerted a significant influence on sexual debut. Some friendship-related variables such as the number of school friends influenced the age at which respondents had their first intimate kiss. Channels of communication with out-of-school friends directly related to the age at which respondents first began watching sex videos.

4.2 Hypothesis Testing

This section analyzes the three hypotheses in this study. The hypotheses focused on three of the seven research questions. The remaining four research questions are examined in the

descriptive analysis of Study A (presented earlier) and the critical case analysis of Study B presented in section 2.3 of this chapter. Certain rules were set prior to the application of specific statistics. The ground rules specific to use of chi-square were as follows. If obtained value of χ^2 is less than 5.991, H_0 is accepted. If obtained value of chi-square distribution is equal to or greater than 5.991, H_1 is accepted (Craft, 1990). The significance level of hypothesis testing is $\alpha = 0.05$.

4.2.1 Hypothesis 1

a. Research Hypothesis

Adolescents' sexual debuts are strongly associated with the types, sizes, and functions of their family and friendship networks.

b. Null Hypothesis

There is no association between adolescent's sexual debuts and the types, sizes, and functions of their family and friendship networks. In other words, an adolescent's sexual debut is not affected by the type, size, and functions of his or her social networks. Three sets of outcome variables treated under this hypothesis are sexual practices; settings where sexual debuts take place; and reasons for, or factors that lead to, sexual debuts. The three sexual practices are intimate kissing, masturbation, and sexual intercourse (all measured as nominal-level variables). Settings where sexual debuts take place are parents' and friends' houses (both measured as nominal-level variables). Two factors leading to, or reasons for, sexual debuts are peer influence and personal curiosity (both measured as nominal-level variables).

The first category of possible predictor variables treated under this hypothesis were adolescents' membership in two types of social networks, namely, family and friendship networks (both measured as nominal-level variables). The second category was number of

members in family and friendship networks (both measured as interval-level variables). The third category was use of family and friendship networks to share information, build self-confidence, and look for boy- or girlfriends (all measured as nominal-level variables). The measurement for the three sets of outcome variables was at the nominal level. Similarly, the measurement for two of the three sets of independent/control variables was at nominal level.

Chi-square was used to measure associations between the outcome and predictor variables. Outcome variables in each category were cross-tabulated with each set of predictor variables. The 39 variable items from both the response and predictor variables were cross-tabulated. Chi-square distribution was computed and the results are shown in Appendices A1, A2, and A3. The outcomes of the cross-tabulation and chi-square results were interpreted and analyzed. The decision had to be made either to accept the null hypothesis or to reject it.

Intimate kissing as one's first sexual experience was associated with membership in a friendship network, $\chi^2 (n = 103) = 9.211, df = 1, p < 0.01$. There was a moderate association, with a Cramer's $V = 0.276$. Gender-disaggregated chi-square indicated that the first experience of sexual intercourse was associated with the number of females in one's family network. There was a moderate association between the number of females in a family network and sexual intercourse as one's first sexual experience, $\chi^2 (n = 71) = 9.918, df = 4, p < 0.05, V = 0.347$. In contrast, masturbation as one's first sexual experience was associated with the number of males in a friendship network. Here too, the chi-square analysis showed a moderate association between these variables, $\chi^2 (n = 68) = 7.030, df = 4, p < 0.05, V = 0.332$. The number of female members in a friendship network was associated with intimate kissing and masturbation as one's first sexual experiences, $\chi^2 (n = 68) = 8.440, df = 4, p < 0.05, V = 0.352$, and $\chi^2 (n = 70) = 6.389, df = 4, p < 0.05, V = 0.342$, respectively. Sexual intercourse as one's first sexual experience was

also associated to the number of females in a friendship network, $\chi^2 (n = 69) = 9.222, df = 4, p < 0.05, V = 0.366$. These results indicated moderate associations between the outcome and predictor variables.

Chi-square analysis indicated associations between respondents' first sexual encounters and the functions of family and friendship networks. Sexual intercourse as one's first sexual experience was associated with the use of a friendship network to build self-confidence, $\chi^2 (n = 101) = 6.605, df = 1, p < 0.05$. Masturbation as one's first sexual experience was associated with the use of family networks to share information, $\chi^2 (n = 103) = 5.994, df = 1, p < 0.05, V = 0.235$. These are, however, weak associations.

There was a significant relationship between the number of males in a friendship network and sexual intercourse at a friend's house as one's first sexual experience. This was the strongest relationship observed between respondents' social networks and settings where sexual activities occurred, $\chi^2 (n = 27) = 7.486, df = 4, p < 0.05, V = 0.527$. Intimate kissing due to peer influence as one's first sexual experience was associated with membership in a family network, $\chi^2 (n = 89) = 7.772, df = 1, p < 0.05, V = 0.023$. However, the association was negligible. The first sexual experience of intimate kissing for due to personal curiosity was associated with the number of females in one's friendship network.

Thirty-nine variables related to sexual practices and social network relationships were cross-tabulated and chi-square results were examined based on the ground rules set for hypothesis testing. The chi-square computations for 11 paired variables (sexual and social variables) showed significant associations between sexual practices and social network relationships. In all 11 chi-square results, which were statistically significant, the strength of association ranges from slightly strong to significantly strong. The associations for four other

paired variables were also significant but were less than 5.991 and thus had to be rejected. One of these sets of paired variables was the relationship between sexual intercourse as one's first sexual experience and membership in a friendship network, $\chi^2 (n = 103) = 4.296, df = 1, p < 0.05, V = 0.188$. The other paired variables were masturbation as one's first sexual experience and use of a friendship network to look for boy- or girlfriends, $\chi^2 (n = 99) = 4.041, df = 1, p < 0.05, V = 0.202$. Although they were statistically significant, these paired variables were not useable for hypothesis testing.

The results of the chi-square analysis offered partial support for hypothesis 1. There were significant associations between selected variables regarding respondents' first sexual encounters and social network variables (types of social networks, number of members in a given type of social network, and functions of a particular type of social network). The gender composition of social networks affected the number of members in a sexual practices relationships. Cramer's *V* demonstrated associations ranging from very weak to very strong between variables concerning sexual practices and variables related to social networks.

4.2.2 Hypothesis 2

a. Research Hypothesis

The age at which an adolescent has his or her sexual debut is positively correlated with engagement in another type of sexual behavior, and this is affected by gender.

b. Null Hypothesis

There is no correlation between the age at which an adolescent has his or her sexual debut and engagement in other forms of sexual behavior, and this is not affected by gender. The statistical tests showed there is no correlation with gender. The independent variables used for this hypothesis were the respondent's age at the time of his or her sexual debut (interval level) and

the gender of the adolescent (nominal level). Seven variables were affected by the age of the adolescent (considered an interval-level measurement). These variables are the age at which respondents had their first intimate kiss, first hugged a member of the opposite gender, first watched sex videos, first fondled the sex organs of another person, first watched others have sex, first masturbated, and first had sexual intercourse.

Since the main outcome and predictor variables were interval-level measurements, the Pearson's correlation coefficient test was used to compute correlations and measure the magnitude and direction of relationships. Table 4.21 summarizes Pearson's correlation coefficients for the respondents' ages at the time of their sexual debuts as the independent variable and the influence of the age at which they first engaged in another sexual behavior. The Pearson correlation coefficient was also used to compute the relationship between gender and the age at which respondents became sexually active.

Pearson's correlation coefficient was used to pair and correlate the age at which respondents first engaged in a sexual activity with seven sexual practices after disaggregation by gender, resulting in 21 paired frequencies. Fourteen of the 21 paired variables for male respondents and 13 for female respondents were significantly correlated. Six paired variables were correlated for both male and female respondents. Five paired variables were not correlated for male or female sample respondents. Four paired variables were correlated only for male respondents, and six paired variables were correlated only for females. Thirteen of the 14 paired variables showed significant relationships at $p < 0.01$.

Table 4.21: Pearson's Correlation Coefficient for Different Sexual Practices

	Correlated variables	Pearson's correlation coefficient (<i>r</i>)		Sample score
		Male	Female	
1.	Age when first hugged a member of the opposite gender × age when watched first sex video	0.601**	0.824**	69
2.	Age when first hugged a member of the opposite gender × age when fondled the sex organs of another person for the first time	0.532**	0.931**	46
3.	Age when first hugged a member of the opposite gender × age when watched others have sex for the first time	0.370	0.316	38
4.	Age when first hugged a member of the opposite gender × age when first masturbated	0.366	0.660**	32
5.	Age when first hugged a member of the opposite gender × age when had sexual intercourse for the first time	-0.70	0.007	30
6.	Age when first hugged a member of the opposite gender × age at time of first kiss	0.516**	0.807**	78
7.	Age when watched first sex video × age when fondled the sex organs of another person for the first time	0.486**	0.799**	49
8.	Age when watched first sex video × age when watched others have sex for the first time	0.370	0.5587**	45
9.	Age when watched first sex video × age when first masturbated	0.497	0.763**	33
10.	Age when watched first sex video × age when had sexual intercourse for the first time	0.623**	0.122	29
11.	Age when watched first sex video × age at time of first intimate kiss	0.555**	0.739**	66
12.	Age when fondled the sex organs of another person for the first time × age when watched others have sex for the first time	0.865**	0.277	27
13.	Age when fondled the sex organs of another person for the first time × age when first masturbated	0.921**	0.421	24
14.	Age when fondled the sex organs of another person for the first time × age when engaged in sexual practice for the first time	0.752**	0.342	22
15.	Age when fondled the sex organs of another person for the first time × age at time of first intimate kiss	0.263	0.713**	44
16.	Age when watched others have sex for the first time × age when first masturbated	1.000**	0.621**	23

17.	Age when watched others have sex for the first time × age of first sexual intercourse	0.444	0.74	20
18.	Age when watched others have sex for the first time × age at time of first kiss	0.224	0.345	37
19.	Age when first masturbated × age when first had sexual intercourse	0.673	0.282	27
20.	Age when first masturbated × age at time of first kiss	0.264	560*	35
21.	Age when first had sexual intercourse × age at time of first kiss	0.542	0.459*	35

* *Correlation is significant at the 0.05 level (2-tailed).*

** *Correlation is significant at the 0.01 level (2-tailed).*

This analysis indicated a moderate linear relationship between the age at which male respondents first hugged members of the opposite gender and the age at which they watched a sex video or looked at pornographic pictures for the first time, $r(n = 35) = 0.60, p < 0.01$. The mean age at which male respondents first hugged a girl was 13.86 ($SD 2.248$), and mean age at which they first watched sex videos or looked at pornographic pictures was 14.30 ($SD 2.493$) years. Pearson’s correlation for female respondents indicated a strong linear relationship between hugging boys and watching sex videos for the first time, $r(n = 34) = 0.82, p < 0.01$. The mean age at which respondents hugged a boy for the first time was 14.44 ($SD 1.778$), and the mean age at which respondents watched a sex video for the first time was 14.29 ($SD 1.887$) years. The age at which male respondents first hugged a girl was also correlated with age at which respondents had their first kiss and first fondled the sex organs of another person. There were moderate linear relationships between age of male respondents when they first hugged a girl and when they first fondled the sex organs of another person, and age of male respondents when they first hugged a girl and when they had their first intimate kiss, $r(n = 33, 38) = 0.532, 0.516, p < 0.01$, respectively. The mean age at which they first fondled the sex organs of another person and age at the time the first kiss occurred were 14.27 ($SD 2.411$) and 13.93 ($SD 2.197$), respectively.

The Pearson's correlation coefficient test showed a moderate linear relationship between female respondents' age when they first hugged a boy and the age at which they first masturbated ($r(n = 19) = 0.66, p < 0.01$). The mean age at which female respondents first masturbated was 14.52 ($SD 1.782$). Age at which female respondents first watched sex videos or looked at pornographic pictures had a strong linear relationship with the age at which they first masturbated, $r(n = 41) = 0.76, p < 0.01$. The mean age at which female respondents first watched sex videos or looked at pornographic pictures was 14.29 ($SD 1.887$). In contrast, there was a moderate linear relationship between age at which male respondents first watched sex videos or looked at pornographic pictures and the age at which they first engaged in sexual intercourse, $r(n = 11) = 0.62, p < 0.01$. The mean age at the time they first had sexual intercourse was 15.15 ($SD 2.34$).

The perfect linear relationship between age at which males respondents watched live sex for the first time and the age at which they masturbated for the first time, $r(n = 13) = 1.00, p < 0.01$, is striking. The mean age at which male respondents first watched live sex and age at which they first masturbated was 16.15 ($SD 3.262$) and 16.00 ($SD 2.517$), respectively.

The Pearson's correlation coefficient test demonstrated that age at which one is initiated into one type of sexual activity is strongly associated with first-time engagement in another sexual activity, irrespective of gender. The Pearson's correlation coefficient (r) supports the research hypothesis that the age at which respondents first engaged in a sexual behavior is positively correlated with engagement in another type of sexual behavior for the first time. It also supports the research hypothesis that the age at which a respondent first engages in a sexual behavior is positively correlated with gender. Correlations between some of the sexual activity variables demonstrated that the age at which respondents first engaged in a sexual practice is

significant for male gender than the female gender in terms of practicing sex after watching sex videos and pornographic picture.

4.2.3 Hypothesis 3

a. Research Hypothesis

Adolescent-parent communication on issues such as academic matters, reproductive health, selection of friends, membership in social networks, and selection of boy- or girlfriends has a positive association with whether or not an adolescent has a boy- or girlfriend.

b. Null Hypothesis

There is no association between adolescent-parent communication and whether or not a respondent has a boy- or girlfriend. In order to test the null hypothesis, one outcome variable—whether or not respondents had a boy- or girlfriend (nominal-level variable)—and five predictor items related to family networks (nominal-level variable) were tested. Since both the outcome and predictor variables are measured at the nominal level, the chi-square statistic is an appropriate measurement. The chi-square test showed that adolescent-parent discussion of academics, reproductive health, selection of friends, and selection of girlfriends was not significant for males. There was a relationship between discussion of academic issues and whether or not female respondents had boyfriends, $\chi^2 (n = 91) = 4.173, df = 1, p < 0.05$.

There was no significant relationship between adolescents' sexual relationships and discussions of various issues with parents. Thus, there is no ground on which to reject the null hypothesis "There is no association between adolescent-parent communication and whether or not a respondent has a boy- or girlfriend." In other words, this study does not support the hypothesis that adolescent-parent communication influenced whether or not adolescents had boy- or girlfriends.

4.2.4 Regression Tests

Which demographic and social network variables predict adolescents' age at the time of their sexual debuts?

a. Research Hypothesis

Demographic and social network variables predict the age at which adolescents made their sexual debuts.

b. Null Hypothesis

There are no demographic and social network variables that predict the age at which adolescents made their sexual debuts.

In order to answer the above research question and test the null hypothesis, various demographic and social network variables hypothesized to be predictors of sexual activities were put in regression analyses. The first step of the regression tests identified 12 predictor variables and 6 elements of an outcome variable. A stepwise analysis was used as a model to select independent variables, and a simple linear regression was run. In the first step of stepwise regression, all possible predictor variables at the interval level of measurement were entered into the statistical test. From the outcome of the first step of regression analysis, possible predictors with values of $p < 0.05$ were selected as significant variables and as the subjects of the second step of analysis. Independent variables selected for analysis at step 2 were drawn from both the social network and demographic variables.

The age of the respondents was the only demographic variable that was viable for analysis. Social network variables that were statistically significant and selected for step 2 of the regression analysis were (1) age of out-of-school friends; (2) number of school friends; (3) channel of communication with out-of-school friends; (4) number of males in extended family

network; (5) number of female school friends; (6) length of time in a religious social network; (7) number of females in family network; (8) number of males in family network; (9) number of females in extended family network; (10) number of male school friends; (11) number of females in neighborhood social network; and (12) number of out-of-school friends who share information with the respondent.

The age at which sexual debut took place was the outcome variable examined through the predictors. The six specific sexual activities tested for predictability by the social and demographic variables were age at which respondents (1) had their first intimate kiss; (2) first hugged a member of the opposite gender; (3) first masturbated; (4) first engaged in sexual intercourse; (5) first fondled the sex organs of another person; and (6) first watched sex videos or looked at pornographic pictures. Age at which the respondents first watched others having sex could not be predicted by any of the social or demographic variables, as this variable was rejected at step 1 and not selected for further regression analysis at step 2.

A simple linear regression analysis examined the power of each of the predictor variables to determine the size and direction of the outcome variable. Table 4.22 offers a summary of the linear regression analysis.

Table 4.22: Regression Analysis of Hypothesized Predictors on Adolescent Sexual Debuts

	β	t	R^2	Adjusted R^2
Age at which first intimate kiss occurred			0.036**	0.025**
Age of out-of-school friends	.190	1.768		
Age at which first intimate kiss occurred			0.156**	0.146**
Number of school friends	.395	3.914		
Age at which first intimate kiss occurred			.041*	.030*
Age of sample respondents	.203	1.932		
Age at which first hugged member of the opposite gender			.102**	.088**
Channel of communication with-out-of-school friends	.319	2.735		
Age at which first masturbated			.369*	.324*
Number of males in extended family network	-.607	-2.861		
Age at which first engaged in sexual intercourse			.101*	.076*
Number of female school friends	-.319	-1.988		
Age at which first engaged in sexual intercourse			.121*	.088*
Number of females in family network	.349	1.896		
Age at which first engaged in sexual intercourse			.121*	.088*
Number of males in family network	.349	1.896		
Age at which first fondled sex organs of another person			.347*	.293*
Number of females in extended family network	.353	1.999		
Age at which first fondled sex organs of another person			.242*	.192*
Length of membership in religious social network	.492	2.189		
Age at which first fondled sex organs of another person			.347*	.293*
Number of male members in extended family social network	.353	1.999		
Age at which first watched sex videos or looked at pornographic pictures			.218**	.195**
Number of females in neighborhood social network	-.467	-3.075		
Age at which first watched sex videos or looked at pornographic pictures			.070*	.054*
Channel of communication with out-of-school friends	.264	2.138		
Age at which first watched sex videos or looked at pornographic pictures			.178**	.164**
Number of out-of-school friends who share information with the respondent	.421	3.269		

Two social network variables and one demographic variable seemed to predict the age at which the first intimate kiss occurred. The age at which the first intimate kiss occurred was predicted by the ages of adolescents' out-of-school friends, $\beta = .196$, $t(89) = 1.678$, $R^2 = .036$, $p < 0.01$. The number of school friends predicted the age at which the first intimate kiss occurred, $\beta = .395$, $t(89) = 3.914$, $R^2 = .156$, $p < 0.01$. Finally, age at which the first intimate kiss occurred was predicted by the age of respondents, which is an important demographic variable, $\beta = .203$, $t(89) = 1.932$, $R^2 = .041$, $p < 0.05$. The coefficient of determination for adolescents' age when they had their first intimate kiss was explained by the age of out-of-school friends, with about 4% variation. This is, however, a very meager determination of the predictor variable over that of the outcome variable. The proportion of variance of the age at which the first intimate kiss occurred was explained by the number of school friends, which provided an explanation for 16% of the population. The same prediction for intimate kissing as explained by age differences of the respondents was only for 4%, which is again a very meager variation in the age at which the first intimate kiss occurred.

Age at which respondents first hugged a member of the opposite gender showed a linear relationship with only one of the social network variables. The channel through which respondents communicated with their out-of-school friends predicted the age at which they first hugged a member of the opposite gender, $\beta = .319$, $t(87) = 2.735$, $R^2 = .102$, $p < 0.01$. About 10% of the variance in the age at which they first hugged a member of the opposite gender was explained by the means by which respondents communicated with their out-of-school friends.

The third type of sexual debut examined by the simple linear regression test was masturbation. Masturbation was explained by the number of males in the extended family network. The prediction of age at which one first masturbated by the number of males in the

extended family network was statistically significant, $\beta = -.607$, $t(48) = -2.861$, $R^2 = .369$, $p < 0.05$. Here there was a negative prediction, with the number of males in an extended family network explaining the age at which respondents first hug a member of the opposite gender. The coefficient of determination (R^2) showed that the number of males in an extended family network contributed 37% of the variation in age at which respondents first hug a member of the opposite gender.

The significant predictors of age at which respondents first engaged in sexual intercourse were (1) number of female friends, $\beta = -.319$, $t(54) = -1.988$, $R^2 = .101$, $p < 0.05$; (2) number of females in a family network, $\beta = .349$, $t(54) = 1.896$, $R^2 = .121$, $p < 0.05$; and (3) number of males in a family network, $\beta = .349$, $t(54) = 1.896$, $R^2 = .121$, $p < 0.05$. The coefficient of determination by the independent variable highly affected the dependent variable. The regression test shows that a 10% variation in sexual intercourse was attributed to the number of female school friends. Here, the regression result showed a negative coefficient of determination of number of female school friends as a predictor variable for the age at which respondents first engaged in sexual intercourse as an outcome variable. The number of males and females in a family network explained the age at which respondents first engaged in sexual intercourse, each having a coefficient of determination for about 12% of the variation.

Three social network variables predicted the age at which respondents first fondled the sex organs of another person. These predictor variables were (1) number of females in the extended family network, $\beta = .353$, $t(38) = 1.999$, $R^2 = .347$, $p < 0.05$; (2), length of membership in a religious social network, $\beta = .492$, $t(38) = 2.189$, $R^2 = .242$, $p < 0.05$; and (3) number of males in the extended family network, $\beta = .353$, $t(38) = 1.999$, $R^2 = .347$, $p < 0.05$. Number of both male and female members of the extended family network was a stronger predictor of age at

which respondents first fondled the sex organs of another person than the length of membership in a religious social network. About 35% of the variance in the age at which this type of sexual debut occurred was explained by the number of male and females in the extended family network. The length of membership in a religious social network explained 24% of the variation in the age at which respondents first fondled the sex organs of another person.

Age at which respondents watched sex videos or looked at pornographic pictures for the first time was predicted significantly by three social network variables: (1) number of females in a neighborhood social network, $\beta = -.467$, $t(81) = -3.075$, $R^2 = .218$, $p < 0.01$; (2) channel of communication with out-of-school friends, $\beta = .264$, $t(81) = 2.138$, $R^2 = .070$, $p < 0.05$; and (3) number of out-of-school friends who shared information with the respondent, $\beta = .421$, $t(81) = 3.269$, $R^2 = .178$, $p < 0.01$. Number of females in a neighborhood social network is a powerful predictor, explaining 22% of the variation in the age at which this type of sexual debut took place as an outcome variable.

4.3 Case Analysis (Study B)

This section presents the analysis of data for the critical cases generated from 10 in-depth interviews conducted in February and March 2009. The main components of this section are the profiles of the critical cases, their conceptualizations of their social networks and sexual practices, the engagement of each case in social and sexual networks, and the factors that contributed to their engagement in these networks and activities. At the end of this section, adolescent-parent communication, an important factor that had a significant influence on the critical cases' decisions to join social networks and engage in sexual activities, is discussed.

4.3.1 Profiles of the Critical Cases

Ten critical cases, five males and five females, participated in the in-depth interviews. All the participants went to Bethlehem and New Era schools. The participants ranged in age from 16 to 19 years and were residents of Gedam Sefer. Basic socio-demographic data for the critical cases are summarized in table 4.23

Table 4.23: Socio-demographic Information on Critical Case Participants

Gender	
Male	5
Female	5
Age	
16	3
17	2
18	4
19	1
School grade	
1–3	0
4–6	1
7–9	1
10 or higher	8
Status of parents	
Both alive	5
Only mother alive	1
Only father alive	3
Both dead	1

The adolescents were eager to share their future professional plans. Each case had goals he or she wished to attain. For example, one participant planned to become a lawyer, and another an artist. Two other cases wanted to pursue higher education but had not decided yet what they wanted to study. Still another participant wanted to go to college and become an engineer. The

sixth participant wanted to go to college and become an architect. Four participants did not share their career plans.

4.3.2 Adolescents' Friendship Networks: Definitions and Functions

4.3.2.1 Social Network Choices

The majority of the adolescents ($n = 140$, 84%) who participated in study A reported family networks to be the type of network that they preferred to belong to. On the other hand, participants in study B chose friendship networks as their favorite type of network, and the one in which they had the closest relationships. They had a number of reasons for favoring friendship networks over family and extended family networks.

The participants in the critical case study reported friendship networks to be their favorite type of network based on their own interpretations of what a friendship network is. One of the critical case informants (Case 1) offered the following interpretation of friendship. "To me, friendship means a deeper relationship that adolescents engage in during times of crisis and sorrow. Friends are young who share their problems and find solutions together." This participant viewed friendship in terms of interactions among friends. Case 2 and Case 3's interpretation of friendship focused on intimacy between friends. Cases 2 and 3 said, "Friendship means living as *brother* and sister."

However, Case 2 revealed there are no friends who truly act as brother and sister. "These days, friendship is about money." He further explained that if an adolescent has no money, he or she may lose all his or her friends. He stated: "If you have money, you are the important person in the friendship. Whether you like it or not, if you have money, you will have friends. Those who have no money may have a few friends, but they are not necessarily true friends."

Case 2 and 3's understanding of how one forms a friendship network is quite different from what the rest of the cases and the literature described. Cases 2 and 3 see friendship as being linked with material rewards, whereas the other cases focused on the functions of friendships rather than material gain. According to Case 5, "Friendship is just a relationship based on tolerance and is established with the person with whom you share your secrets. There is no shame or shyness among friends." Similarly, Case 6 defined friendship as "a mutually beneficial relationship." For Case 7, on the other hand, "friendship means the connection between individuals who think good things of each other and who solve problems together." Similarly, for Case 8, "a friendship is a relationship between persons who like being together in times of happiness and sorrow." For Case 9, "friendship is the relationship with the person who shares my interests more than my family does. Friends are more than family members."

These comments help us understand how adolescents perceive their relationships. For some adolescents, relationships with friends can be interpreted in terms of behavior, what Case 5 calls tolerance. For others, friendship is simply a kind of give-and-take relationship, or what Case 6 called "mutual beneficence." This is of course in line with group socialization theory, according to which one of the requirements of a social network is reciprocity and mutual benefit. Still for others like Case 7, the focus is on the outcome. Friends should always be positive and help each other solve problems. Friendship is also associated with bonding. Friends want to be together not only in times of happiness but also in times of sadness or crisis. Interestingly, is the comparative definition of friendship. As discussed by Case 9, friends are people who are even more than family members, and with whom individuals share their secrets.

4.3.2.2 Comparison of Friendship and Other Social Networks

It is important to understand adolescents' conceptualizations of friendship in terms of general social network systems. For the participants in the critical case study, membership in a social network is simply for adults. In other words, social networks are not the business of adolescents. One of the cases assumed that adolescents do not understand what a social network is. These adolescents perceived social networks to be relationships between neighbors or within a family. The cases believed that adolescents do not belong to social networks with their neighbors and, in most cases, with their family members.

Case 1 said, "Social networks in most cases are established by adults, and adolescents are not members of these types of relationships." However, this participant did not seem clear with the assumption to understand that friendships can be part of the broader social network. On the other hand, for Case 2, there is no clear distinction between social networks and friendship. Case 2 provided a better definition of social networks. According to him,

Belonging to a social network means living together in a mutual support system. It means supporting each other, mutual affection, and living in tolerance. It means no one can live without support from others. A person without a social network is like a car without fuel. He or she cannot move.

Another participant considered those who cooperate and work together to be members of a social network. This case saw a similarity between social networks and the traditional support systems such as *iddir*, *mahber*, coffee groups, and *equub* in Ethiopia. These are forms of social capital that people use:

in times of social or financial problems individuals depend on their neighbors, friends and relatives through traditional systems. *Iddir* is a self-help voluntary association, which

serves as economic and social insurance at times of death and other crises. *Mahber* [is a] socio-religious association which hold gatherings, with spiritual and social functions named after saints. *Iqqub* is a circular saving system in which relatives, neighbors or friends collect money to build each member's financial capacity. (Kebede & Butterfield, 2009, pp. 357-58).

Other cases, for example, Case 5, defined social networks as similar to friendships. However, they made distinctions in terms of size. For some of the participants, a friendship is a small network and other forms of networks are large. According to Case 5, a friendship can be between two or three persons, but social networks, for example, *iddir*, *equb*, and *mahber*, are formed by many people. Case 6 had a different view of friendship and social networks. Case 6 argued that there is no difference between friendships and social networks. She stated, "In my opinion, there is nothing that makes social networks different from friendship. Friends can be members of social networks." The same idea was expressed in more detail by Case 7. For this case, a social network is defined by its function, the specific activities in which members engage, and the setting in which it is established. According to him,

A social network simply allows people to help each other. Social networks use the support of the neighborhood to help [members] solve problems at home. They also help [members] solve conflicts when there is a misunderstanding between individuals, groups, or individuals. . . . Social networks can facilitate the celebrations in a neighborhood. Friends at church, at school, in immediate and extended families, and in the neighborhood can establish social networks.

This case provided a more comprehensive description of social networks than the other cases. There was also a geographically based definition for social networks. For Case 10, "social

networks are relationships among people who live in a specific place. This is unlike friendship, as we can make friends who live in different places.”

4.3.2.3 Geography and Friendship Formation

Friendship is not a geographically confined relationship. The 10 critical case studies shared a common understanding of where friendships are established. According to them, the best place for friendships to be formed is school. After schools, the neighborhood is the next-best place where adolescents can form friendships. Two cases reported that friendships can be established in religious places. There is also a non-geographically specified friendship that is based on common interests (reported by Case 2). This is in line with the explanations given by researchers who apply social balance theory. Individuals who have similar sentiments about an object share a common interest. Thus according to Case 2, whose perceptions are supported by balance theory, to establish a friendship, individuals should have a common sentiment about an object, attribute, or feeling that brings them together.

4.3.2.4 Functions of a Friendship

As was briefly described above, adolescents can form friendships in different settings. Friendship established in different settings can be utilized for different purposes and have various functions. School friendship is important in that it allows adolescents to discuss private matters. Six of the 10 critical case studies explained that sex, smoking cigarettes, substance abuse, and gang behavior are all “private matters.”

Depending on their gender, participants reported different views about the functions of a school friendship. Female participants reported that they use school friendships with other females to share information about possible sexual risks that male adolescents may pose to them. On the other hand, when males are members of a school friendship, the friendship is used by

female members to protect themselves from sexual harassment by male adolescents who are not part of the friendship network. Male adolescents reported using the female members of their school friendships to help them find girlfriends.

For all the cases except Case 4, age is the main criterion for the formation of a friendship. The participants had various reasons as to why they preferred to have friends of the same age. “We do not dare to talk freely with older persons about private matters” (Case 1). There is an assumption that adults do not understand the feelings of adolescents. This is the reason why adolescents do not have strong ties with neighbors and even their own family members who are adults. However, Case 3 had a different view concerning with whom adolescents establish friendships. He argued, “We can establish friendships with people of different ages. But the relationships we establish with people who are not our age are social networks, not friendships.”

It is very interesting to see how adolescents establish boundaries between their relationships with their peers and similar relationships with people of a different age by giving these relationships different names. The functions of their relationships with those they refer to as friends (i.e., peers) and those they call social network members (individuals of a different age with whom they have a relationship) may differ. For Case 3, friendships have a variety of functions. He stated, “We use our friendships to share our opinions, to hang out together, to study together, to strengthen interaction, and to support each other in crises.”

School friendships have other functions as well for adolescents. Academic support commonly provided by school friends. School friends also organize picnics and parties. Friendships established in recreational areas are composed of members of both genders and the main purpose of these friendships is to entertain each other in a sexually oriented manner (Case 3). Some friends engage in antisocial behaviors together. Some school friends skip school

together and hang around *khat* houses or go other places where they will not be seen by teachers or parents. “This is a kind of friendship where members smoke, drink alcohol, and even become sexually active at an early age” (Case 9).

4.3.3 Engagement in Friendship Networks

The next step was for participants to identify their own friendship networks based on the definition of a friendship network. The PI raised many questions and expanded upon them until each respondent provided adequate information about his or her friendships. In this part of the interview process, the following topics were covered.

- 1) Friendships established in school
- 2) Friendship network size, identification of five best friends, and criteria for a friend to be called a best friend
- 3) Specific activities the critical case does with his or her best friends
- 4) Use of the critical case’s knowledge of network interactions to draw a sociogram
- 5) The case’s level of influence on his or her best friends, and vice versa
- 6) The influence of adolescent-parent communication on friendship selection

Some of these topics were covered during the first and second sessions with each interviewee. Naming all network members and identifying five best friends and drawing the sociogram required some thought. Respondents were asked to list the members of their various friendship networks, choose best five friends from the list, and draw the sociogram, and the exercise to draw the sociogram was done during the second interview. In-depth data were gathered from the participants on some issues, while less in-depth information was secured on others.

4.3.3.1 Formation of Friendship Networks

Table 4.24 offers a case-by-case analysis of the friendship network sizes, settings where adolescents establish their networks, gender composition of networks, and ages of network members are reported. The smallest friendship network consisted of four members, while the largest consists of 23 members.

Table 4.24: Profiles of Friendship Network Members of the 10 Cases

Case	Gender	Age	Friendship network size			Age of members					
			m	f	Total	Below 16 years	16 years	17 years	18 years	19 years	Over 19 years
1	f	16	8	13	21	0	4	3	10	0	4
2	m	17	12	6	18	2	7	5	1	2	0
3	f	16	2	8	10	4	3	0	0	0	3
4	m	19	14	8	22	0	0	0	4	7	11
5	m	16	15	4	19	11	7	1	0	0	0
6	f	17	4	7	11	2	2	4	3	0	0
7	m	16	12	6	18	9	8	1	0	0	0
8	m	16	11	4	15	14	1	0	0	0	0
9	f	18	0	4	4	2	1	0	0	1	0
10	f	17	16	7	23	3	7	6	5	2	0

In general, many of the critical cases' networks were heterogeneous in terms of gender. But for some cases, the majority of network members were similar in gender. For example, 13 of the 21 members of Case 1's friendship network were, like the case herself, female. Case 10, who is female, was an exception—16 of the 23 members of her network were male. All the members of Case 9's friendship network were female. Gender also influenced friendship for male participants. None of the cases only had friends who were exactly their age. With the exception of Case 8, whose network consisted of some younger members, the networks of all the cases had members of the same age or older.

Schools and neighborhoods were the two most popular places for the participants to establish their friendship networks. However, some cases met members of their networks in other places. For example, the networks of cases 7 and 10 had members from the neighborhood, school, church, and other settings. Case 7's neighborhood network consisted of four members, his school network consisted of four members, and his church network consisted of four members, and he also had a friendship network consisting of six members whom he met through the theater. Case 10's school network had 15 members, and her neighborhood network had four members, and she had four friends from other places.

4.3.3.2 Size and Density of Friendship Networks

The size of networks varied from one case to another. The friendship networks of some cases have members from a single place, for example, school, while others have networks with members from different places, such as school, the neighborhood, theater clubs, and church. The number of members with whom one establishes direct contact determines the size of the network. The number of connections can be estimated by the formula " $K * K - 1$ where K is the possible number of times a node can make an interaction with other network members" (Hanneman & Riddle, 2005, quoted by Kebede & Butterfield, 2009, p. 366).

To understand the possible number of connections in a complete social network interaction, it is helpful to consider the following examples. Case 6's friendship network had 12 members and is categorized as a medium-sized network. If each individual connects with everyone else, the possible number of connections is $12 \times (12 - 1) = 132$. Case 9's network had five members, so the possible number of connections is 20. Case 10 had a large network with 24 members. Therefore, Case 10 had the largest number of connections, $24 \times (24 - 1) = 552$. This calculation assumes connections among all members. However, the study did not identify how

many of the network members were connected. Therefore, the known number of interactions is at least equal to the minimum number of network members minus one ($K-1$), since we know that the cases are connected with each of their network members. When the connections are undirected or asymmetric (i.e., in cases of one-way communication), the number of connections is reduced by half. The larger the social network is, the lower the density of connections.

To calculate network connections in a larger network and estimate the possible number of links between all individuals in a network, it is necessary to understand how cliques function in a social network. A clique is a subgroup within a larger network, “a sub-set of points in which every possible pair of points is directly connected by a line and the clique is not contained in any other clique” (J. Scott, 2000, p. 114). “Division of actors into cliques or sub-groups can be a very important aspect of social structure. It can be important in understanding how the network members as a whole are likely to behave” (Hanneman & Riddle, 2005, p. 77). For example, Case 10 reported three cliques in the larger friendship network that function independently of the other cliques or the larger network. One is a neighborhood friendship clique consisting of five members (including the case herself), another is a school clique with 17 members, and the last is a clique of five friends from other places. The total number of possible connections among 24 network members was calculated to be 552. This is reduced to 312 lines of connections for the members of the three cliques who interact with the case independently of each other (see table 4.25).

Table 4.25: Possible Number of Connections for Three Cliques in a Social Network

Network clique	Number of members	Possible total connections
Neighborhood clique	5	20
School clique	17	272
Other	5	20

Note. Number of members in each clique includes the case herself.

When the number of members in a network increases, the possible lines of connection that one node makes with other nodes increases. This is network size, which is inversely related to the quality of the relationships. When a network becomes bigger, connections are looser.

4.3.3.3 Criteria for Choosing Best Friends

In order to make a detailed analysis of the functions of friendship network, it was necessary to minimize the number of members in participants' networks. Participants were asked to choose five best friends. Each participant was asked to use his or her own criteria in determining whether a friend was a best friend. Some of the cases reported having seven to eight best friends, which indicates the difficulty that adolescents have limiting the number of those they consider best friends. Case 1 had 10 best friends. Nine friends are from school. Her best friends are friends she has had for a relatively long period of time, and who have similar attitudes about and perceptions of certain subjective and objective matters. She does not use economic, educational, or religious factors to choose best friends. The model she uses to choose her best friends is balance theory. This theory says, "When you have a positive or negative sentiment toward X and think that your partner has the same sentiment toward X, you have a positive sentiment toward your partner" (Nakanishi et al., 2008, para. 5). Case 1 makes friends with people if and only if the people have feelings and attitudes similar to her own.

Case 2 chose six best friends. Trust is his criterion for selecting best friends. Trust is the “support that friends offer each other without exaggerating or understating the support.” Friends “never ridicule each other [and] share views and opinions with one another and academic support.” Knowing one another closely is a prerequisite for making someone a best friend. Spending time together is also a criterion used by Case 2 to choose best friends.

Gender is both a positive and negative criterion for choosing best friends. Selecting best friends of the same gender is popular among those who are afraid to have friends of the opposite gender. Case 2 explained why he did not want to have female best friends. He said:

It may be because of the environment in which I grew up that I do not have much exposure to girls. When I was growing up, my parents did not allow me to play with girls. My elder brothers were raised in an autocratic environment, which is part of the reason why they would threaten me if I attempted to go out of the house. Therefore, I can say I grew up in an autocratic family environment where I did not have the freedom to make friends.

This case models both social exchange theory and theory of homophily, which apply reciprocity and assimilation concepts, respectively. The reasons why Case 2 chooses his friends and his age challenge empirical evidences regarding relationships developed later in adolescence and findings that during high school, “friendship patterns become more heterogeneous, and relationships shift in nature and intensity” (Cooksey et al., 2002, p. 118).

Case 2 shows that a poor upbringing may affect adolescents’ relationships with their friends. In a family where children are raised in a democratic manner, adolescents have no reason to choose best friends who are only one gender or another. In addition, these kinds of families allow their adolescents to invite their best friends to their homes. Case 4 reports that his

“parents should know who my best friends are. Not only that, but it is important that I invite my best friends to my house so they can become familiar with my family’s way of life.” Here, the criterion for best friendship goes beyond the personal interest of the case.

Mutual support in relation to academics and an interest in helping parents were also reported to be main criteria for choosing best friends. Case 6 selected two boys as his best friends since they help their mothers. Two network members are best friends because they are good at helping their mothers. One of the friends is his best friend since he assists the case informant with his schoolwork. The ability to keep certain personal issues confidential is an important criterion. Female participants listed potential boyfriends as their best friends.

4.3.3.4 Degree of Influence in a Network of Best Friends

Degree of influence is a measure of centrality of an actor. It is tough to identify who has influence in a network of best friends. The first challenge is that the information that the respondent gives may be biased, as they may provide such information based on their own truth and outlook. The other challenge is understanding the concept of influence. How can influence be measured? What factors determine whether or not someone is influential? The questions concerning who influences whom were: “Do any of your best friends share their worries and concerns with you before sharing them with anyone else? How do you know that you are the first person with whom they share their concerns?” One of the cases stated, “One of my best friends shares her concerns and secrets with me because I am the only person whom she trusts enough to share her private life with.” She shared that her friend who shares her problems with her before telling others:

Never even goes to school when I am absent and she has something she wants to share with me. She does not want to go to school because she is afraid that she may tell

someone else before she tells me. I remember one day, my friend knew that I was not at school and she called me before class started. When she found out that I was not going to school, she decided to come to me instead of attending class so that she could share her concerns with me. (Case 1)

If one wishes to earn a person's trust and exert influence over him or her, it is very important to be able to keep secrets. Case 1 said " am committed to assisting my friend to solve problems in whatever way I can. Unless it is with her consent, I do not share the information with anyone else. I believe this makes my friend trust me."

This demonstrates reciprocity and mutual benefit (theory of social exchange). However, the trust is only unidirectional. Case 1's friend shares her secrets, but Case 1 does not. She gave the following reason as to why she is not interested in sharing her secrets. "I think she does not understand the feelings of others, while others really understand her feelings. When I tell her something, she doesn't say anything." This is a clue that even if a person receives firsthand information from someone, it does not necessarily mean that he or she shares information with that person. This may contrast with the general belief that there is mutual trust among social network members, the main tenet of social exchange theory. In reality, although someone trusts another person, it does not necessarily mean that there is trust on both sides of the relationship. This is what is called an asymmetric relationship.

Case 2 states that three of his six best friends share information with him before they share it with others. His only proof of this is that he has never heard the information from anybody else before his best friends told him. Nevertheless, he did not deny that his three best friends might share with each other even before they tell him. He said, "Two of my best friends

in particular may share information when I am not there, but later they tell me. This strengthens trust among us.”

Case 10 influences at least two of her best friends, whom she calls her “secret providers.” Birke and Zeberga trust her advice and share their concerns with the hope that she will find solutions or help them solve problems. However, she did not have proof that they provide her with information before sharing with others. She stated of one of her friends, “Whenever I ask other friends to find solutions for a problem he has encountered, they usually tell me that he did not communicate with them about the issue.” The rest of the seven cases did not share any proof of their influence on their best friends. They explained that their friends provide them with advice and support regarding their education and other aspects of life.

4.3.3.5 Roles and Activities of a Network of Best Friends

Individuals establish friendships for a purpose. Each member of a friendship has particular roles for which he or she is responsible. These roles and activities are linked to the relationship that each member establishes with each of the other members. In none of the networks drawn by the case participants was every member linked to every other member. One reason is that individuals come from different friendship categories. Some are school friends, while others know each other from the neighborhood, theater clubs, or other places. As Hanneman and Riddle (2005) note, “Fully structured networks (i.e. one where all logically possible ties are actually present) are empirically rare, particularly where there are more than a few actors in the population” (p. 41). Figure 4.2 illustrates the connections between members of a network of best friends drawn by one of the cases.

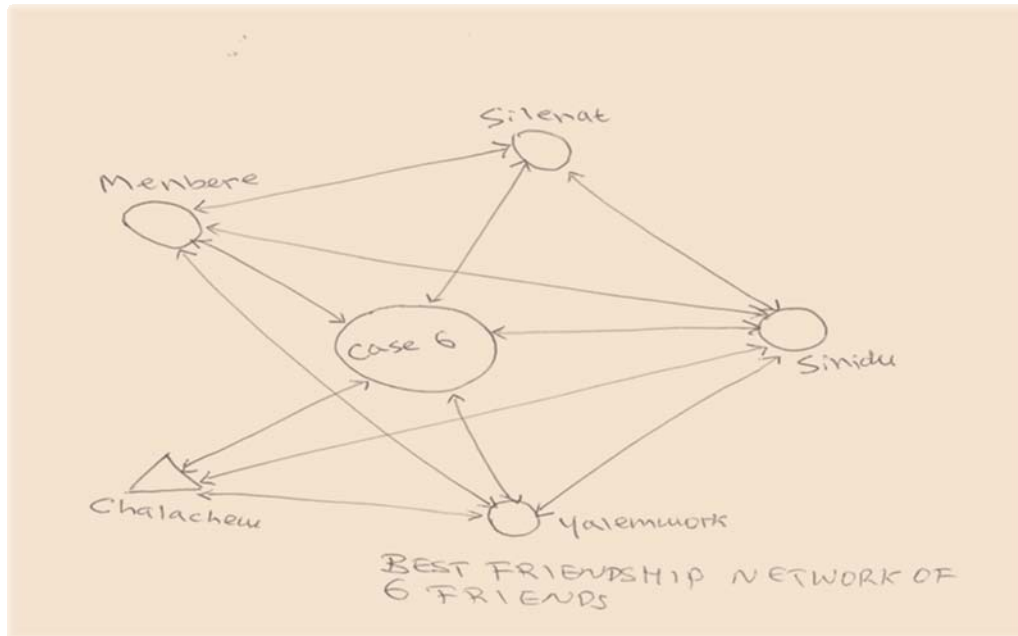


Figure 4.2 Friendship Networks of Six Best Friends

Most of the six members of the network depicted in figure 4.2 have established connections with each other. Each of the network members come from a different friendship category and plays a specific role in the network. For example, Silenat is a female friend from the neighborhood and has connections only with three other members, including the case. Case 6 and Silenat study together and go to the library and other places together. Sinidu is also a friend

from the neighborhood as well as one of Case 6's school friends and has the largest network ($K=1$), with connections to five network members. Case 6 and Sinidu study drama together. Both of them are involved in the theater, and they study scripts together. Yalemwork, Case 6's third best friend, is from her neighborhood; their relationship is entertainment oriented. She has connections with four network members, including the case. They watch films and play football together. The fourth best friend is Chalachew, with whom Case 6 plays football, perform household chores, and fights with other groups of friends. Chalachew is one of Case 6's best friends and theirs is probably the strongest relationship. In the words of Case 6, "Chalachew is the best of best friends, since he is everything to me." Menbere, who is the fifth best friend, is a special friend to Case 6. They eat lunch together at school, have picnics, walk home from school together, and spend almost all their time together. Menbere and Chalachew, whom Case 6 calls "the best of best friends," are not connected to each other. Both friends want Case 6 to spend most of her time with them, which makes them rivals. Case 6 does not want them to quarrel because of her. Case 6 prefers not to introduce them to each other as friends of hers, so these two friends do not know each other.

Case 1 is female and has the most best friends. She has eight friends, but she has the most isolated connections with her best friends. She engages in a variety of activities with each of her eight best friends, with whom she became friends in different places. For example, she studies and likes to chat about love with her friend Bedilu. Another friend named Sara is the one who provides information about entertainment, picnics, and all other recreational activities. Another friend, Menbere, shares her problems, and Case 1 is always assisting her in solving her problems. With Semahegn, Case 1 tells jokes and discusses films, love, and friendship. In general, Case 1 helps her female best friends solve their problems but engages in recreational activities and

romantic relationships, plays games, and watches films with her male best friends. Female friends are problem solvers, and male friends provide entertainment.

Case 2 is a male, and all the members of his network are males. With each of his best friends, he engages in the following activities: playing games, watching films, and discussing family affairs or sex. With two of his friends, Yitbarek and Yohanes, Case 2 discusses films, music, and plays football. With his friend Tenagne, Case 2 discusses sex. Semahegn is the friend with whom Case 2 discusses family issues such as family conflicts, relationships with their parents, and economic and social issues that affect their families. Case 2 has no particular issues to discuss with two of his friends, Zekarias and Esubalew. He reasons that they are younger than he is and are not mature enough to discuss these issues. These two friends are responsible for performing minor tasks such as gathering information about other groups of friends and providing information to network members. Case 2 says that “to discuss sex, in most cases, you need to have friends older than you.” It is interesting to see how members of a network share responsibilities so that the network functions properly. The theory of reasoned action argues that “the decision to engage in behavior is based on the outcomes that the individual expects to accrue from the behavior” (Gillmore et al., 2002, p. 886). Case 2 intentionally chooses older friends with whom he can discuss sex. The outcome is satisfactory in that he gets a better orientation to sex, as his older friends are more likely to have had sex than his younger ones.

Case 3 is female. She has many issues to discuss with her best friends, including academics, theater, boyfriends, her life experiences as a role model, family affairs, and match making. She discusses each of these subjects with one best friend or a couple of friends. Best friends can be good or bad role models. Case 3 reported on the experience of one of her friends and how she became a negative role model for her.

With Tsion, I discuss many things. She has two children. I asked her why she has two children, because I wanted to learn from her. She told me this happened when she was a student. She married a man and dropped out of school. However, she got a divorce after she had her first child. She gave birth to a second child by another man. She told me that it was a mistake to marry and have two children when she was still a student. Based on her own experience, she told me that there is no need to have a boyfriend while someone is a student. From her mistakes, having two children while she was still a student, I got good lessons. Of course, she told me that she was not forced to do anything in her relationship with her husband. When she advises me not to have a boyfriend, I always ask her why. Her response is that having a boyfriend when you are a student will negatively affect your education. I ask her what is wrong if I have a boyfriend. Her response is “You will be ruined.” Although she is my friend, Tsion is a negative model in terms of having sex at this age.

This example demonstrates that friends can act as role models, and that individuals can make choices to do or not do something based on the stories their friends tell them about their own experiences.

Case 5 is male. Case 5 does not have much interaction with the members of his network. Yet he does very funny things with one of his best friends. He and his friend Sinidu do many antisocial things together, and they are known for their bad behavior. Case 5 shared what he did in his own home in the company of his friend Sinidu.

Once, at my house, a *doro wat* [chicken soup] was prepared. I was at home with my friend. We agreed to taste the *doro wat*. It was too delicious. We kept sipping it. We did not realize that we had finished it until we were fighting for the last bone of chicken.

This kind of friendship supports the belief that friends encourage the development of bad behavior. Case 5 has other friends who engage in positive activities with him, which are mainly related to school. His best friend, who is a girl, showed him how to make love. Case 5 reports that a female friend close to his age took him to her house one day and told him a story about other adolescents' sexual experiences. In the middle of the story, she kissed him as if demonstrating what happened in the story. He stated that after their first kiss, "I felt something unusual in my body and we had sex."

Case 7 is male. He and his four best friends provide each other with academic support to each other and study drama together. He and one of his best friends discuss helping out their parents. The case also reports that playing football and visiting sick people are activities he does with his best friends from the neighborhood. In order to get money to buy food and other things for the sick, Case 7 and his friends occasionally engage in business activities, such as washing cars and carrying goods, and sometimes ask their parents for money. Cleaning their rooms and streets in the village is an activity in which he and his best friends regularly engage. Case 7 also knows an artist whom he wants to make his role model so that he can be a good artist in the future. The father of one of his best friends is a well-known artist, and Case 7 wants to learn how to become famous in the theater. In addition, he has another best friend who has gone with him to visit many historical places, including monasteries. Case 7 demonstrates that even a few friends can engage in a number of activities that may be difficult to do alone. Friendship is a means of gaining exposure to many things, both good and bad.

Adolescents may choose different friends for different purposes. The most important criterion for choosing friends is an interest in engaging in the same activities. As Kandel (1978) described, "An important dimension of child and adolescent peer relations is the behavioral

similarity between individuals and their peer affiliations” (quoted by Kiesner, Poulin, & Nicotra, 2003, p. 1329).

Case 8 is male. Case 8 enjoys participating in a cultural activity called *mahber*, which is different from other activities that he engages in with his best friends. He engaged in Mahber with neighbors who are not necessarily his best friends. *Mahber* is a gathering of friends and neighbors with similar religious beliefs who get together to honor a particular saint. Its purpose is to provide spiritual, emotional, and social support to its members and to assist poor people through almsgiving. Case 8 and his friends support each other academically, play football together, and accompany each other to school and back home.

Case 9 is female. She is the only case whose friends are all female. With at least four of her best friends, Case 9 discusses problems they are having at homes, school, and other places. She is afraid of being asked about anything by teachers, boys, and strangers on the street, and her four friends share her fear. They share information and discuss how to get out of answering questions about school, their parents’ questions about their friends, or questions about sex. Case 9 has one best friend who is a joker, Seneit. This friend does not care about issues that concern the others. Therefore, whenever the rest of her friends get together to discuss issues that bother them, they do not invite her. But when they need some relief from stress, they invite Seneit and ask her if she has a joke to tell them. Case 9 explained, “I tell you, Seneit always makes jokes and she makes us laugh. Without her, life would always be boring and dark.” This demonstrates that a combination of interests and temperaments in a network of best friends is important for creating balance between discussion of worries and entertainment.

Case 10 is a female who has frequent interactions with her friends. She has both female and male best friends. Through one of her best (male) friends, she has connections with another clique, a group of adolescents that functions on its own.

Case 10 and her best friends discuss sex and their problems. She has a special best friend whom she calls “a brother,” with whom she discusses all her personal issues. With Zeberga, Case 10 discusses academic issues, sex, family support, addiction, and love. Case 10 and her best friends provide each other with academic support, help solve each other’s problems, play games, and discuss family issues.

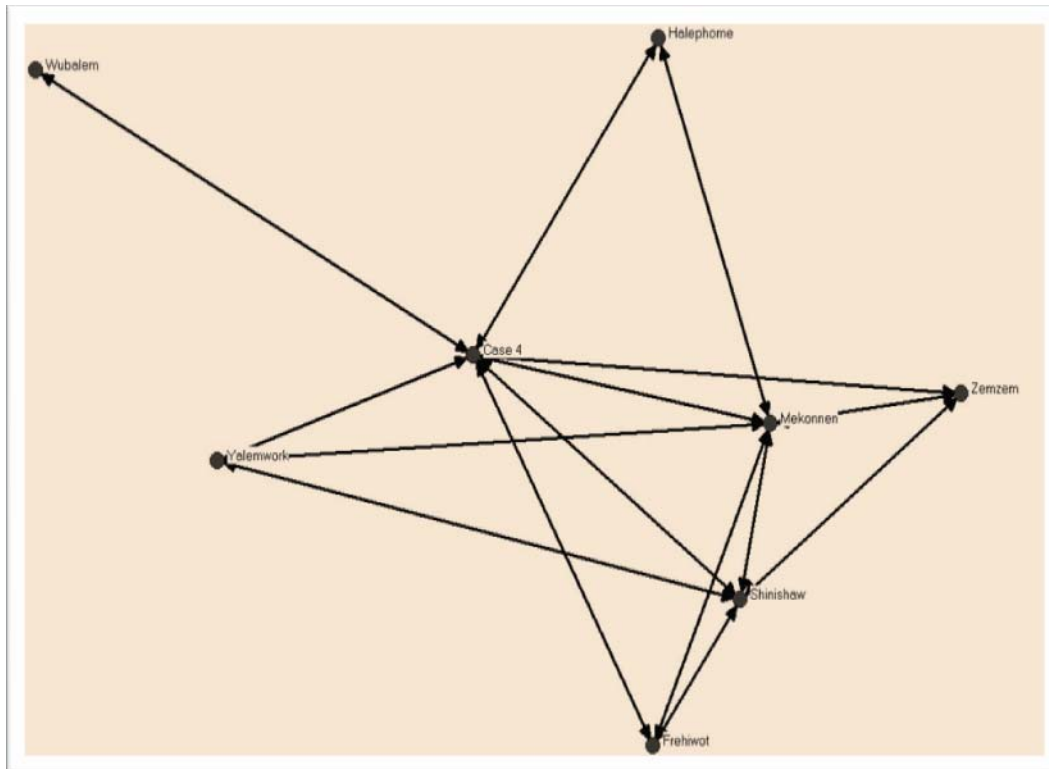
4.3.3.6 Connections in Friendship Networks

A connection describes who communicates with whom or who interacts with whom in a network system in day-to-day life. The structure, nature, and modes of connections that members in each best friendship network established are depicted here by sociograms drawn by the participants. The sociograms are the participants’ representations of their own understandings and interpretations of social networks.

Through their best friends, some participants develop other social and sexual relationships. Cases 4 and 10 are good examples for the following reasons. First, they provide a wealth of information on their friendship networks. Second, they chose their best friends from their network members, who come from different settings. Third, Case 4 represents male participants, and Case 10 represents female participants. Fourth, through their best friends, Cases 4 and 10 demonstrate connections to other networks independent of their own social networks or cliques. Finally, they have a large number of relationships, with over 20 members in their friendship networks.

Case 4 identified seven best friends: four from school, one from the neighborhood, and two from recreational activities. Figure 4.3 illustrates the relationships that Case 4 has established with each member of the network.

Figure 4.3: Interactions among Eight Members of a Friendship Network



Information about these relationships was collected from Case 4, who was assigned the role of “name generator.” In a social network analysis, the name generator reports who is connected among the eight best friends. “In a complete or direct network, everyone is connected with everyone else symmetrically, with 56 possible connections. Fully structured networks—one where all logically possible ties are actually present—are empirically rare, particularly where there are more than a few actors in the population” (Hanneman, 2005, p. 41).

In figure 4.3, there are network members who either are connected partially or are isolates. For example, Wubalem has connections only with Case 4. On the other hand,

Mekonnen, who has the highest degree of connections, connects to six of the seven network members. Halephome has a connection with Mekonnen and Case 4, both of whom have many connections. Therefore, Halephome may be the one with the densest network (highest-quality relationship), since he may generate information through his connections with Case 4 and Mekonnen, who control information flow through the network system. Table 4.26 is an alternative illustration of the connections between Case 4 and his best friends.

Table 4.26: Adjacency Matrix of Eight Actors in a Network of Best Friends

	Case 4	Halephome	Yalemwork	Zemzem	Wubalem	Zemedkun	Mekonnen	Frehiwot
Case 4	0	1	1	1	1	1	1	1
Halephome	1	0	0	0	0	0	1	0
Yalemwork	1	0	0	0	0	1	1	0
Zemzem	1	0	0	0	0	1	1	0
Wubalem	1	0	0	0	0	0	0	0
Zemedkun	1	0	1	1	0	0	1	1
Mekonnen	1	1	1	1	0	1	0	1
Frehiwot	1	0	0	0	0	1	1	0

Note. The number 1 denotes presence of connections, and 0 denotes absence of connections.

Table 4.26 shows that Mekonnen, who has connections with six members, is the most popular friend after the ego, who has the maximum number of connections of $K-1$, where K is 8. The least connected actor is Wubalem, who has a connection only with the ego. A gender-specific analysis indicates that female actors have connections with only male actors, while male actors establish connections with members of both genders. From table 4.17 male actors in Case 4's network are Halephome, Zemedkun and Mekonnen.

The figure and matrix for Case 10, who is female, show that she has a network of five best friends. Case 10 has denser connections than Case 4. This is because when the number of actors (network size) decreases, the density, or quality, of connections increases. According to Hanneman and Riddle (2005), "as a group gets bigger, the proportion of all of the ties that could

(logically be present—density—) will fall, and the more likely it is that differentiated and partitioned groups will emerge” (p. 41).

Figure 4.4: Complete and Partial Network Connections among Six Friends

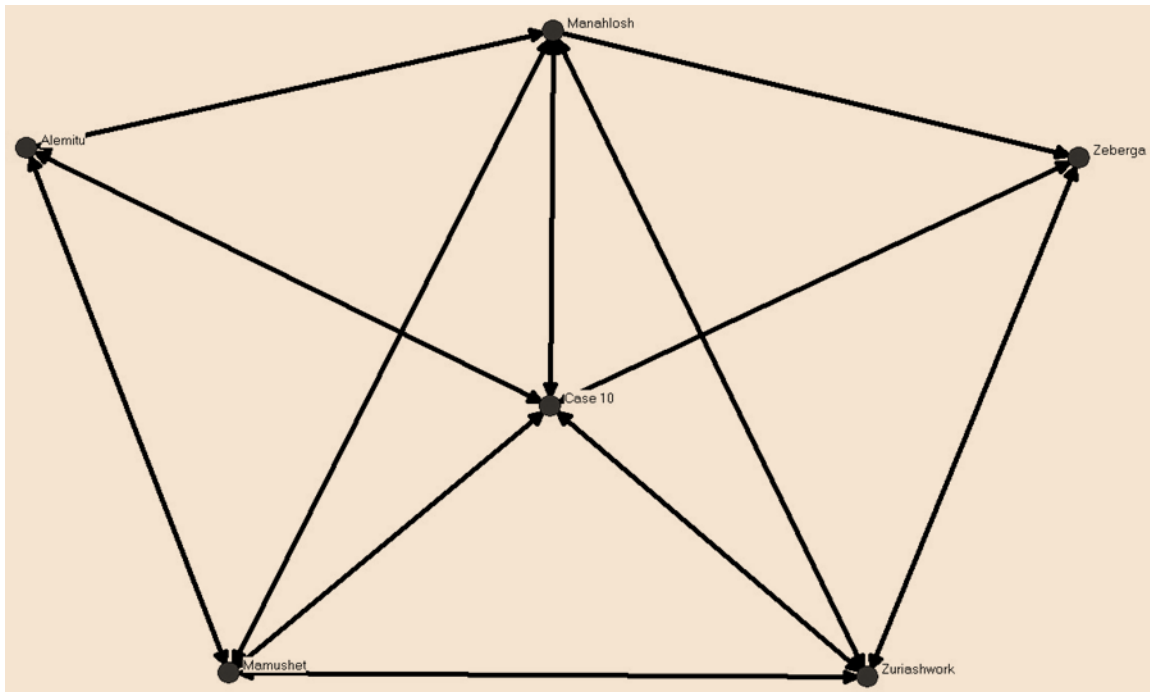


Figure 4.4 shows the connections between the six members of a friendship network. Six actors can establish a maximum of 30 links, $K \times (K-1)$. This would be reduced to 15 in an asymmetric connection or when the links are unidirectional. In fact, there are 23 links out of 30 possible links. The case and a friend by the name of Manahlosh have the most links in the network; each of them connects with five other friends. Two other network members have four links, and the remaining two members have links to three network members. Comparison of Case 4 and Case 10, and their connections with their best friends, shows that the latter seems to

have a more homogenous network. Table 4.27 illustrates the connections of the networks of Case 10's six best friends.

Table 4.27: Adjacency Matrix of Six Actors in a Network of Best Friends

	Case 10	Zeberga	Zuriashwork	Manahlosh	Alemitu	Mamushet
Case 10	0	1	1	1	1	1
Zeberga	1	0	1	0	0	0
Zuriashwork	1	1	0	1	0	1
Manahlosh	1	1	1	0	1	1
Alemitu	1	0	0	1	0	1
Mamushet	1	0	1	1	1	0

Note. The number 1 denotes presence of connections, and 0 denotes absence of connections.

Case 10 is connected to another clique through one of her friends by the name of Zeberga. Table 4.18 shows that Zeberga, who only has links with Case 10 and another female member, has the least number of links. However, he has other connections, which helps Case 10 establish links with other friends. Unlike the previous network, where the case is a male and there is an absence of connections among female members, in this network, female members establish their connections irrespective of gender. In contrast, although they are few in number, male members do not establish links among themselves.

Cases 4 and 10 were also selected to analyze participants' preferences regarding the gender, age, educational status, and place of residence of those they call their best friends. A combined analysis of the two cases follows.

Age: Female participants prefer having friends who are about their age, while male participants prefer having older friends. Case 10, who prefers having friends her age, argued that if she makes friends with older persons there might be a mismatch in attitude and their world outlook. Case 4, who prefers making friends who are older, argued that this provides the opportunity to learn from their life experiences. If they are successful in life, they can teach him

how they became successful. "I can learn from them and would like to have relationships with people who are older than me." A quick scan of the age preferences of the participants shows that six of the 10 participants prefer having older friends. This is, of course, in contrast with what McPherson et al. (2001) claim in their study of homophily in social networks: "In studies of close friendship, homophily on age can be stronger than any other dimensions" (p. 425).

Gender: Case 10, who is a female, prefers to have female friends. However, Case 4, who is a male, does not have a gender preference. Neither case was able to give a reason for this gender preference. However, data from the remaining cases were analyzed in an attempt to learn why adolescents prefer having friends of one gender rather than the other or are indifferent. One case reported having no preference. Another case reported that although her preference is for female friends, she gets more out of her relationship with one of her male friends than with others. He "explains things about males to me that my female friends cannot teach me." Two 16-year-old males prefer having male friends because "males are not shy talking about sex." Two females who prefer having female friends argued that when they are with other females it is easy to talk about sex. Talking about sex with males is shameful. One of them stated, "As females, we face similar problems. We have similar needs and we can easily understand each other." Feelings about gender preference are more or less mixed. Older male adolescents seem to be indifferent. On the other hand, younger males strictly prefer having male friends. Older female adolescents seem open to having friends of both genders but need males to be members of their networks.

Settings: While Case 4 prefers to have friends from school, Case 10 prefers for her best friends to be from her neighborhood. Each case had his or her own reasons. Case 4 likes making friends from school because school friends can help him academically. "As I spend most of my time in school, I need friends from school so that we can spend time discussing common

concerns, especially academic issues.” Case 10 likes making friends from her neighborhood. “I prefer having friends who are my neighbors since we know each other at a family level and we understand each other’s interests.” However, Case 10 has no best friends from her neighborhood. “At the moment, both my parents and the parents of other adolescents in the neighborhood are very strict and they do not allow us to have free time to discuss issues of common interest and hang out together.”

The rest of the cases all had different views. One case explained why he needs his best friends to be from outside his neighborhood. “When friends live far from the neighborhood, it helps to maintain affection for long time. If you have frequent contact with best friends, you get bored.” Another case also prefers to have best friends who do not live in her neighborhood because of the need for acceptance and dignity. “When friends live far from the neighborhood they accept whatever I tell them about myself or about my family, whereas if my friends are from my neighborhood, they may know about my life in detail and therefore they cannot accept what I tell them. Rather, they may have different interpretations of my views in light of what they know about my family life.” It is interesting to see that some of the participants’ perceptions are contrary to the views of network researchers, who say that social networks are established by people who have intimate knowledge of each other, and that physical proximity is an important factor in a friendship.

Another case had a diametrically opposite view:

I prefer for individuals who live in my neighborhood to become my best friends because we have a common understanding about many issues since we have a similar lifestyles. If we establish friendships with individuals who live outside our neighborhoods, the first challenge emerges from differences in outlook influenced by local experiences. As the

result, we have different interests and there may not be a sufficient common goal that will guide us.

This reflects the strong views of participants who feel that geographic proximity is an important factor in a friendship regardless of common interests that may be due to age, gender, or education. Those who argue that geography has no influence on friendship quality disregard the importance of physical proximity and similar life experiences in determining, if not influencing, the quality of social network relationships.

4.3.3.7 Centrality and Power

The most important goal that an adolescent has in a network relationship is to gain influence so that other members of the network recognize his or her authority. Thus each member of a peer network strives to occupy the center of the network. According to Hanneman and Riddle (2005),

All sociologists would agree that power is a fundamental property of social structure. Network analysis often describe the way that an actor is embedded in a relational network as imposing constraints on the actor and offering the actor opportunities. Actors that face fewer constraints and have more opportunities than others are in favorable structural positions. (p. 60)

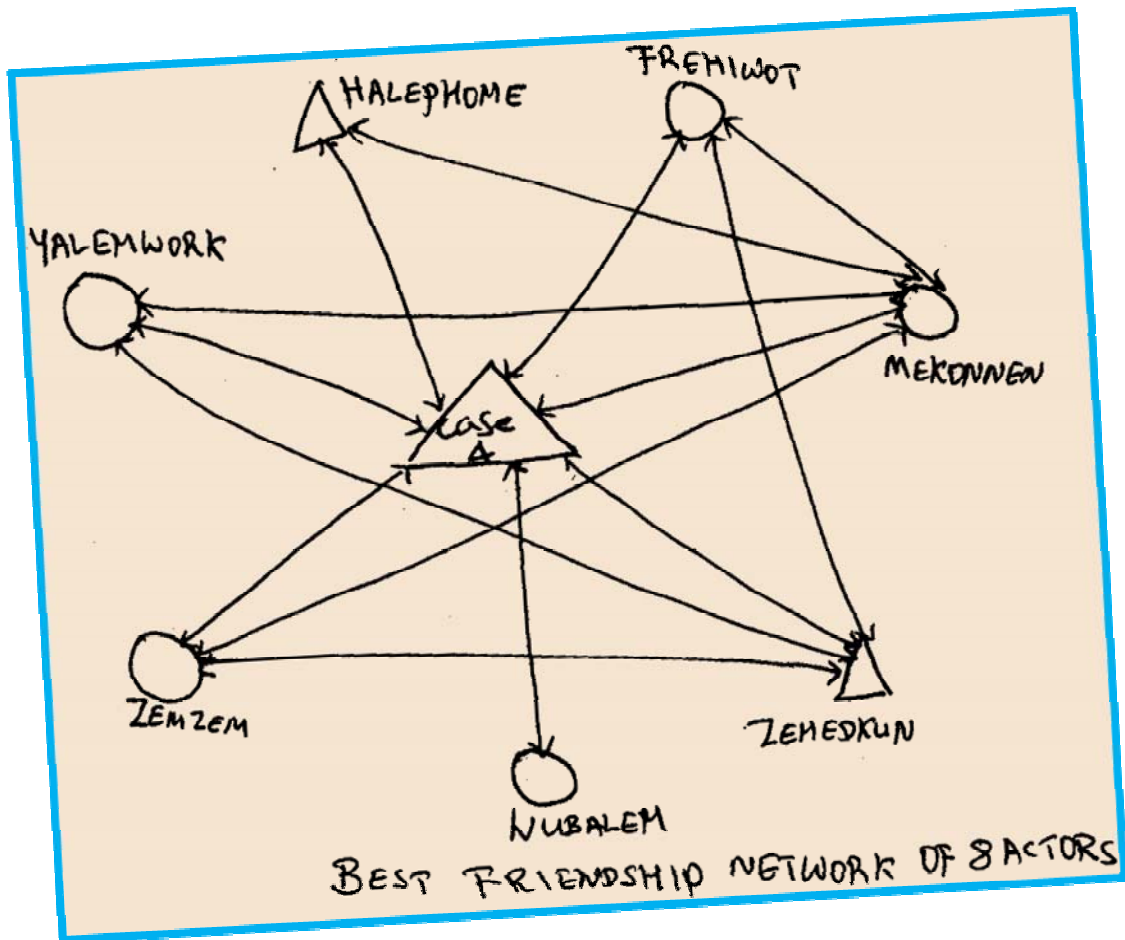
In network analysis, the concern is not the power that an actor exerts over the other actors. Rather the goal is to describe how an actor influences or controls the flow of information within the network system. In this study, the three centrality measures were assessed in terms of the extent to which each participant is central to the information flow in his or her network of best friends. Answers to the questions “Are you influential person in your friendship network?”

How do you measure the level of influence you exert on the rest of friendship members?" were the basis for analysis.

A case-by-case analysis of information on the issue of centrality indicates that every participant has direct and close access to the rest of the members in his or her network of best friends. The critical case study participants have influence on some of the members in their best friendship networks. For example, Case 3 stated that, of the 21 members in her friendship network, she has influence on 10 of them. The direct access she has to every issue such as information on her friends sexual affairs, family interaction and their academic success measure of her influential power over these 10 friends. Moreover, these actors consult her before they engage in activities, and thus she is the center of communication in the network. The interview also revealed that she does not have mediation power, so this case lacks betweenness centrality.

The level of influence that Case 3 exerts over members of her friendship network indicates that she has minimal control over the flow of information. She reports there are only two members who directly communicate with her and seek advice from her. Thus, her position of centrality is weak. The issue of centrality or power of influence for Case 4 is confined to his best friendship circle. Out of his seven best friends, he has the most centrality power over Wubalem, Zemzem, Yalemwork, Halephome, and Frehiwot (see figure 4.5).

Figure 4.5: Partial Centrality Measure of Case 4



Case 4 has complete control of communication between Wubalem and the rest of the members of his network of best friends. If Wubalem wants to communicate with Halephome, for example, she has to pass through Case 4 (who thus has betweenness centrality). Similarly, if Yalemwork wants to communicate with Zemzem, she has to go through one intermediary. First, she has to communicate with Case 4, who holds the central position. Then she has to go the final step to communicate with Wubalem (closeness centrality). Mekonnen has more access to other

members Case 4, who holds the central position (degree centrality). This is also the geodesic distance measurement.

Other critical case study participants have different levels of positional power in controlling information and other resources within their network of best friends. For example, Case 5 reported on his influence and power and was confident that he holds a central position in his friendship network. He reported the following: “My influence is very strong. I communicate easily with my friends. My friends fully accept all my ideas. I am the one who disseminates information and provides the necessary guidance to each of my close friends.” Figure 4.6 shows the sociogram of Case 5’s network.

Figure 4.6: Complete Centrality Measure of Case 5

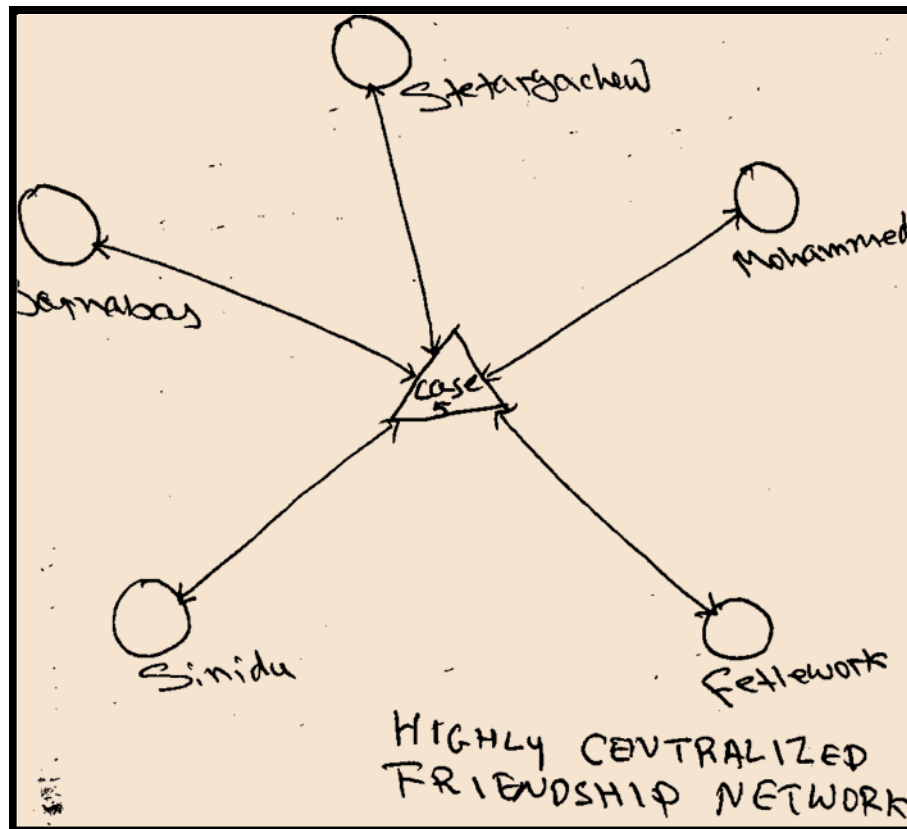


Figure 4.6 shows highly centralized connections among six friends. Case 5 has full control of the resources, including information, in the friendship network. Case 5 owes his position to the fact that his friendship network consists of friends from various settings. For example, Nardos and Tsetargachew are friends from the school. Even among those who go to the same school, there is no direct communication. Case 5 reported that these friends are connected through him. Fetlework is his friend from theater club, and as a result she does not have frequent contact with other friends in the network, only receiving information through Case 5. Mohammed and Barnabas are friends from the neighborhood who live on different streets, and Case 5's family lives in the street in between. This has made him a close friend and an intermediary between them.

4.3.4 Engagement in Sexual Activities

In Study A participants were given a list of sexual activities and asked to report which ones they perceived as sexual activities. Respondents reported which sexual activities from the list they engage in. Quantitative data were generated based on their answers. In the critical case study, data were generated based on the respondents' perceptions of and attitudes toward sex and their own sexual experiences.

Three important issues are analyzed in this section. The first is the perceptions of and attitudes about and meanings ascribed to sexual activities. The second is explanations given for the participants' sexual encounters. The third is the participants' involvement in social networks (mainly their friendship networks), and the influence of these networks on sexual behavior.

4.3.4.1 Perceptions of, Attitudes about, and Meanings Ascribed to Sex

To understand and analyze the participants' perceptions of and attitudes toward sex, and meanings they ascribe to it, two strategies were employed. Participants were asked to "Tell me

about the behaviors that you consider sexual activities.” First, responses given by participants without probing were recorded, and then information generated through probing was recorded. Participants of both genders had mixed feelings about making a list of activities that they considered sex. Male participants were at ease in talking about their perceptions of and attitude about sexual activities, but female respondents, on the other hand, looked shy and ill at ease. Some of them bowed their heads, which is a sign of shyness and indicates uneasiness. To make participants to feel at ease, the PI reassured each of them that the information they gave was confidential. Even with this promise, three participants did not provide information suitable for analysis. The remaining seven participants shared a variety of perceptions of and attitudes about sexual activities, as well as the meanings they ascribe to sex.

The initial response was simple and straightforward. All seven participants responded that sexual activity is just sexual intercourse between a woman and a man. Two participants added other activities to their list without further probing. One participant believed that both sexual intercourse and kissing are sexual activities. Another participant expanded on this and included hugging and fondling the sex organs of another person as sexual activities.

Once probed, the participants began to list other activities to their definitions of sexual engagement. The list of sex-related terms that were operationally defined and used to generate data in study A was used to motivate participants to continue the discussion. The views of six cases who generated data for analysis are presented below.

Case 1: In addition to sexual intercourse and kissing, Case 1 considered masturbation a sexual activity. She also mentioned some motivating factors that lead to the initiation of sexual activities. “For example, the use of drugs such as marijuana and *khat* and alcohol motivate individuals to engage in sexual activities.” After being probed, she also added fondling the sex

organs of another person as a motivating factor. This case did not believe that hugging members of the opposite gender and watching sex videos and live sex are sexual activities. For Case 1, “watching is different from doing.”

In short, Case 1 perceived three important things. First, there are activities that are considered sexual practices (e.g., sexual intercourse, kissing, and masturbation). Second, there are activities that are not considered sexual but often lead to engagement in sexual activities (e.g., drug and alcohol use). Third, some activities are not perceived as sexual activities (e.g., watching sex videos and live sex, as well as physical gestures like hugging).

Case 3: Case 3 is one of the few cases who did not seem to comprehend the question, not because it was a complex question, but because she did not want to engage in the discussion. “What is a sexual activity?” she said. “I do not understand the question.” Therefore, it was necessary to split the phrase into two words—“sex” and “activity”—and provide further explanation of the terms, so that she could try to respond to the question. After pausing for awhile, she answered, “If it is between members of the opposite gender, it means sex.” Case 3 did not know whether kissing is a sexual practice. Watching sex videos and live sex is a motivating factor that leads to sexual activities rather than constituting sexual activities on their own. Case 3 perceived sexual engagement between members of the same gender as sexual activity. Case 3 had difficulty expressing her perceptions of and attitudes about sex. She preferred to remain ignorant of most of the operationally defined terms of sexual activities, responding, “I do not know.” Nonetheless, her observations of what is going on at her school among adolescents constitute some of the reach data in this study.

Case 4: Case 4 was one of the three cases who reported freely about their sexual experiences and provided valuable information on various sexual activities. Case 4 also added

oral sex to the list of sexual activities, which was not included in the operationally defined sexual terms used in Study A. Similar to the other cases, Case 4 mentioned sexual intercourse between members of both the opposite and same gender, kissing, and masturbation. He also qualified how and when hugging is a sexual behavior. According to Case 4, hugging is a sexual experience if it happens at a party. “Hugging at a house party, where there is drink, dance, and other activities that stimulate sex, has no other motive than becoming the first phase of sex.”

Although the cases described so far did not consider watching sexual videos to be a sexual activity, Case 4 believed that watching sexual videos is a sexual behavior, especially if it takes place in the company of members of the opposite gender. While Cases 1 and 3 perceived masturbation to be a sexual practice, Case 4 argued that for masturbation to be called a sexual activity, there must be another person present to support the gratification.

Case 5: Case 5 considered hugging a normal part of social interactions rather than a sexual behavior. “Hugging is not different from our daily social communication,” she said. She argued that kissing is only one step lower than sexual intercourse. Whether or not watching sex videos and even live sex is a sexual activity depends on the settings where these activities take place. In particular, watching live sex is more related to sexual intercourse.

Case 5 introduced the idea of what he called group sex. “Group sex is most commonly done by a group of boys and one girl in the jungle. It could also happen even in at the home of the girl or one of the boys participating in the group sex, when no one else is around. Group sex usually starts with the consent of the girl. Boys do not force group sex. However, once group sex starts, it may go far enough that the girl may lose her ability to say no, since she may become unconscious from excessive sexual activity in trying to satisfy all the boys in the group.”

Watching live sex is a planned activity and leads to sexual intercourse, which participants see as the most gratifying form of sexual activity.

Case 9: Case 9 introduced the idea of *eq'a-eq'a cha'wata*, which means, “playing sexual games with goods” and is the Amharic name for exploring sex. The goods help adolescents to play different games such as baking bread, boiling tea, constructing a house from barks and leaves of trees and the like. When the game is over, participants sleep together, acting as if they are real couples. Case 9 believed that watching live sex is a sexual activity because in the absence of parental education about sex, adolescents learn how to have sex by watching their peers have sex and by engaging in *eq'a-eq'a cha'wata*.

Younger adolescents usually start playing with goods then act as if they are carrying out household responsibilities, attaching themselves to each other as husband and wife. This usually leads the “husband” and “wife” to sleep together, and others who act as children watch the actors try to do what couples in the real world do in bed—having sex. Case 9 stated that “a young boy who has watched sexual films or live sex may persuade a young girl to play *eq'a-eq'a* and practice what he observed in the film.”

4.3.4.2 Externalization of Sexual Activity

“I am single, but she has a boyfriend”, said one of a male case informant “I am single, but he has a girlfriend”, said one of a female case informant. This is the kind of expressions respondents used when asked if there is anyone close to them with whom they can go out for tea, play, or develop any emotional attachment. The question was very easy for Study A participants, of whom 76% ($n = 58$) of males reported having girlfriends, and 37% ($n = 34$) of females reported having boyfriends. However, none of the critical cases answered the question directly. Externalizing the issue by talking about a situation or relationship but describing it as if it

happened to someone else was the main strategy participants used to avoid disclosing their involvement in a sexual relationship. However, through probing, the responses changed. The participants' stories about their sexual activities are summarized below.

None of the participants denied having someone with whom they go to get coffee or tea or even to parties, to nightclubs, or on other special outings. However, only one male participant used the phrase "my girlfriend." One female participant shared everything she knew about a man who is 18 years old and oversees matters involving day-to-day life, giving her instructions regarding to whom she may or may not talk. She talks with him on the telephone every day and sees him at least three times a week. He invites her to school parties and she does the same thing, but she still says, "He is not my boyfriend." What else can he be? She provided the following narrative.

I do have a best friend who is one of my close friends. . . . He knows much about my personal life and I know much about his personal life. . . . He is really more than a friend. However, I do not mean that our relationship is a kind of brother-sister relationship. It is not also a romantic relationship. Nevertheless, I have strong feelings for him and I guess he has the same type of feelings for me. He usually advises me not to trust my other friends. However, he never tells me why he says this. However, since he has more life experience than I do, I just accept whatever he tells me to do. I know that most of our friends are jealous of our close relationship. He is good. I never want to go a day without seeing or talking to him. We communicate in person at least three days a week. In addition, we call each other every day. When we want to meet, he is the one who usually sets the time. I do occasionally.

Despite the cultural proscriptions that prohibit girls from speaking about sex, most of the information that the participants offered indicates sexual commitment. From this narrative it is clear that the boy wants to control her by isolating her from the rest of her friends. This may be an indication that he desires her sexually or maybe they are already lovers. The participant reported that the boy is one of her best friends. Calling a sexual partner a friend may be common among adolescents when they discuss the relationship with outsiders such as parents, school principals, and even researchers.

There are several indications that a relationship may be a romantic one even when participants did not explicitly provide this information. First, social and sexual relationships both compete with each other and overlap. Second, if friends suspect they see something unusual in the interactions of two friends of opposite gender, this may be because they wonder whether they are involved in a sexual relationship. Case 1 said of her friends: “They never trust us. Even when we are together, both my friends and his, they ask us whether we are only friends or if we are in a romantic relationship.” Third, when a friendship is also sexual, the individuals start to develop jealous feelings whenever one of them talks or walks with other friends.

It is important to add one more example of how adolescents talk about the sexual lives of others where in fact they may be talking about their own sexual encounters. Case 10 reported that she was introduced to a young man at her sister’s wedding. From that day on, the man was her “special friend,” but not a boyfriend. She was asked: “What do you do with this man?” The participant reported that they have lunch or dinner together on a regular basis. They have visited a number of historical places in Addis Ababa and outside the city. Occasionally the man pays her school fees. He gives her clothing and other gifts. Case 10 has a good feeling about him and she reported that he has significant control over her activities; for example, he supervises her

education. He has also given her strict orders not to mix with other friends, whom she called “spoiled youths,” in her neighborhood.

Despite these indications of a serious relationship, she still says, “We are close friends.” Upon being probed for more information about their relationship, she reported that they have pledged to become sexual partners in the future. She was asked why they had not yet begun a sexual relationship. What makes her want to hide their sexual relationship? The PI asked her a tricky question: “When he calls and asks to spend some time together and for you to meet him, how do you perceive him? Do you perceive him as a school friend, a neighborhood friend, a relative—who is he to you?” She stated, “I feel I am going to meet my friend.” Earlier in our discussion, we defined two forms of friendship—social and sexual. Therefore, the PI asked her again, “Which form of friendship is the relationship between you and the man?” At this point, she decided to tell the truth. Finally she stated, “Yes he is my sexual friend and I believe he also considers me his sexual friend.” In addition, she confirmed that they have been engaged in a sexual relationship for a year and a half.

4.3.4.3 Gendered Constructions of Sexuality

Moore and Rosenthal (1993) introduce the idea of gendered constructions of sexuality, which is relevant to this discussion. Sexual activities (but not sexual feelings) are socially constructed. The current study has identified differences between male and female participants in the way they discuss sexuality in general and their own sexual activity in particular. Male case study participants were in general proud to talk about their girlfriends, if they had one, and were at ease sharing information about their sexual encounters. In contrast, female case study participants were not at ease talking about their boyfriends or sexual encounters. For example while a boy said “my girlfriend if he had one, a female said “my educational advisor” or “my

friend.” They did not feel free to speak about boyfriends and sexual behavior. To get information about their sexual behavior, it was necessary to probe at length or to extrapolate from what they said based on the researcher’s experience of interviewing others and from the understanding of specific cultural contexts.

An extended discussion as to whether they had engaged in any type of sexual activities was held with both male and female participants. Gender-based differences in perceptions about sexual engagement are reported in the following pages.

Watching sex videos and looking at pornographic pictures: This was the most popular type of sexual activity, in which eight of the 10 participants engaged. The most common places to watch sex videos and look at pornographic pictures are at video rooms and on mobile phones. Male participants reported they use both video rooms and mobile phones to watch sex films, but female participants only used mobile phones to look at sexual pictures and watch short sex clips. Males report that watching sex videos and pictures is their first experience learning about sex. Females explain that they watch for entertainment. Case 1 reported the following:

I watch pornographic pictures on my mobile phone. Every student who has a mobile phone has a pornographic picture on the mobile phone. Some students use pornographic pictures as screen savers while other students save them in the picture gallery folders. My friends and I never feel strange when looking the pornographic pictures because we have had them for a very long time.

A male participant reported sex videos to be a source of sexual arousal and joy. Case 2 explained:

When I was a 14-year-old boy in seventh grade, one of my friends showed me a sex film at his parents’ house. When I saw the different sexual activities in the film, I was shocked

and felt shy. My friend assured me that it would be okay and I would find it pleasant if I stayed and finished the film. I did as he advised. Then, I started to get happy when I saw a woman wearing a short skirt engaged in sex with a man. Since then, my best friends—both boys—and I get together and watch sex films. We see sex films at school on our mobile phones. This is not so pleasant because we are only able to watch sex films during a very short break. Mostly I see sex films at home while my parents are not around. When I am alone and watching a sex video, I get sexually excited and mostly I masturbate.

The two cases suggest two important things. First, watching sex films and looking at pornographic pictures are considered sexual activities. This is different from the earlier finding. Some participants did not admit that watching sex videos is a sexual activity. Second, both male and female participants reported watching sex videos. Boys consider watching sex videos a serious activity; girls see the same activity as entertainment.

Masturbation: Moore and Rosenthal (1993) write about masturbation as follows:

Even as late as the beginning of this century, physicians, including the Surgeon General of the United States, warned that masturbation was a cause of cancer, heart disease, hysteria, impotence, and insanity. On the other side of the Pacific Ocean, in 1906 a review of a New Zealand Borstal institution . . . elicited the views . . . that masturbation led to imbecility and epilepsy. (p. 3)

Despite the fact that some of the participants, mainly boys, reported masturbating, the belief that it is unhealthy and sinful was accepted by some of the participants in Study B. Case 1 engaged in almost all forms of sexual activities except watching live sex. Although he frequently masturbates prior to having sexual intercourse, he believes that masturbation has serious negative

reproductive health effects. “Masturbation has a side effect. It brings weak sexual performance and also leads to infertility.”

None of female participants reported having masturbated. Three of the five male participants, including Case 4 and Case 2, considered masturbation a means of sexual gratification. Those who practiced masturbation often did so after watching sex films and before beginning to engage in sexual intercourse. They use masturbation as an intermediary stage between kissing and sexual intercourse.

Kissing: Whether or not kissing should be defined as, a sexual activity was a confusing question. All the participants reported having kissed individuals of the opposite gender, but they did not recognize this as an expression of sexual feelings. Even those who had experienced other forms of sexual activities did not categorize kissing as a sexual activity. However, the same group reported kissing to be an activity in which adolescents in general commonly engage. This is another example of adolescents externalizing sexual activity as a something that others do, not something in which they are involved.

Cases 1 and Case 2 reported that they had never intimately kissed anyone although they have experienced kissing someone else. Case 3 introduced the idea of same-gender sexual activity. She reported that there are two girls in her class who kiss each other in an intimate way—that is, differently from kissing that is recognized as a form of greeting. She states, “I have never . However, two girls in our school kiss each other in a very intimate way. Many students know what these girls do.” This is another indication that for adolescents it is easy to report the sexual behavior of others even when they are reluctant to report their own behaviors.

Both Case 4 and Case 5 have kissed others. Case 4 is experienced not only in kissing but also in other sexual activities. Case 5 was very shy when telling his experience of kissing. Case 5

shared that his girlfriend took the initiative when they first began to kiss. He was shy at first, but his girlfriend encouraged him.

4.3.4.4 Sexual Intercourse

Adolescents spoke of their experiences kissing, watching sex videos, masturbating, and engaging in other sexual experiences with little hesitation. Sharing their experiences with sexual intercourse, however, was difficult for the participants in general and females in particular. This finding is supported by empirical studies such as that by Gillmore et al. (2002), who explain, “The nature of friendship patterns, relationship experiences and sexual behaviors differ for males and females, particularly at younger ages. Males tend to report more casual relationships [easily] with their first partners, while females have more intimate first relationships [but having difficulties to share with others about their sexual intimacy]” (p. 118). Even among male participants, only two of the 10 participants freely reported having engaged in sexual intercourse.

Case 4, an older adolescent of 19 years old, started having insertion sex with opposite gender late, at the age of 17. He told the story of the first time he had sexual intercourse, which, according to him, is “the final stage of sexual engagement.”

I met my current girlfriend one evening at my friend’s birthday party. One month after our introduction, my phone rang on a Saturday night. I said, “Hello?” It was my girlfriend. I asked her, “What happened?” She said, “I need you now, please come.” I went to her. She was with her school friends at a restaurant around Bole area. Everyone else was with their girl- or boyfriends, but she was alone. She left them and she asked me if we could spend the night together. I was not actually prepared to spend the night away from home. However, I did not want to reject her. Before I accepted her invitation, I

asked her to promise me one thing. That was, no sex that night. We agreed, and we spent the night together.

I think it was the weekend after we spend the night together that my girlfriend invited me to have a shower with her in a public shower called *filwuha*. That is the place where adolescent couples pay for a shower room and use single rooms not only to take a shower but also to play sexual games—whatever they want to do. When she invited me, I knew that she wanted me to have sex with her. I accepted her invitation and had sexual intercourse—the first time for her, but not for me since I had had sex with another girl in the past year.

It is difficult to know whether it is a female's job to insist that a male have sex with her. Culturally, it is a male's duty to ask girls for sex. Although they do have the same needs and feelings, it is culturally difficult for females to ask for sex. Female participants were asked if females can also ask for sex. Out of the five female participants, three of them said that it is possible these days for girls to ask boys for sex.

A male participant much younger than Case 4 told the story of his first time having sexual intercourse. He was 16 years old at the time of the interview. He met his girlfriend when he visited one of his relatives just about a year ago. Since then, they have gotten together to have tea or coffee, walked together, and sometimes watched films together. Her overtures led to their having sex for the first time.

When I told her that I loved her, our sexual desire got stronger. After school, whenever her parents are not at home, she usually invites me to study with her at her house. But we never study. Whenever go to her house, we always watch sex videos and we talk about sex. I think she is older than I am by two years. Usually when she comes close to me, I

feel warm but also I am afraid. I usually sweat. However, one day, we saw a very interesting sex video and I could feel myself getting an erection. My girlfriend knew that I was feeling sexually aroused and she took off her dress and invited me to lose my virginity with her. It was also her first time having sex. I accepted her offer and we had sex.

The above two cases illustrate emerging cultural acceptance of sexual negotiations. It is typically believed that it is the job of the man to play a more active role in sex, but there is some indication that women can also take the initiative.

4.3.4.5 Determinants of Sexual Debuts

Two important factors that affect adolescents' initiation into various sexual activities are place and communication. In Study A, the settings in which adolescents experienced their sexual debuts included parents' houses, friends' houses, school, bars and hotels, and recreational areas. Three of the critical case participants mentioned using public bathrooms to take a shower and engage in sexual activities.

Adolescent-parent communication was mentioned by survey respondents as one of the factors that influences their decisions to make their sexual debuts (although the result was not statistically significant). The critical case participants agreed and provided explanations for the influence of adolescent-parent communication on their sexual debuts.

Each participant saw his or her communication with parents as having a positive effect on the decision to engage in or postpone engaging in sexual activities. Those who were not yet involved in any form of sexual activity believed that good advice and regular communication with parents helped them delay their sexual debuts. Similarly, those who were sexually active appreciated the democratic family thinking that enabled them to make this decision. Case 4 is a

good example of a respondent who argued that adolescent-parent communication enables him to make decisions about sex on his own:

I live with my mother and three of my siblings (two boys and a girl). Our mother speaks freely with us about our girlfriends and even gives us helpful advice on how we should care for our girls. Because of the freedom my mother gave me, soon after I started going out with my girlfriend, I told Mom that I got a girlfriend. She was happy and asked me to bring my girlfriend to visit our house. The next day I told my girlfriend that Mom wanted to meet her. She agreed and we went together. Since that day, my girlfriend has visited Mom at least once a week. When my girlfriend is not able to come, she calls Mom and talks to her regularly.

Case 1 offered a very different account. She is 17 and is not yet sexually experienced.

Case 1 has the following belief regarding the influence of adolescent-parent communication on her sexual behavior.

First, I cannot discuss sex with my father. He does not allow me to discuss sex at my age. I have discussed a few things with my mother. However, her message is a horrifying one. She always uses my elder sisters as examples and she tells me regularly how they are “spoiled” because of they started engaging in sexual behavior at an early age. My mother tells me that if I want to have a boyfriend, I should not go beyond talking, and if it gets serious only kissing. Mom says, “No sexual intercourse.”

It is culturally unacceptable for girls to initiate sexual affairs before a certain age and prior to marriage. That is why Case 1’s mother considers her older children who started having sex at an early age “spoiled,” since they might have been perceived as not respecting the family’s dignity, community rules, and social norms. Case 1 believes that her father’s thinking is extreme

because he does not want to talk about sex. Even her mother's advice is impossible to follow, because she says one can kiss but not have sex, and it is difficult for adolescents to control their passion. Case 1 also stated that because of her knowledge of what has happened to some of her friends, she will not become sexually active until she completes high school. Case 1's story suggests that messages from parents not to engage in sexual activity—whether as advice or warnings—may not prevent adolescents from becoming sexually active at an early age. It may be the lessons they learn from their friends or elsewhere that contribute more to their decisions. This finding is consistent with group socialization theory, which emphasizes that group influence is more prevalent during adolescence than in early childhood or later adulthood. However, a democratic type of family in which parents talk freely about sex with their adolescents may help them make informed decisions.

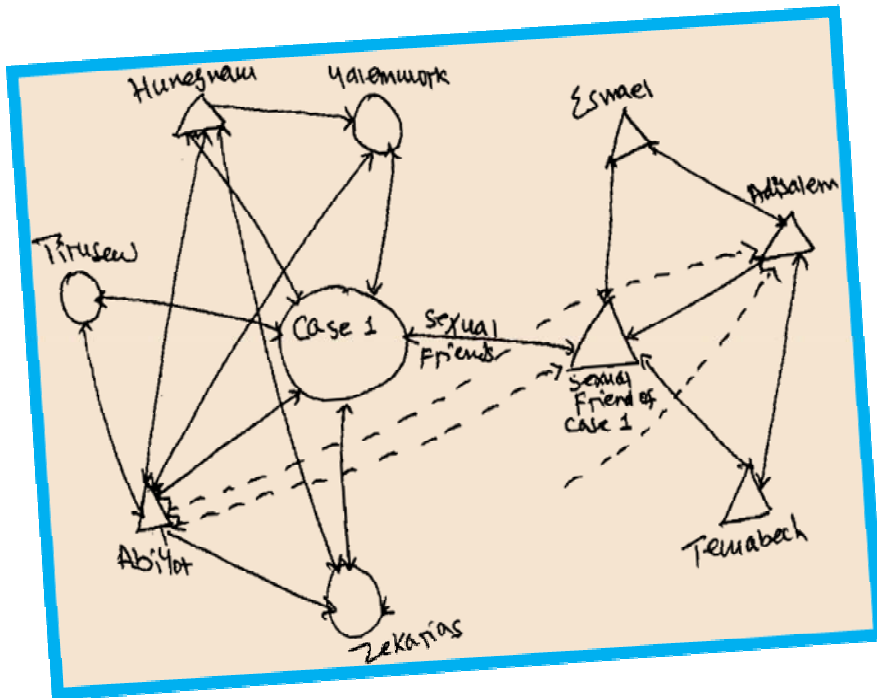
4.3.4.6 Integration of Social and Sexual Relationships

The focus of this research is to explore and explain the ways in which social interactions may result in sexual relationships. The data from each case show relationships between adolescents' social engagements and their sexual experiences.

In most cases, boys who have wider social networks begin engaging in sexual activity at an early age. A good example is Case 4, who engaged in more than four types of sexual activities, including sexual intercourse, before the age of 17. However, female participants who had wider social networks did not have boyfriends, or at least they were afraid to admit to having boyfriends. An example is Case 1, who has over 20 friends but would not admit to having a boyfriend without being probed.

Some relationships are the bridges that connect social and sexual relationships. The integration of the friendships of two participants—both females—with those of their sexual partners and, through such sexual partners, the establishment of social relationships with other groups made their relationship systems more complex. Figure 4.7 shows how one case established friends, and those friendships helped her to get a sexual partner, who connected her and her friends to his clique.

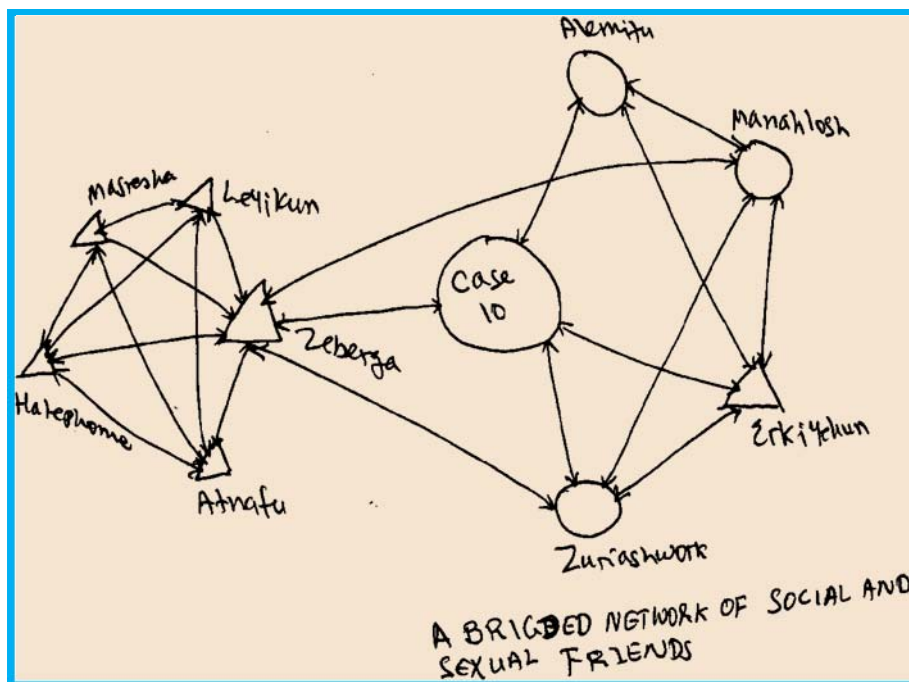
Figure 4.7 Connections between Social and Sexual Relationships



On the left side of the figure are the five best friends of Case 1. She met her current sexual partner through her previous social network. Now, since he is her sexual partner, he has a special place and is isolated from her social network. Two members of Case 1's friendship network have had the opportunity to make new friends from her boyfriend's clique. Two friends, Abiyot and Zekarias, established relationships with two of the members of the clique to which Case 1's sexual partner belongs. These two friends—Tewabech and Adisalem—communicate with two clique members independent of the bridges or connectors. They may be involved in either social or sexual relationships.

Case 10 presented a similar example of how making the acquaintance of other adolescents helped her find a sexual partner (see figure 4.8).

Figure 4.8 Bridging Social and Sexual Relationships



At the right side of figure 4.8 are four of Case 10's friends. These friends are connected to each other and with the case. In the middle, Case 10 is connected to another actor, Zeberga, who plays a double role. He has his own friendship network with four other members. At the same time, he is Case 10's sexual partner. He is connected with two members of the case's network; however, he controls the flow of information from his girlfriend and other network members to members of his own clique, who can only communicate through him to the rest of the network members and his girlfriend.

Other cases also suggested that friendship networks can be sources of sexual partners. In rare cases, sexual partners can enable individuals to make new friends. However, this depends on the will of the sexual partner, who holds a central position between friends of his or her sexual partner and his or her own clique. As figure 4.8 demonstrates, one of the actors by the name of Zeberga plays a role of bridging two network cliques. Although it seems that Zeberga has weak ties with one of the cliques in which Case 10 is a member, as Granovetter (1973) explains, "the strength of weak ties is the fact that they are not integrated in networks, but tend to bridge them. These ties are interesting when [one is] studying information flow" (quoted by Louch, 2000, p. 47).

The rest of the cases confirmed that friendship networks are a source of sexual relationships. Although adolescents may not be interested in jumping from a social relationship into a sexual relationship, members of a friendship network may help each other connect to potential sexual partners outside the social network. Case 3 had the following to say:

Once, one of the boys in my school friendship network asked me to help him get one of the girls in my other friendship network to become his girlfriend. I did as he asked. After

repeated negotiations, she become interested in him and they are now becoming sexual partners.

There are still other participants—one male and another female—who demonstrate that friendship networks help adolescents find sexual partners. Case 5, who is male, stated that one of the members of his school friendship network repeatedly asks him if he can connect her with a boy who is an outstanding student in their class so that she can make him her boyfriend. It is, however, important to note that social network members are not very interested in turning their friendships into sexual relationships. Rather, they prefer to use their networks as a resource for meeting potential sexual partners outside their social networks.

4.4 Summary

This chapter presented data and analysis for Study A, a quantitative survey, and Study B, where qualitative data were collected through case interviews. The independent and dependent/outcome variables for the descriptive data were discussed in detail. Adolescent sexual practices were the dependent variable. Variables related to the participants' friendships and social network relationships, and their sociodemographic characteristics and knowledge about sexual activities were treated as the independent/predictor variables.

Fifty-five percent ($n = 91$) of the sample were females. The mean, median, and mode age were 17 years. Most respondents lived in Arada Sub-City of Addis Ababa, where the schools selected for the study are located. The majority of the respondents reported high academic achievement, which is probably unreliable information and would need to be confirmed by other techniques such as a review of their school-recorded grade points.

Friendship is a special kind of relationship for adolescents. Friendships established at school and outside school were examined. Male and female respondents reported different

interests in making friends. Females like to have female school friends and male out-of-school friends.

Adolescents' understandings of the types of relations that should be considered social networks were explored. Family relationships and friendships were recognized as parts of adolescents' broader social networks, but participants were less likely to view relationships with extended family as social networks. Family and friendship networks were the two forms of relationships most favored by adolescents. Sixteen- and 17-year-olds preferred to remain in the family network structure, whereas 18- and 19-year-olds preferred friendship networks. Membership in multiple social networks—including friendship and family networks—was documented.

Specific social network variables were the functions of social networks and network centrality, measured in terms of closeness, betweenness, bridging, and control. The respondents saw the role that friendship networks play in problem solving as a top priority. Two important roles that friendship networks play are building adolescents' self-confidence and helping adolescents refrain from engaging in antisocial behavior.

The centrality of respondents in Study A was highly exaggerated, but not in Study B. This is an indication that a self-administered survey may not be a good tool to use to collect data on centrality measures. Social network strength was measured by length of membership and frequency of communication.

Three dependent variables were sexual practices, having a boy- or girlfriend, and age at which one had one's sexual debut. Intimate kissing or kissing that differs from that used as a form of greeting was most common, followed by watching sex videos and hugging members of

the opposite gender. Adolescents reported using either their own houses or their friends' houses for their first sexual encounters.

Of the seven research questions proposed in chapters 1 and 2, four were subjected to hypothesis testing. The major variables examined through statistical tests were relationships between social networks and sexual behavior, relationships among different sexual behaviors, the influence of one type of sexual debut on another type of sexual debut, and the relationship between adolescent-parent communication and sexual behavior. Three of the four null hypotheses- (1) *there is no association between adolescent-parent communication and whether or not a respondent has a boy- or girlfriend;* (2) *There is no correlation between the age at which an adolescent has his or her sexual debut and engagement in other forms of sexual behavior, and this is not affected by gender;* and (3) *there are no demographic and social network variables that predict the age at which adolescents made their sexual debuts*-were rejected.

The last section of the chapter was the critical case analysis. The 10 cases provided information on their conceptualizations of social networks, their views of the differences between friendship and social networks, roles of a friendship network, their involvement in a friendship network, the criteria they use to choose members of their friendship networks, their conceptualizations of sexual activities and their sexual experience, and the integration of social and sexual relationships.

In the social network analysis section, the number of network members, the roles of study participants in the network system, the type of social networks that participants liked to join, and the characteristics of those with whom they established social networks were analyzed. The participants illustrated their social network connections by drawing sociograms.

The case study explained the connections between adolescents' social networks and their sexual relationships. Either directly or indirectly, social relationships influence the sexual relationships they establish within or outside their social networks. Various sexual activities, including group sex and same-sex sexual activity, were discussed. Bathrooms in public showers were added to the list of locations for sexual activity.

The interviews confirmed that the family environment has both positive and negative influence on adolescents' social and sexual relationships. The family environment helps adolescents identify friends and sexual and romantic partners—that is, parents give their consent for their children to engage in these relationships. However, those who are not supported by a positive family environment still have friends, and some were engaged in sexual relationships, which suggest that a non-supportive family environment does not prohibit adolescents from having friends and engaging in sexual activities. One possible explanation to this kind of engagement could include that when adolescents feel they are denied the proper attention from their parents, friends are an immediate choice to fill the gap in attachment.

5 DISCUSSION

The purpose of this study was threefold. The first purpose was to examine adolescent social networks in terms of form, size, and function and the environmental factors that affect their establishment. The second was to examine adolescents' sexual behaviors by studying the social network factors and settings that influence sexual debuts. The third was to examine differences between the social network interactions and sexual encounters of males and females and adolescents of different ages.

This chapter discusses the data presented and analyzed in chapter 4 and looks closely at the three purposes of the study. The chapter also provides reflection on the research questions and assumptions described in chapter 2. Research outcomes from other studies and some theoretical perspectives are examined in light of the findings of the current study.

5.1 Knowledge and Perceptions of Social Networks

Irrespective of age and gender, respondents felt that the friendship network is the best type of network. The importance they accorded other forms of social networks varied depending on age and gender. For example, a family network is more important to younger adolescents. Sixteen- and 17-year-olds attach themselves to the family environment and place more value on relationships with family members. For younger adolescents, the family network is more important than other forms of social networks. Older adolescents of 18 and 19 years old tend to distance themselves from the family environment and place more value on friendship networks.

Older adolescents prefer to go out with close friends rather than remain at home. As adolescents get older, they become more attracted to peer networks and relationships with members of the opposite gender. Kuttler and La Greca's (2004) study of adolescent girls' romantic relationships found that peer networks and friendships allow adolescents to develop

close friendships and romantic relationships and start to spend less time in the family environment, and more time with friends. These findings correspond to social exchange theory. According to social exchange theory, “individuals develop and maintain relationships that maximize rewards and minimize costs” (Kuttler & La Greca, 2004, p. 396).

Adolescents saw differences between friendships and other forms of networks in terms of formality. Friendship networks are informal networks, whereas family, neighborhood, and extended family/kinship networks are formal. Respondents’ perceptions of a formal-informal distinction were based on their involvement in these networks. To them, there are no formal procedures that are required for one to join or leave a friendship network, whereas, family and neighborhood social networks have more rigid requirements.

The current study identified size, function, and space as three factors that distinguish different forms of social networks. Friendship networks are small compared to other networks. Function is a service provided by a social network to meet the needs of members, and space can make one social network more desirable than others.

According to Cattell (2001), a “heterogeneous network is an open network consisting of a relatively large number of membership groups. [Social] networks can comprise individuals who may be similar or different” (p. 1510). Membership in social networks differs based on such variables as age, gender, place of residence, occupation, ethnicity, and religion. Smaller size, clear function, and physical proximity of members are most needed in a social network. Adolescents’ understandings of the size, function, and spatial parameters of social networks did not correspond to their participation in different social networks; that is, adolescents involved in large networks were not clear about the functions of those networks or their spatial organization.

In addition to size, function, and space, communication is a significant factor that shapes adolescents' knowledge and perceptions of their relationships with friends, religious groups, neighbors, and extended family members. Those adolescents who do not discuss academic matters with their parents but do discuss reproductive health considered relationships formed in a religious context to be part of their social network system. For adolescents who do not discuss academic matters with their parents, religious affiliation serves as a coping mechanisms to alleviate the frustration that results from a lack of communication at home. Adolescents whose parents are willing to discuss reproductive health are more likely to be believers in religion, and they perceive relationships formed in a religious context to be part of their social networks. Assimilation is easy among those who like us. Those adolescents who lack proper contact with parents try to assimilate with groups of people who are similar to them, such as religious groups and friends.

Other studies detail the relationship between religious and social networks and report that they work in conjunction with each other. A Web site called Spread Religion through Social Networking Sites notes:

A social networking site is the perfect place for people of a particular faith to come together and spread their religion and belief to many people. It serves as a good platform to evoke comforting emotions and feelings; offer strength, empowerment and control; ease the emotional burden of the illness; and offer social support and a sense of belonging among religious people. (Agriya Infoway, 2008, para. 1)

Study participants were cognizant of the close relationship between people's religious beliefs and their behaviors. However, the data show that adolescents accorded more importance to friendships than to all other forms of relationships of which they had knowledge. Study

participants perceived friendship networks to be important social capital for solving problems such as risky behavior, information, and sharing their happiness and sorrow. Across all ages and both genders, problem solving was seen as a primary function of friendship networks. Other studies show that friendship networks can create problems in the lives of adolescents. Studies by Rice, Donohew, and Clayton (2003); Pearson and West (2003); Bhattacharya, Cleland, and Holland (1999); and Kinsman et al. (1998) show that risk factors including smoking, early sexual engagement, and drug use are associated with friendship networks.

The survey results show that the ability of a friendship network to help members find sexual partners is low compared to other types of supports that network members provide to each other. Age influences adolescents' perceptions of their friendship networks and whether or not they believe that they can provide them with assistance in finding boy- or girlfriends. The belief that the friendship network can be used to solve problems and help look for boy- or girlfriends increases with age. In addition to age differences, there was a disparity between males and females regarding the belief that a friendship network provides members with assistance in finding boy- or girlfriends. Males were more likely than females to believe that friends can help them find boy- or girlfriends. This may be related to the different intentions male and female adolescents have regarding the popularity they hope to attain from their sexual relationships. Cooksey et al. (2002) suggest, "The nature of friendship patterns, friendship experiences and sexual behaviors differs for males and females particularly at younger ages. . . . Males are likely to emphasize sexual aspects of relationships, while females are likely to romanticize relationships" (p. 118). Male adolescents often hope to use their romantic encounters to become popular in their networks. They use their friendship networks to obtain girlfriends, but adolescent girls establish boundaries between their social and sexual relationships.

Members of friendship networks often have best friends. They are friends with whom adolescents believe they share everything. They have high trust, reciprocity, and commitment to one another. Adolescent girls use their best friends to look for boyfriends and to discuss important issues more than adolescent boys do. However, adolescent girls do not use ordinary network members to find boyfriends.

5.2 Knowledge and Perceptions of Sexual Activities

Over half of adolescents surveyed considered watching sex videos and looking at pornographic pictures non-sexual activities. Over 90% of survey respondents agreed that sexual intercourse is a sexual activity. The response from case study participants is not different in this regard: before they were probed, eight of the 10 participants did not consider watching sex videos and looking at pornographic pictures to be sexual activities. All case study participants agreed that sexual intercourse is a sexual practice. However, without probing, four of them were not sure about watching sex videos and looking at pornographic pictures. In Ethiopia there is a widespread belief that only sexual intercourse between a female and a male is considered as a sexual activity. Sexual activities other than sexual intercourse receive little attention from the public.

The method of data collection had some influence on the response rates for some of the sexual activities. Discussion of some sexually activities is culturally and emotionally taboo, and a number of participants in the case interviews were reluctant to share their views. For example, masturbation received high response rate by 53% of the survey respondents and was reported to be a sexual behavior. Only two of the 10 case study participants were willing to talk about masturbation. Even if the interviewee is knowledgeable about certain sexual activities, a face-to-

face interview may not be the best way to collect solid data on sexual behaviors like masturbation.

It is possible to divide adolescents into three categories based on their knowledge and perceptions of sex-related issues. The first is those adolescents who have knowledge and positive perceptions of different sexual activities. The second is those who have knowledge of sexual activities, but negative perceptions of sex. The third category is those who do not have a clear understanding of what activities are defined as sexual activities and have mixed feelings about sex. Perceptions of what constitutes a sexual activity vary by gender. Male adolescents believed that hugging is a sexual activity only when females hug males. Similarly, female adolescents viewed hugging as a sexual practice when male adolescents hug girls. This is a negative-multiplication balancing state of two groups' evaluation of hugging. The outcome variable is a negative-negative balance of state, where one group has a negative perception about the other group's engagement in this activity. However, the multiplication result is positive, meaning that members of both genders consider hugging members of the opposite gender a sexual practice, although the context tends to determine whether hugging is defined as a sexual activity.

According to both male and female adolescents involved in the study, watching sex videos is a sexual activity only when adolescents of the opposite gender watch videos together. Otherwise, study participants believed that watching sex videos is a form of entertainment.

Attachment between adolescents and significant others determined their perceptions of what activities constitute sexual behavior. Significant others are parents, best friends, siblings, extended family members, schoolteachers, and other individuals who are important to an adolescent. Those who have close attachments with parents and other family members do consider intimate kissing and hugging members of the opposite gender sexual activities. Intimate

kissing can be considered a sexual behavior. Those who were strongly connected to their neighborhoods believed that watching sex videos can “ruin” adolescents’ lives. The data suggest that adolescents who have strong attachments with others describe certain activities as sexual activities.

Knowledge and perceptions of sexuality are associated with social network relationships. Those who chose friendship networks as their priority relationships and whose networks included older members had better knowledge and more positive perceptions of all the sexual activities mentioned in this study. Positive perception refers to a willingness to talk openly about sex without the need for probing or persuasion. It is clear from other studies (see, for example, Moore & Rosenthal, 1993) that adolescents who have older friends feel at ease talking about sex, and they are tempted to become sexually active at an early age. Older adolescents teach younger ones through discussion and practices such as placebo sex, or simulation of sexual activity. The best example is *e’qa-eq chewa’ta* (discussed briefly in chapter 4).

5.3 Adolescents’ Social Network Engagements

Despite the fact that the adolescents indicated that friendship networks are preferable to family networks, more adolescents were more engaged in family networks than friendship networks; however, membership in family networks was only slightly higher. For adolescents, the family network interaction is more stable than friendships or other networks. This sounds positive and is predictable due to adolescents’ dependency on their parents and older siblings for many reasons, including economic, emotional, and social reasons. It is possible to attribute the discrepancy between adolescents’ perceptions and their actual engagement in friendship networks to a number of factors. The first is that for a number of reasons, such as parents’ decisions to prohibit their children from joining peer networks, some adolescents may not

succeed in joining the friendship networks they wish to join. Second, some respondents had trouble distinguishing between a friend and a friendship network. For example, 156 of the 167 adolescents who participated in the survey reported that they have friends, but when asked how many people are involved in a friendship network, 139 of the 167 adolescents answered yes. The discrepancy can also be attributed to age. Younger adolescents value family relationships more than friendships. This group of adolescents talked more about family networks than friendship networks.

Adolescents involved in this study accorded less importance to extended family/kinship networks both in terms of their perceptions and in practice. This may be associated with the effects of urbanization and the deterioration of the extended family network in Ethiopia. The ties among extended family members and institutions such as *mahber*, *equb*, and *wonfel* (culturally approved networks from which adults gain economic and social benefits and adolescents learn socialization and connectedness) are weakening in many communities in Ethiopia. The deterioration is more aggravated in urban centers and cities, where the nuclear family system is more pronounced. Fischer, Jackson, Stueve, Gerson, Jones, and Baldassare (1977) posit three reasons why family relationships with other groups deteriorate in urban settings:

- (1) Ties outside the family have become more fleeting and transitory;
- (2) social life has increasingly withdrawn from public places into the privacy of the home;
- (3) frequency of contact with intimates outside the household has declined; and
- (4) intimacy itself has become increasingly displaced from wider social groups onto the family. (p. 86)

Due to urbanization and the development of cities, relationships between families and other relatives are declining. Perhaps adolescents do not see the value of relationships with extended family members because they do not have the opportunity to learn from parents' interactions

with relatives. This is in contrast to the findings of Ayuku, Kaplan, Baars, and de Vries (2004), who report that schoolchildren establish a “balanced network between family, friends and helpers” (p. 310).

Adolescents felt strongly that neighborhood relationships are important social networks, although a smaller number actually belonged to this type of network. This may be due to cultural barriers. In most societies in Ethiopia, forming relationships with neighbors is the responsibility of adults. Those involved in neighborhood relationships have economic, social, and cultural goals, and adolescents do not engage in these due to their age and related social norms. In addition, it is difficult to define the boundaries between friendship and neighborhood networks when adolescents establish networks with other adolescents who live in the same neighborhood.

Some types of social networks (i.e., neighborhood and religious networks) are more strongly influenced by gender than others (i.e., extended family/kinship and family networks). The objective of interactions in a specific network determines the gender composition in a given network. For example, the friendship network is the most popular network among adolescents because it provides the most opportunity to share important personal matters. During adolescence, the most trusted person with whom one discusses personal matters is of the same gender and age. As a result, adolescents choose best friends of the same gender. This leads to the belief that a friendship network is composed of friends of the same gender and age. Nevertheless, there are adolescents who prefer to have friends of the opposite gender and of different ages. This is more prevalent as the age of adolescent increases. Age homophily is influenced by the reasons for which individuals establish their relationships. For example, if the purpose of a relationship is to engage in hobbies or a neighborhood game, there is strong age homophily. On

the other hand, if the relationship is based on financial support or other services, it is less homophilous (McPherson et al., 2001).

The study identified characteristics of religious social networks. The religious networks that adolescents join have one clear objective: provision of spiritual orientation. As in adolescents' friendship networks, gender has an influence on the interactions of members in a religious network. However, influence of gender is not due to the interests of the members. Rather, it is associated with the religion itself. For example, in the Orthodox Church in Ethiopia, of which most of the case study participants reported they are members, men and women are required to be separated even if they are gathered in a single assembly room. Therefore, strict religious doctrine guides adolescents who establish religious networks to identify those of the same gender as members of networks. Religious social networks provide good examples of the group socialization theory and the theory of homophily. In a religious network, individuals associate with those of the same gender through religious sanction.

As in friendship and religious networks, gender has a substantial influence on the formation and membership of the neighborhood social networks of which adolescents are members. This is mainly due to negative influence from community members. Close attachments between male and female adolescents may be challenged by parents or neighbors. In other words, adults may suspect that adolescents are dating and engaging in sexual activity. Case study participants reported that parents and neighbors do not approve relationships between adolescent boys and adolescent girls. This is because of the fear that they may become sexually active. Even though they do not join neighborhood social networks for a number of reasons discussed above, they still become members of this form of network. Because their activities take place outside the home, female adolescents have greater interest in joining neighborhood social networks than do

their male counterparts. More female adolescents ($n = 50$, 55%) joined neighborhood networks than male adolescents ($n = 38$, 50%).

Age is an important predictor of social network engagement for adolescents. Age influences adolescents in deciding which form of network to belong to and for what purpose they should join. At a younger age, adolescents want to spend time with their parents. At an older age, their interest in experiencing life outside the home environment increases and they start to look for environments where they can associate with their peers. A friendship network is the primary network whose formation is dependent on members' age. Adolescents first leave the home environment, in terms of social interactions, by joining a friendship network. Once adolescents join a friendship network, they start to distance themselves from the home environment; however, complete disassociation from the home environment does not occur.

Although the interest in spending time with friends increases as adolescents get older, the home is still the environment that gives them confidence, irrespective of their age. Although friendships are attractive to adolescents, they are a source of tension, frustration, and competition. Friendship networks are sometimes full of rivalry and conflicts. Nevertheless, one cannot deny that friendship networks are a source of self-confidence for adolescents. Adolescents demonstrate the self-confidence they build through their friendships by recounting their adventures (often boastfully and aggressively). There are times when the confidence-building process fails. Such a failure may contribute to frustration and engagement in antisocial behavior when the friendship network is unable to provide members with proper guidance. The family-based confidence-building process is more sustainable and is approved of by the family and communities. One of the functions of a family, according to social customs, is the nurturing and socialization of children.

Friendship and family networks demonstrate contradictory interests as adolescents develop self-confidence. Adolescents who rely on family networks for confidence do not need a friendship network to play a similar role. Parents and older siblings who create a positive environment help adolescents build confidence, make connections with peers when their adolescents are unsuccessful to do so. They do this through positive reinforcement, and sometimes have a negative influence on adolescents. This finding is consistent with Ayuku et al.'s (2004) observation that "Children form relationships among themselves independent of adult guidance and outside of the adult norms and models available to them" (pp. 307–308).

Emotional attachment results from the strength of relationships among members of a priority social network. Adolescents who preferred friendship networks reported they having strong relationships, which is explained by the sustainability of information exchange, quality of the information delivered to members in the network, and the provision of mutual support, a sense of belonging, and companionship in times of joy, sadness, and crisis. These are all non-material values that govern the strength of relationships among members of a social network. This is about trust and group cohesion. The person in the network who constantly delivers quality information (symbolic resource) holds a central position; others gather around the person due to their trust in him or her. This person delivers information to other network members, which is an important resource that maintains the relationship. This has a resemblance to what Bourdieu defined as the field. The field is one of the two concepts of Bourdieu's symbolic capital (the second of which is habitus) in his conceptualization of the symbolic human interaction. As Swartz (1997) explains, Bourdieu and Wacquant (1992) define field as:

a network, or a configuration, of objective relations between positions. These positions are objectively defined, in their existence and in the determinations they impose upon

their occupants, agents or institutions, by their present and potential situation . . . in the structure of the distribution of species of power (or capital) whose possession commands access to the specific profits that are at stake in the field. (p. 117)

The field is the social space a person occupies as a result of his or her resources.

Positional centrality in social network analysis is synonymous with the field, which refers to the person's position in a social space due to the resources the person possesses—mainly cultural and symbolic. Point of centrality refers to the position in a network through which most of the information flows.

Survey respondents, unlike case study participants, reported exaggerated centrality roles. In order to find a balance between the responses regarding centrality roles from the survey, a conjecture was made based on the exploratory study done prior to the major project. The results from the exploratory study align with the case study results. This suggests that the role of centrality of adolescents is not significant, particularly when the network is outside the best friendship network. Even within networks of best friends, the centrality role may be very fluid, because every member wants to be recognized and no one is ever an important figure for a long time. Nevertheless, what matters is the amount and importance of the cultural and symbolic resources that an adolescent has and from which other members in the network benefit.

Space has an important influence in the network systems of adolescents. Responses as to where participants preferred to establish their networks varied. Some adolescents argued that it is good to establish social networks in one's own neighborhood. Others felt that school is the best place to make best friends. Still others wanted to have friends far from both the neighborhood and school. Those adolescents who wanted to establish social networks in their own neighborhoods claimed that network members should know each other not only at the personal

level but also at a family level so that they can provide each other with more personal support. Younger female and male adolescents dominated this group. Those adolescents who wanted to establish social networks at school argued that adolescents need to assert their freedom from parental and neighborhood control in their relationships with their friends. Network relationships should be anchored in the place where adolescents spend the most time, and schools are the place where adolescents spend almost half of their time. In this group were older males. The third group that argued that there is no need to establish networks at school or in one's neighborhood consisted of older female adolescents. This group felt that parents, neighbors, and schoolmates should not know where one's best friends live, and best friends need not know much about each other's parents, neighbors, or school friends. "We should live in a world free of harassment or ridicule by those who have important roles in other parts of our lives."

From the social network analysis perspective, each argument has strengths and weaknesses. Networks established with neighbors and others who are geographically near allow for cohesiveness among members, and the conservation of resources such as time and energy. One possible weakness of a geographically close social network is that this kind of network suffers from lack of access to information and exposure outside the neighborhood. Homogeneity may result from narrow-mindedness due to an assumption that members know everything, which may not necessarily be true. Some of the strengths associated with a non-geographically based social network include diversity of ideas, which may enrich information shared by members and may lead to an interest among members in communicating on a regular basis based on the assumption that other members may come up with new information and ideas. A downside of non-geographically based social networks is the lack of trust that occurs when members do not know very much about each other. Non-geographically based networks may be resource

intensive, and cohesiveness among members may be weak since they do not meet on regular basis. Some of these potential weaknesses do not hold true in other studies. For example, Fischer et al. (1977) compared the degree of intimacy in neighborhood and non-neighborhood friendships. They asked, “Are neighborhood friends considered more intimate than those outside the neighborhood?” (p. 170). The answer was no.

Resource as a determinant factor for the formation of social networks is an important element in social exchange theory. In order to fully understand relationships between actors, it is important to examine the relationships’ resources and costs. Space is a necessary variable that affects relationship satisfaction, expected outcomes, relationship stability, trust and commitment, and exchange dynamics (Sabatelli, 2007). Some adolescents argued that a geographically close relationship is more stable, while others claimed that for social network to be stable, members should come from different geographic locations. This prevents members from getting bored and maximizes their interest in communicating, since each member has information to contribute.

5.4 Friendship: A Special Form of Social Network

Adolescents preferred friendship networks, although they were still members of other social networks. A friendship network is a sign of freedom, liberty, and confidence as adolescents assert their freedom over the controls they encounter from their families, neighborhoods, and even schools. Depending on the purpose of the friendship, friendship networks may differ from each other, as members may prefer one type of network over another. For example, if the purpose of the network is to help members look for sexual partners, a geographically nonspecific friendship network is preferable. Neighborhood friendship networks are most appropriate if the purpose is to fight with other groups. For academic assistance, a school-based friendship network is necessary.

School friendships have purposes different from those of other friendship networks. Primarily, school friendships are for academic support. Other functions depend on the gender and age of network members. Females use school friendships to share information about the sexual behavior of male adolescents. Male adolescents use their school friendship networks to find sexual partners. The critical case study showed that friendship networks offer a starting point for adolescents to experience peer behavior, sexual practices, and to some extent antisocial behavior. The majority of adolescents receive their sexual orientation at school, where they begin to watch sex videos, talk about sex, and connect with networks outside their schools, which hold the potential for future sexual relationships. School friendships also provide adolescents with an alibi when they need to get permission from their parents to go out, especially on weekends. They ask permission to go out with their school friends, but in fact this is not what they are planning to do.

What is a best friend? A number of variables characterize the best friend. Best friends provide companionship, have similar attitudes and perceptions of the objective and subjective world, trust each other, and provide each other with material or financial support. Those friends within the larger friendship network systems whose relationships are characterized by these features join subgroups of friends in a network called a clique. A clique is a group of individuals who share interests and a special relationship and are part of a larger network system. Cotterell (2007) writes:

Cliques are natural groupings of peers. Members are of similar ages, have similar interests, communicate easily with one another, and spend a great deal of their time together simply enjoying one another's company. . . . The cliques are exclusively same

gender in early adolescence; it is only in later years that mixed-gender cliques form. (p. 55)

Adolescents in the current study formed a number of cliques depending on the heterogeneity of their network relationships. Adolescents who joined school friendship, out-of-school friendship, neighborhood, and theater club networks belonged to at least four cliques in each of the networks to which they belonged. In the opinion of the researcher, it is not possible to connect equally with all members of a school friendship network that consists of 24 people.

In a school friendship network, cliques consist of members of the same gender. This is not the case outside school. Here heterogeneity characterizes cliques. In both settings, gender plays a decisive role. In a school-based clique, females use gender as a shield to protect themselves against potential harassment from male adolescents. Male adolescents also form cliques with other males, mostly to play together and occasionally to exchange information on potential girlfriends. Cliques formed in out-of-school friendship networks have different functions based on members' gender. For females, they protect against sexual harassment. Girls feel secure outside school when boys hang out with them. Boys, on the other hand, feel glorious and brave when girls hang out with them. This finding does not support the theory of homophily. The theory of homophily suggests that individuals with similar characteristics such as age, gender, and occupation form social networks together. The current study shows that similar interests are more important than similar characteristics, and this provides some explanation as to why both boys and girls prefer to belong to social networks outside school with members of the opposite gender.

The activities of cliques are sometimes negative. Adolescents can engage in antisocial activities with their cliques. Cliques may use their sense of belonging to abuse family property or

community norms. Some cases reported that, with their cliques, they steal from their own families, harass girls, and fight with other cliques in their neighborhoods for control of resources such as the athletic field, or sometimes the control of girls. The study of cliques “with regard to their problem behavior is . . . showing that adolescent antisocial boys and their close friends typically live in the same neighborhood and meet in unsupervised and unstructured activities” (Kiesner et al., 2003, p. 1334).

5.5 Social Network Factors Affecting Sexual Practices

One network may have a stronger influence than others on adolescents’ sexual practices, as revealed by the analysis of friendship and family networks. This comparison showed that the friendship network exerts more influence than family networks on the sexual experiences of adolescents. This finding is consistent with the observations of Cotterell (2007), who collected examples from larger studies of high school adolescents conducted by different researchers and in different settings. A study by Bearman et al. (2004) on high schoolers’ sexual networks, cited by Cotterell (2007), identified 573 students who had been involved in romantic or sexual relationships.

The investigators found that over one-third . . . were located in network components of two or three members; another 13 percent were in components ranging in size from four to fifteen members and more than half of the population of romantically active students was linked into a large component that contained 288 members. (Cotterell, 2007, p. 68)

The current study reveals important information about family networks’ influence on adolescent sexual practices. It is not common in Ethiopia for parents to discuss sex with their adolescent children. Although it was a statistically insignificant finding, Study A found that family members have an important influence on adolescents’ sexual decision making. For

example, mothers provide information to their teenage daughters to help the girls decide not to have boyfriends (Moore & Rosenthal, 1993). The current study documents some unusual and unexpected results that are foreign to the customary thinking in Ethiopian society. Thirty-five percent of 16- and 17-year-old survey respondents and two of the 10 case study participants reported using their religious networks to look for a boy- or girlfriend. This becomes less common as adolescents grow older (as reported by 18- and 19-year-olds). This may be due to maturity and an awareness of the conflicts between sexual desires and religious principles, or perhaps more opportunities to find boy- or girlfriends become available.

Despite different views of the conflict between religious values and the use of religious networks to pursue sexual relationships, religion exerts an influence on adolescent sex in three ways. Religion

provides the norms for acceptable sexual behavior; individuals in powerful roles in this institution use norms as the basis for informal controls and finally, there are often formal rules which constrain sexual behavior through fear of institutional sanctions. Religious belief rather than affiliation with a religion is strongly related to teenage sexual behavior. (Moore & Rosenthal, 1993, pp. 12–13)

Different social network variables contribute to male adolescents' engagement in sexual activities. Friendship networks help members access information about whom to date and how to date. Access to information boosts male adolescents' confidence, which may result in successful communication with potential girlfriends. This does not hold true for female adolescents. Female adolescents face more consequences from sexual activity, such as unplanned pregnancy and increased susceptibility to STDs (Gillmore et al., 2002).

Female adolescents have very close friendships that are much smaller in size than those of male adolescents. Their friendships allow them to share information on how to protect themselves from sexual harassment. Other studies confirm that friends play an important role in providing each other with information and guidance on sexual matters. However, learning about sex from friends has its drawbacks. According to Moore and Rosenthal (1993),

It seems that peers and friends take an active role in each other's sex education, but the role of these non-sexual partners is largely confined to talk. The sex education provided from this source is limited and often not supplemented by other sources. This can be a case of "the blind leading the blind," with incomplete and wrong information being disseminated. (p. 67)

In contrast to males' use of their friendship networks to satisfy their desire to engage in sexual activity, female adolescents use family networks in a similar way to make decisions about sex. The controlling variable of gender and friendship and family networks, acting as predictor variables, exert an influence on adolescents' decisions to become sexually active. Friendship networks are an important social resource for engaging in sexual activity.

Family networks also play an important role in female adolescents' decisions to delay becoming sexually active. Family members give girls support by teaching them about sex, warning them about the risks associated with unprotected sex and having sex at an early age, and advising them to protect themselves when they go out to play and engage in other social activities. On the other hand, parents do not provide boys with information about sex. As a result, for males the main sources of information about sex are friends, sex videos, pornographic pictures, and other pictorial representations of people having sex. As a result of strict family control, adolescent girls do not get the opportunity to date or hang out. The strict control that

parents exercise over adolescent girls makes them prone to unplanned and in most cases forced sexual engagement. Cooksey et al. (2002), in their study of the link between friendships and sexual initiation, found that “Females were significantly more likely than males (16% vs. 8%) . . . to report having had sex prior to dating” (p. 122).

5.6 Gender, Social Networks, and Prediction of Sexual Activity

Friendship networks were more useful to female adolescents than to their male counterparts for finding sexual partners. Seventy-four percent of the male adolescents who had girlfriends used their friendship networks to find girlfriends, while 75% of female adolescents who had boyfriends at the time of data collection used their friendship networks to find boyfriends. Although the difference is only 1%, considering the gender and cultural barriers encountered by girls in using their network resources to satisfy their sexual needs, the difference is significant. This difference can be attributed to a number of factors.

Boys spend their time with friends chatting, engaging in activities such as exercise, and going places outside their neighborhoods. Study B showed that boys engage in friendship networks in which group behavior becomes dominant. Girls cannot immerse themselves in intensive social activities, which require more time and energy. They cannot do this because family and community traditions and practices do not allow them to leave the house for a long time. Their interactions with friends are more intensive than extensive. They have fewer friends, with whom they engage in deep discussions. There are also cultural barriers that prohibit girls from talking freely about sex, except with their mothers. These barriers force girls to use the resources they have at hand to learn about sex and employ their connections to find boyfriends. Girls do not use their friendship networks as much as boys do to look for sexual partners. Females who participated in the case study reported they did not want to make close friends in

their neighborhoods or at school. Many of them want best friends who go to other schools or whom they meet outside school. If friends do not know each other from school, they can develop enough trust to share secrets.

The mothers of female adolescents talk with them about sex and assist them by providing information about boyfriends and sex. The case study interviews indicated that mothers are more willing to discuss sex with their daughters than with their sons. Mothers teach their daughters so that they can take the necessary precautions to protect themselves from sexual attacks. As described by Moore and Rosenthal (1993), “the messages that teenage girls receive from others about sex are more likely to be disapproval than the messages given to boys. This is particularly true about messages from parents” (p. 68). “Parents often find initiating and sustaining discussions about sexuality with their teenagers extremely difficult” (p. 63). Communication about sex only takes place between children and mothers. Other studies document similar findings and show that communication with parents and potential sexual partners about sex before their sexual debuts helps adolescents not only understand how sexual intercourse works but also allows them to protect themselves against unwanted pregnancy and infectious diseases (Cobb, 1997).

There appeared to be relationships between various types of sexual activities. For example, watching sex videos, engaging in sexual intercourse and hugging are accompanied by intimate kissing. The respondents considered intimate kissing to be eye opening and a way to make hugging, watching sex videos, or sexual intercourse more interesting.

Out-of-school friendship networks have more influence on sexual practices than school friendship networks. This may be related to the purpose for which a friendship is formed. School-based friendships are in most cases established for academic purposes and other school-

related purposes. In contrast, adolescents establish out-of-school social networks with friends whom they see on special occasions, and these relationships are usually more selective. One important purpose of such a selective friendship network is the creation of sexual relationships. Of the case study participants who had sexual partners, four shared that they either established the relationships through their out-of-school social network friends or are connected through their out-of-school social network friends to their boy- or girlfriends.

A number of social network variables were associated with different sexual practices. Four social network variables—namely, network size, length of membership, strength of relationship, and social network type preference—were associated with watching sex videos, intimate kissing, hugging members of the opposite gender, and fondling the sex organs of another person. Some social- and sex-related variables indicated positive covariations, while others demonstrated negative covariations. Length of time in a friendship network was positively correlated with intimate kissing (being the first sexual activity) ($n = 49$, $r = 0.841$, $p < 0.01$). In contrast, there was a strong negative relationship between length of membership in a religious network and initiation into hugging members of the opposite gender as their first sexual ($n = 37$, $r = -0.805$, $p < 0.01$). Those adolescents with a strong attachment to religion who established religious networks were strongly committed to not hugging members of the opposite gender.

Religious conservatism, which is a personal attribute, may not be a reason to refrain from becoming sexually active. Rather, religious youths connect to other religious youths, which may enforce motivation to adhere to religious doctrines (Moore & Rosenthal, 1993; Regnerus, 2005). On the other hand, the longer adolescents are in a friendship network, the more likely it is that their social relationships may develop into sexual relationships. Moore and Rosenthal (1993) also explaining that “peers and potential sexual partners of sexually mature youths may

encourage sexual involvement” (p. 39) According to group socialization theory, the context in which socialization takes place shapes one’s behavior. Members of religious networks refrain from hugging those of the opposite gender not as the result of a conscious individual decision, but because this is how members are socialized. In other adolescent social relationships, members may influence each other to engage in a particular kind of behavior, such as sexual behavior, that is supported by group norms. Group socialization theory posits that six processes shape human behavior, including the intention to establish sexual relationships. Processes relevant to this study include context-specific socialization, outside-the-home socialization, transmission of culture via group process, and in-group processes that widen between-group differences.

Gender affects how boys and girls communicate with others both socially and sexually. Some of female case participants were unable to talk about sex as freely as the boys. They were not entirely truthful and were unable to go into detail without continued probing. In contrast, boys had no problems talking about their friendships, which provide them with the opportunity to look for sexual partners.

Gender has a direct influence when adolescents choose friends and sexual partners and where to engage in sexual activity. Boys use video rooms to watch sex videos, whereas girls use mobile phones. Boys can watch sex videos with other boys or with girls but girls are conscious of gender when engaging in this activity. Gender also affects perceptions of some activities. Boys perceive watching sex videos as a sexual activity, and girls see the same activity as entertainment. Perhaps due to cultural influences, girls are not able to express their sexual feelings openly. Therefore, watching sex on videos may help them release their feelings and provide emotional satisfaction and thus they call this entertainment.

5.7 Sexual Activity

According to the survey report, adolescent girls had been sexually active longer than adolescent boys, but the case study did not support this finding. In the case study, the girls were not comfortable talking about their sexual networks, but it was easy to talk about their long-term relationships with their best male friends, which they called brother-sister relationships. It was not easy for girls who participated in the case interviews to admit to being sexually active; female adolescents who participated in the survey were more likely to report their sexual activity.

Female adolescents did not consistently report whether or not they had boyfriends. Some who reported that they did not and that they were not sexually active later admitted having boyfriends and participating in at least one of the sexual activities discussed in this study.

Age is an important variable in adolescents' sexual debuts. For male adolescents, the likelihood that they are sexually active increases with age, while female adolescents' sexual debuts are independent of their age. A study conducted in South Africa (McGrath, Nyirenda, Hosegood, & Newell, 2008) found that for girls, sexual debut is associated with the loss of a parental model (such as the death of a mother) more than with age. The issue of empowerment is important here. Male adolescents have independent decision-making power about when to become sexually active. However, cultural, economic, and other social factors compromise female adolescents' decision-making power regarding their sexual debuts.

In spite of the cultural barriers against female adolescents becoming sexually active, the majority of the adolescents of both genders—121 of the 167 (80%) sample respondents and eight of the 10 case interview participants—were involved in at least one activity. Law and tradition in Ethiopia expect adolescents not to be sexually active. For example, age of consent according to

the Ethiopian revised family law is 18 years for both genders (Ethiopian Family Law, 2000), but this does not reflect reality.

Adolescents reported three categories of sex-related activities. The first category consists of activities that they considered sexual: sexual intercourse, kissing, and masturbation. The second category is those activities that adolescents believe motivate sexual activity but are not themselves sexual activities. These activities are alcohol and drug use. The third category consisted of activities over which there was some controversy; these include watching sex videos and live sex and hugging members of the opposite gender.

Some adolescents argued that activities in the third category should be considered sexual activities since they stimulate sexual feelings. Others took the position that hugging and watching sexual videos are forms of entertainment and social interaction and thus are not private issues. What is not probably clear to the adolescents who argued that watching sex videos and live sex and hugging members of the opposite gender are not sexual activities is their ability to lead to sex. Someone who watches sex videos, for example, may develop a desire to try the activities he or she is seeing. Hugging members of the opposite gender may also create strong emotional attachments between individuals, which eventually may lead to a sexual relationship. The settings where these activities occur also affects whether or not they are considered sexual activities. If one hugs a member of the opposite gender at a party where there is dancing, drinking, and other activities that stimulate sexual activity, it can be considered a sexual activity.

The question of whether or not hugging members of the opposite gender is a sexual behavior is controversial. It is especially very confusing in Ethiopia, where everybody can hug and walk around holding hands irrespective of gender, age, or relationship. Adolescents argued that siblings can hug each other, fathers and daughters can hug, and a mother and her son can

hug. This is an interesting argument. Adolescents tried to clarify that hugging is an expression of one's feelings about someone else, not just sexual desire. However, the majority of the adolescents reported hugging other adolescents of the opposite gender, not their mothers or fathers. Hugging members of the opposite gender was the common sexual activity and was engaged in by 52% ($n = 87$) of 167 survey respondents and six of the 10 critical case study participants.

Assuming that the respondents provided accurate information on the types of sexual activities in which they are engaging, the most common sexual activity even more than hugging activity is kissing. Adolescents call this safe, not socially sanctioned, and both a social and sexual activity. Adolescents have strong feeling about kissing and see it more as a social activity than as a sexual activity. Nevertheless, kissing was the most popular type of sexual activity. Other popular sexual activities are those that adolescents recognize as not socially sanctioned and those that are inexpensive and can be practiced easily. These were hugging members of the opposite gender, fondling the sex organs of another person, and masturbating.

It is surprising that 32% of the respondents were engaged in the serious business of sexual intercourse, which was reported to be the first type of sexual practice. This shows that adolescents' end goal in a love-making process is sexual intercourse.

The literature reveals at least four issues related to sexual debut. These are the discourses of morals, desire, danger, and victimization (Moore & Rosenthal, 1993). What evidence do we have in the current study that these discourses shape the sexual debuts of adolescents?

The unclear role of some of the sexual activities leads adolescents to become sexually active. Sexually experienced adolescents may watch sex videos for entertainment and this may serve as an initiation, especially for younger adolescents who have never thought of watching

sex videos as a sexual activity. However, once they try it, visiting video houses becomes a habit, and after watching sex videos two or three times, most of them start to engage in other sexual activities on their own. The most common sexual activities in which adolescents engage next are kissing and masturbation or fondling the sex organs of another person.

Other factors motivate adolescents to become sexually active and influence the settings where sex takes place. Of the seven factors identified as major variables that influence adolescents' sexual debuts, peer influence and personal curiosity were the most widespread. Moore and Rosenthal (1993) say, "Peer influence and pressure is often cited as one of the most influential factors affecting adolescent sexual decisions" (p. 66). Other factors such as coercion or force, financial gain, the desire to express gratitude, family pressure, and depression exert limited influence on adolescents' decisions to engage in sexual activities compared to personal curiosity and peer influence.

The respondents engaged in those sexual activities about which they had the most knowledge. For example, those who believed that kissing is a sexual activity engaged in kissing more than those who did not believe that kissing is a sexual practice.

The physical environment also influences sexual behavior. Various places are more conducive to sexual activities than others are. Preferred physical settings differ according to the respondent's age, gender, and the type of sexual activity. Adolescents assumed that parents and community members do not notice that they are engaging in sexual activities such as intimate kissing, watching sex videos, and masturbating when they do so at their parents' or friends' houses. Kissing does not require special preparation other than privacy. Similarly, it is easy to watch sex videos at home since there are video players, electricity, and separate rooms in which one does not have to worry about being interrupted by adults. Masturbation requires privacy and

security. In most cases, only the person who masturbates has to be alone, but sometimes very close friends can be together. Masturbation usually takes place in bathrooms at home or at a friend's house.

Adolescents often have sexual intercourse for the first time at a friend's house. This happens for a number of reasons. Adolescents are afraid of going to other places such as bars, hotels, and recreation centers to have sex for the first time. Those who are sexually inexperienced prefer safer places and do not want anyone to see them with a member of the opposite gender far away from home. This is mainly true for female adolescents. For example, a male reported that his girlfriend invited him to her house since she could not go out, and they had sexual intercourse for the first time there. Some adolescents have sexual intercourse at bars and hotels, but these are not the locations where these adolescents had sex for the first time.

Public showers are out of sight and are favored by adolescents. For example, *filwuha* is the most preferred place in Addis Ababa among adolescents. This public shower is a safe place as long as one pays the necessary service fee and rent a shower room that accommodates more than one person. The respondents were under the impression that public shower places such as *filwuha* provide bar/hotel services for those who want to engage in sexual activity. *Filwuha* is also one of the few places in Addis Ababa where sex between members of the same gender, which has only recently entered the public consciousness in Ethiopia, is prevalent (Case 1, Case 4, and Case 7). There are only few places where sexual activity takes place. Such places include schools, and the sexual activities that take place there include hugging and kissing, neither of which is considered a sexual activity when it happens at school. Nevertheless, schools are places where sexual negotiation with school friends and out-of-school friends takes place.

Female adolescents choose to go places where others do not recognize them when they are with males with whom they are in a sexual relationship. They choose either their own homes or bars or hotels. They choose their own homes because no one suspects they are having sex if they are at home. They prefer bars and hotels because they assume that these are places where they will not run into anyone they know. They prefer bars and hotels when they are not engaging in sexual behavior for the first time. Male adolescents prefer their friends' houses because their friends keep their secrets, and when they have sex at their friends' homes, it is easy for their friends to tell others in the friendship network about their sexual encounters if they want their friends to know about them.

The issue of externalization of sexual relationships was another important finding. It is clear from the qualitative data that adolescents have a tendency to externalize their sexual relationships. They either call their sexual partners their best friends or share their own experiences as if they were experienced by others.

5.8 Communication and Sex

Both the survey and case study participants indicated that communication has an influence on sexual engagement. Case study participants discussed the effects of communication in both encouraging and delaying their initiation into sexual activities. Members of both genders agreed that the quality of their communication with parents/guardians affected their decisions to make or delay their sexual debuts. Communication also affects the relationships of the members of friendship networks. More frequent communication fosters trust and reciprocity among friends. For male adolescents, the use of a friendship network for information sharing is important for finding girlfriends and engaging in sexual activity. Girls try to keep their sexual relationships secret and do not tend to share this information with the members of their

friendship networks. When they become sexually active, they start to isolate themselves from already established social networks. Thus some boys stated that they are reluctant to enter into sexual relationships, as they assume that their girlfriends may try to keep them away from their friends.

Male and female adolescents interpret sexual engagement differently. Male adolescents see sexual engagement as a means of self-realization and adventure. Female adolescents see sexual engagements as romantic relationships and in terms of emotional attachment. According to Moore and Rosenthal (1993), “young men frequently interpret their initial sexual experiences as learning and experimentation. Young women on the other hand, usually assume that commitment will accompany physical intimacy that sex and love automatically go together” (p. 95). The need for physical intimacy makes adolescent girls isolate their sexual partners from others.

Peer influence is one of the strongest factors that lead adolescents to make or delay a sexual debut of any kind. For example, kissing commonly occurs due to peer influence. Peers influence each other in a number of ways. There are at least two important categories of peer influence. The first is positive peer influence, and the second is negative peer influence. Adolescents can be influenced and persuaded by their peers in a positive manner to try what others have already experienced. Negative peer influence is more coercive and can involve ridicule and, often, rejection if an individual does not give in to peer pressure. This is common in schools, where a member of a clique may be told to kiss someone outside that particular clique. If the member agrees, he or she is praised and becomes the center of discussion for awhile. This also gives the network member a sense of courageousness, confidence, and assurance that he or she will remain a member of the clique. In contrast, if a member is encouraged to engage in a

sexual activity and refuses, he or she may be considered a fool and inexperienced, and as refusing to conform to group culture. If the member continues to refuse to give in to the peer pressure, he or she may be dismissed from the clique. A group's preference for a particular behavior often leads adolescents to try out the behavior. Sometimes group members become shaped in a particular behavior, such as forcefully kissing girls without permission, in order to remain a part of the group (group socialization theory).

Personal curiosity is an important factor that leads adolescents to start having sex. Adolescents become curious about sex when they do not proper guidance from any of the parties expected to teach them about sex. As reported by case study participants, many parents do not communicate properly with their children and do not use the right form of communication to teach them about sex. Peers either exaggerate or convey distorted information about sex. Adolescents are curious about sex for a number of reasons. Because of this curiosity, adolescents have an interest in having sex and are also pressured by their peers to have sex. The interest of adolescents in having sex is counterbalanced by their own personal feelings and the approval or disapproval of close friends. The theory of self-interest assumes that dyads form relationships in order to maximize their personal preferences and desires. Lessons that are communicated to adolescents by their peers or sex videos and pornographic pictures increase their curiosity about sex. For example, one of the case informants reported that after he watched a sex video, he decided to have sex. He invited a friend to go with him to visit a sex worker. However, as both of them were kids, the sex worker kicked them out. Information conveyed by sex videos would have been the reason for his sexual debut if the sex worker had not rejected him.

5.9 Summary

This chapter discussed major issues concerning the social networks and sexual practices of adolescents. The discussion focused on eight themes that emerged from the analysis of major findings. The first two are the adolescents' knowledge and perceptions of social and sexual networks. Adolescents' knowledge and perceptions of the forms and functions of social networks are influenced by their age, sex, and levels of communication with parents and significant others. Among adolescents, friendship networks are more popular than the other four forms of networks: family, extended family/kinship, neighborhood, and religious networks. A number of factors such as culture, attachment to significant others, engagement in social networks, and gender affect adolescents' knowledge and perceptions of sexual activities.

The findings concerning the respondents' social network engagements show certain inconsistencies with their knowledge and perceptions of forms of social networks. The discrepancies between knowledge, perceptions, and experience are associated with unattainable aspirations, a lack of understanding of certain types of relationships, membership in a friendship network, and the influence of older members of social networks, irrespective of their knowledge and aspirations concerning that particular social network.

Adolescents do not tend to consider extended family members to be part of their social networks and have little interest in joining extended family/kinship networks. On the other hand, adolescents like to join neighborhood social networks but, because of adults' perceptions of neighborhood interactions, do not have much success in joining this form of social network. Gender and purpose of the establishment of a particular social network influence each other. An adolescent's age determines which form of social network he or she wishes to join. On the other hand, the purpose of the network determines at which age adolescents wish to join that particular

social network. Of the five forms of social networks treated in this study, friendship and family networks are the two networks that attract adolescents. The study identified different types of friendship networks based on location and function.

Friendship networks exert more influence on adolescent sexual activity than other forms of networks. However, family-based social networks have a positive impact on adolescents' decisions regarding whether or not to have sex. This is an interesting finding that contradicts Ethiopian traditions, according to which talking about sex in the family environment is not appropriate. The study reported interesting yet puzzling findings regarding adolescents' use of religious networks to make sexual connections. A gender-disaggregated report indicated that male and female adolescents use their friendship networks differently as a means of connecting with sexual partners. Friendship and family networks are controlled by age and gender of members in their function as predictors of sexual engagement.

The study revealed that adolescent girls stay in sexual relationships longer than adolescent boys. However, adolescent girls were inconsistent in their reports of their sexual experience. In contrast to male adolescents, for female adolescents, age is not a predictor of sexual debut. Of the seven motivating factors/predictors of sexual debut, peer influence and curiosity about sex were the two most common factors that influenced the sexual debuts of both males and females. There was a positive correlation between adolescents' knowledge and perceptions of types of sexual activity and their engagement in those types of sexual activities. Locations in which adolescents first engaged in a sexual activity vary, depending on their gender and the type of sexual activity. For sexual intercourse, female adolescents tend to prefer their own homes, while male adolescents prefer their friends' houses. The environments, which are

free of sexual engagement, are schools. However, schools are the place where adolescents make connections with potential sexual partners.

The frequency and focus of communication among adolescents and their parents, as well as between adolescents themselves, have an impact on social and sexual network engagement. Some factors serve as encouragement for adolescents to engage in sex, while others prohibit them from engaging in sexual activity. Most peer-related communicative factors are positive contributors and communications with parents inhibit adolescents from becoming sexually active.

6 IMPLICATIONS

This study has implications for three different aspects of social work: social work education, the social work research, and social work practice.

6.1 Implications for Social Work Education

Social work education involves the study of practice with individuals, small groups, and community relationships. The focus of social work education is to train social workers and equip them with the necessary knowledge and skills to deal with the issues and problems faced by individuals, groups, organizations, and communities. The problems and issues of individuals, groups, and communities are interrelated. At the individual level, the practitioner should understand the connections between individuals and groups. At the group and community levels, in order to address the needs of a particular group or community, practitioners should understand the ways in which groups are connected to each other. Social network analysis is an excellent tool for understanding relationships in organizations and communities.

Training in different disciplines gives much emphasis to social network theories, concepts, techniques, and tools. However, this is not a focus for all social work professionals. Very few social work scholars have joined the International Social Network Association (Gray & Webb, 2009). Although it is not the tradition of schools of social work around the globe, other disciplines such as sociology, political science, and computer science train students in social network analysis.

The curriculum at the School of Social Work at Addis Ababa University lacks content on social network analysis. Like other schools of social work around the world, social work education in Ethiopia aims at equipping students with the necessary knowledge and skills for mobilizing resources, dealing with the issues of family and child welfare, promoting community

health, and focusing on organizational management and social policy planning. Specific target groups are vulnerable children, families, adolescents, persons with disabilities, persons affected and infected by HIV/AIDS, the poor, and disfranchised communities. Adolescents have multifaceted needs and often have problems that call for professional social work intervention. The National Association of Social Workers in the United States has standards for the practice of social work with adolescents. According to the National Association of Social Workers (1993), “Adolescents strive for autonomy and self-identity, try to define their values, and increasingly rely on peers for advice” (p. 2). Social work professionals should be equipped with core knowledge about adolescents. In addition, they should understand “the importance of opportunities for adolescents to establish positive relationships with open expression of thoughts and feelings with family members, peers, and adult role models such as teachers, clergy, sports team coaches, and so forth” (National Association of Social Workers, 1993, p. 4).

Although there is a youth policy in Ethiopia, no studies on adolescent social networks and sexual practices have been conducted. Findings from the current study suggest that adolescent social networks have direct links to their social and sexual behaviors. Therefore, this study suggests there is a need to train social workers in social network analysis so they can address these issues. The study also reveals adolescents’ level of engagement in social networks and their relationships to reproductive health and related risk factors.

By acquiring knowledge of adolescents’ relationships with their peers, families, extended family members, and other groups, social work students will understand with whom adolescents are connected. Trained social workers will be able to analyze the prospects and consequences of each connection made by adolescents. This can be systematically achieved through the use of network analysis techniques.

Social work education at Addis Ababa University should equip its graduates with the skills and techniques of social network analysis. Training should cover social network theories, techniques for developing data collection tools, and analysis and interpretation of data. Either of the following two approaches is recommended to train students in social network analysis skills. First, social network theories, concepts, and techniques may be integrated into one of the existing courses. An MSW course that could incorporate social network training is SSWA 603 (Integrated Social Work Methods I). Major focuses of the course are basic theories, concepts, and principles of integrated practices for working with communities and task groups. The focus of the course is understanding types of groups, roles of groups, stages of group development, and the process of team building. The course is intended to help students develop skills to analyze the roles of community leaders, community groups, and other community-based organizations. The basic data collection tools designed to understand the roles and functions of groups are community assessment and group and individual interest group interviews. Students are not thoroughly taught analysis skills for understanding connections among individuals, within groups, and between groups. Alternatively, an independent course on social network analysis for MSW students might be developed. Basic material for teaching social network analysis as an integral part of Integrated Social Work Methods I or as an independent course is suggested in table 6.1.

To learn social network theories, concepts, and techniques of data collection, one must have basic knowledge of and skills in social network analysis. Sociology, psychology, and social work provide the knowledge base for social network analysis, in addition to social network theories. Gray and Webb (2009); Cotterell (2007); Hanneman and Riddle (2005); Payne (2005); J. Scott (2000); Freeman (1996); and Granovetter (1983). Teaching social network analysis also

requires knowledge of mathematics and statistics . The school needs to have faculty with the necessary training before social network analysis coursework can be offered. The PI of the current study might be a candidate due to his engagement in social network research in a couple of projects. At present, one master's student is doing her thesis research on the social networks of one of the marginalized communities in Ethiopia in relation to coping mechanisms in an environment of exclusion. She could be another potential candidate to teach social network analysis. The goal of a course on social network analysis should be to give students “general knowledge of major theories, concepts and techniques used in social network analysis” and an opportunity “to get some hands-on experience . . . collecting, analyzing and mapping network data with [social network analysis] software” (Mayorova, 2008, p. 1).

There are important theories that need to be taught in a social network analysis course. These theories include social exchange theory, group socialization theory, balance theory, and the theory of homophily. Each of these theories helps explain people's relational dynamics, which is an important component of the social work profession. Social exchange theory explains that a human relationship is built on the basis of mutual exchange and provides knowledge on how people share resources. The theory emphasizes on group interaction, which is also the focus of social work. Group socialization theory, on the other hand, emphasizes that the environment constantly shapes human behavior. Social networks are inherent human practices that regularly shape human behavior. Social workers work in a dynamic environment in which people are always interacting and relationships are constantly changing. This theory's understanding of human dynamics is an important element of social network analysis.

The remaining two theories, which were used to interpret and analyze the findings of the current study, are balance theory and the theory of homophily. An important contribution of

balance theory to social work is its observations regarding people’s shared perceptions of and attitudes about an object external to them. Assimilation occurs when there is a positive balance between persons in the evaluation of the object. Social work as a profession deals with relationships. Relationships do not occur in a vacuum. Common interest is what brings people together. This is an important contribution of balance theory to social work teaching, research, and practice. The last theory, which has great implications for social work education, is the theory of homophily. This theory emphasizes the importance of shared characteristics, such as gender, age, ethnicity, profession, and social status, in bringing people together. The theory of homophily is also important to social work. By offering social work students the opportunity to study social network analysis and the above theories, schools of social work can equip them with the skills needed to deal with people’s relationships. For the tentative proposed course content to teach social network analysis, see table 6.1 below.

Table 6.1: Recommended Course Content on Social Network Analysis

Content	Main focus
Theories and concepts of social network analysis	To teach theories, concepts, and methods for studying social structures of dyads, small groups, organizations, and institutions by using social network analysis. Important social network theories and concepts to be taught as part of the general theoretical and conceptual introduction may include: social exchange theory, group socialization theory balance theory and theory of homophily, and other elements such cohesiveness in a social network, position in a network, social network ties, social networks and community benefits (Mayorova, 2008). Other concepts include network centrality/ centralization, small-World Networks, cluster analysis, network density, structural equivalence, network neighborhood, shortest paths and path distribution.
Methods of data collection and analysis	To teach approaches to collect network data, data quality, graph-theoretic, statistical, and visual approaches to analyzing network data.
Software application	Software such as UCINET, Pajek, and SocNet is used.

6.2 Implications for Social Work Research

Social network analysis is a methodological tool for social work research. Some scholars believe that the purpose of social network analysis is essentially to generate data for social work education and practice. Sainsbery (2008).

Humans are unavoidably social beings. Consequently, not only does society exist, but also its existence is inevitable, and society, individuals, and groups within it influence each person in many ways. It follows that to understand the attributes of individuals (for instance their behaviors and health) the research toolkit must include methods that explore the social relationships between people. Social network analysis is one such method. (para. 2)

Human relationships and their support mechanisms have formal and informal aspects of interaction. Research on formal and informal support networks covers community institutions, homelessness, street life, disease transmission, family support system, adolescents and youths' social and sexual networks, and social capital. Different studies focus on various community groups such as women, children, adolescents/youths, family, and neighbors, as well as the community at large, in order to understand support systems used by social networks.

Adolescents have multifaceted interests that families, schools, and professionals such as social workers, public health service providers, and physicians need to address. The needs of adolescents range from their basic needs to connections within and outside the home environment to the achievement of broader life goals related to education, employment, marriage, and family formation. Findings of this study showed that adolescents' networks include romantic relationships, friendships, and adolescent-parent interactions and can be

affected by substance use, sex, peer culture, peer conflict, depression, and frustration, most of which are subjects of social network study. The social networks of adolescents require more study to help us understand the multifaceted functions of these connections. For example, research on adolescent social networks provides knowledge of the strength of ties among adolescents. Social exchange theory defines tie strength as a “combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterizes the tie” (Maddrell, 2008, p. 6). Tie strength is an important element of adolescents’ connections, and an issue that social network research should explore more.

The current study also suggests that the study of adolescent social networks contributes to our knowledge of their risky sexual behavior. Other studies focus on “how the form and content of teenagers’ social networks can influence sexual and HIV infection risk behaviors” (Lombardi, Cargill, Stephens, & Gigliotti, 1997, p. 1).

Other implications for research relate to the use of MMR. MMR is more than just the combination of quantitative and qualitative research methods. MMR makes it possible to generate the most relevant information on adolescent social networks and their sexual practices, which would not be possible with a single research method. In this study, the use of only a survey or case study would not have generated such in-depth information. The mixed methods were used to triangulate the quantitative and qualitative data. The MMR method also helps to explain ambiguous information generated by the survey method. The use of in-depth interviews was useful for clarifying ambiguities in data generated on the age at which sexual debuts took place, places where adolescents made their sexual debuts, and factors that trigger sexual debuts. In addition to its potential for use in social network studies, MMR has relevance for other areas of research in social work education.

The School of Social Work needs to train students and faculty in MMR. Traditionally, postgraduate students use both quantitative and qualitative methods in their research, but often these methods are applied incorrectly because of a lack of proper training in MMR. MMR is not typically recognized as an independent research paradigm different from the mere blending of quantitative and qualitative methods. Faculty members need to strengthen their research skills in MMR. Postgraduate research courses should include MMR. Depending on the nature of the research agenda, master's students need to be encouraged to use MMR in its scientific sense, rather than just mixing quantitative and qualitative methods.

In summary, the current study calls for further research on the following areas.

- 1) The current study needs to be replicated throughout Ethiopia not only with high school students and in urban settings but also with out-of-school youths and in rural settings.
- 2) An in-depth study of adolescent social networks is required to help us understand adolescent risk behavior such the risk of sex, substance abuse, and violence and how they are influenced by social relationships.
- 3) The influence of adolescent-parent communication versus that of peers on adolescents' socialization was one unresolved finding in this study. Investigation that is more comprehensive is needed to understand family networks and the roles they play in shaping adolescent behavior in comparison with outside-of-home socialization among peers.
- 4) The use of MMR in study of social network analysis is important.

6.3 Implications for Social Work Practice

Good training and research are reflected in good practice in the field. Comprehensive social work training enables social workers to understand the diverse spectrum of human needs.

As argued above, social work education should include training in social network analysis.

A social work practitioner needs to understand how individuals, groups, and communities connect with each other. The current study demonstrates that adolescents connect to family, friendship, extended family/kinship, neighborhood, and religious networks. Each of these connections, as Granovetter's theory of the strength of weak ties claims, involves either a strong or a weak tie. Strong ties create cohesion and weak ties reduce fragmentation. It is important to note that "the strength of ties is interesting because weakly tied individuals tend to bridge different networks and are therefore less integrated into any particular networks" (Louch, 2000, p. 49). Social work practitioners must understand those individuals whose relationships have little or no cohesion and as a result are not receiving adequate information and intervene where necessary.

In this study, adolescents demonstrated both strong and weak ties in their relationships with members of their various networks. The networks provided them with the necessary information and skills to solve problems and to support each other. Data from the current study help us understand how adolescents' social networks and sexual practices work with and through each other. Adolescents use their networks as informal supports in order to achieve what they plan or want to do regarding reproductive health and sex.

The degree and extent of adolescents' connections with their social networks is an issue that has been neglected by agencies and professionals working in the area of reproductive health, HIV/AIDS, and youth training and skill development. Schools, parents, and government agencies, which are often the most concerned about adolescents, are, in most cases, ignorant of the influence that social networks have on adolescents' sexual practices. Adolescents learn about

sex from their friends and peers, but schools and parents rarely look at the purposes for which adolescents use their social relationships.

The study identified important practical implications of adolescents' social networks for the promotion of safe reproductive health. It also identified gaps in parents' and schools' involvement in promoting healthy adolescent sexual activity. An important finding is the level of ignorance shown by parents and schools in their communications with adolescents regarding sex. Parents seem unprepared to give attention to adolescent sexual activity. They may assume that when adolescents stay at home or go to their friends' houses, they are safe from the risks of unsafe sex, but, as this study demonstrates, this is not necessarily true.

Schools place more emphasis on academic matters and give less attention to adolescents' social interactions and related outcomes, such as sexual activity. However, according to adolescents, the first stage in sexual exploration, such as hugging members of the opposite gender and kissing, takes place at school. These kinds of sexual practices do not arouse attention from other adolescents or from the school administration. The assumption is that hugging is not necessarily sexual or inappropriate. The study also demonstrated that adolescents use the loose relationships between schools and parents to go out, telling their parents that they are going to study with their friends but instead going to sex video houses and public baths.

An important finding was the use of bathhouses for sexual activity. This study raises questions as to whether parents and public bathhouse administrators are aware of the purpose for which adolescents are using these public facilities. Another risk factor for unsafe sexual practices is parties with schoolmates and out-of-school friends. These networks are primary sources of sexual partners. Do parents and school administrators know the purpose of these parties?

Schools, parents, and health agents have a significant responsibility to ensure the reproductive health of adolescents. The following are important practical steps the three parties may take.

a. Parents

To make sure that adolescents enjoy the benefits of their social networks and practice safe sexual behavior, parents should be aware of and act upon the following. Friendships are not necessarily genuine. Sometimes friendships lead to unsafe sexual practices. Parents should be taught the importance of informing their adolescent children of the potential positive and negative outcomes of their friendships. Adolescents should have a private place at home where they can begin experimenting sexually. Adolescent-parent communication and discussion of social networks and reproductive health may minimize the risk of unsafe behaviors in places that are generally considered safe, for example, one's own , friends' houses, and public bathhouses. Parents should be aware that their adolescents watch sex videos in their own bedrooms.

b. Schools

Schools are important social environments where adolescents have many life experiences that shape their later lives. In order to prevent adolescents from using the school environment to engage in relationships that lead them to become sexually active at an early age, school administrations should emphasize the major functions that school-based friendships should play. Schools and parents should establish strong partnerships to provide proper guidance for adolescents.

c. Health Agencies

Adolescents are at risk of HIV infection, pregnancy, and unwanted births. Adolescents use their friendships and other types of social networks to make sexual connections. To promote reproductive health and anti-HIV campaigns among adolescents, health agencies need to

understand the social networks of adolescents and utilize such connections to promote positive reproductive health behavior among the adolescent population. For example, the Family Guidance Association of Ethiopia, which has been a pioneer in providing reproductive health education and contraceptive use for adolescents, needs to focus attention on sensitizing concerned stakeholders and inviting those in influential positions to support its adolescent reproductive health promotion program (International Council on Management of Population Programmes, n.d.). The importance of employing adolescents' social relationships to promote their reproductive health is not mentioned by the association's program document.

The study also indicates other issues that are important for skilled social workers to be aware of.

- 1) Social network analysis can help school social workers provide appropriate guidance and counseling services to students who have weak social connections. The study shows that adolescents who, for example, have strong communication with their parents have higher test scores than those with weak communication with their parents.
- 2) Social network analysis can help health care practitioners disseminate primary health care services through available networks. Network analysis may be used to help support adolescents in disconnecting themselves from cliques that engage in unhealthy behavior. As the study shows, adolescents who have small networks and weak ties are those who are most at risk of becoming sexually active. Moreover, adolescents who have weak ties but bridge their networks with dense networks are often recruited as sexual partners either by acquaintances or by members of the networks with which they connect or bridge.
- 3) A family network is more sustainable than a friendship network and is the environment in which adolescents should receive reproductive health education, academic support, and

an orientation toward delaying sexual debuts. However, adolescents, for various reasons, dislike family networks. An analysis of the prospects and consequences of social networks may help social workers assist adolescents in choosing social networks that promote physical, mental, and spiritual growth and development.

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Appendix A: Tables**Appendix A1 Types of Sexual Debut × Social Network Variables (Type, Size, and Functions)**

		Chi-square statistics				
		frequency	χ^2	<i>df</i>	Cramer's V	Asymp. sig. (2- sided)
1.1	Membership in friendship network × first sexual experience was intimate kissing	103	9.211**	1	0.276	0.002
1.2	Membership in friendship network × first sexual experience was masturbation	104	0.158	1	0.036	0.691
1.3	Membership in friendship network × first sexual experience was sexual intercourse	103	4.296	1	0.188	0.038
2.1	Number of male members in family network × first sexual experience was intimate kissing	74	5.172	4	0.270	0.264
2.2	Number of male members in family network × first sexual experience was masturbation	79	3.510	4	0.466	0.212
2.3	Number of male members in family network × first sexual experience was sexual intercourse	77	5.588	4	0.269	0.232
2.4	Number of female members in family network × first sexual experience was intimate kissing	67	5.050	4	0.275	0.282
2.5	Number of female members in family network × first sexual experience was masturbation	68	1.439	4	0.145	0.837
2.6	Number of female members in family network × first sexual experience was sexual intercourse	71	9.918*	4	0.374	0.042
2.7	Number of male members in friendship network × first sexual experience was intimate kissing	68	2.224	4	0.182	0.891
2.8	Number of male members in friendship network × first sexual experience was masturbation	68	7.03*	4	0.332	0.023
2.9	Number of male members in friendship network × first sexual experience was sexual intercourse	68	1.102	4	0.127	0.894
2.10	Number of female members in friendship network × first sexual	68	8.440*	4	0.352	0.022

2.11	experience of intimate kissing Number of female members in friendship network × first sexual experience was masturbation	70	6.389*	4	0.342	0.017
2.12	Number of female members in friendship network × first sexual experience was sexual intercourse	69	9.222*	4	0.366	0.050
3.1	Function of friendship network is to build self-confidence × first sexual experience was intimate kissing	100	0.334	1	0.059	0.557
3.2	Function of friendship network is to build self-confidence first sexual experience was masturbation	99	0.999	1	0.096	0.340
3.3	Function of friendship network is to build self-confidence × first sexual experience of sexual intercourse	101	6.605*	1	0.214	0.032
3.4	Function of friendship network is to help find a boy- or girlfriend × first experience was intimate kissing	101	1.442	1	0.119	0.230
3.5	Function of friendship network is to help find a boy- or girlfriend × first sexual experience was masturbation	99	4.041	1	0.202	0.044
3.6	Function of friendship network is to help find a boy- or girlfriend × first sexual experience was sexual intercourse	101	0.160	1	0.04	0.689
3.7	Function of family network is information sharing × first sexual experience was intimate kissing	102	0.199	1	0.044	0.855
3.8	Function of family network is information sharing × first sexual experience was masturbation	103	5.994*	1	0.235	0.017
3.9	Function of family network is information sharing × first sexual experience was sexual intercourse	103	0.495	1	0.069	0.481
3.10	Function of family network is to build self-confidence × first sexual experience was intimate kissing	101	1.482	1	0.121	0.223
3.11	Function of family network is to build self-confidence × first sexual experience was masturbation	102	2.285	1	0.150	0.131
2.12	Function of family network is to build self-confidence × first sexual experience was sexual intercourse	100	0.667	1	0.082	0.414

* $p < 0.05$, ** $p < 0.01$, 2-tailed

**AppendixA2: Settings Where Sexual Debuts Take Place × Social Network Variables
(Type, Size, and Functions)**

		Chi-square statistics				
		Counted frequency	χ^2	<i>df</i>	Cramer's <i>V</i>	Asymp. sig. (2- sided)
1.1	Number of male members in a friendship network × first experience of kissing committed in parents house	51	0.589	4	0.107	0.964
1.2	Number of female members in a friendship network × first experience of kissing committed in parents house	54	4.935	4	0.302	.294
1.3	Number of male members in a friendship network × first experience of kissing committed in parents house	52	2.594	4	0.223	0.628
1.4	Number of female members in a friendship network × first experience of kissing committed in parents house	53	2.329	4	0.210	0.878
1.5	Number of male members in a friendship network × first experience of sexual intercourse committed in parents house	26	3.806	4	0.383	0.433
1.6	Number of male members in a friendship network × first experience of sexual intercourse committed in friends' house	27	7.486*	4	0.527	0.045
1.7	Membership in a family network × first experience of kissing committed in parents' house	89	2.273	1	0.150	0.132

* $p < 0.05$, ** $p < 0.01$, 2-tailed

Appendix A3: Reasons for Sexual Debut × Social Network Variables (Type, Size, and Functions)

		Chi-square statistics				
		Counted frequency	χ^2	<i>df</i>	Cramer's <i>V</i>	Asymp. sig. (2-sided)
1.1	Membership in a friendship network × first kiss due to peer influence	89	0.313	1	0.59	0.576
1.2	Membership in a friendship network × first kiss due to curiosity	89	2.725	1	0.175	0.990
1.3	Membership in a family network × first kiss due to peer influence	89	7.772*	1	0.023	0.029
1.4	Membership in a family network × first kiss due personal curiosity	89	3.781	1	0.206	0.052
1.5	Number of females in a friendship network × intimate kissing was due to personal curiosity	52	5.935**	1	0.3360	0.002

* $p < 0.05$, ** $p < 0.01$, 2-tailed

Appendix B: Data Collection Instruments

Appendix B1: Survey Questionnaire

Adolescent Social Networks and Sexual Practices Questionnaire

School code _____

Questionnaire code _____

General instructions: Please read each question carefully before answering.

SECTION 1 Friendship and Social Networks

Questions on School Friends

1 Do you have close school friends? (Circle the code number.)
 (A close friend is a person with whom you share very important information such as secrets, and who also shares information with you.)

01 Yes

02 No (If the response is no, go to question 9.)

2 How many close school friends do you have? _____

3 How many of your close school friends are:

Female: _____

Male: _____

4 List the name, gender, and age of up to FIVE of your close school friends. If you have fewer than five close school friends, list all of them.

Name	Gender	Age
1. _____	m f	_____
2. _____	m f	_____
3. _____	m f	_____
4. _____	m f	_____
5. _____	m f	_____

5 How many of your close school friends know each other? Circle the answer code for the statement that best describes your answer.

	Answer code
All friends know each other	05
Most friends know each other	04
Few friends know each other	03
None of the friends know each other	02
I do not know.	01

- 6 In one week, how frequently do you communicate with your close school friends? Circle the answer code for the statement that best describes your answer.

	Answer code
Every day	05
Five to six days	04
Three to four days	03
One to two days	02
Less than once a week	01

- 7 In your perception, how many of your close school friends share information with you before sharing with their other friends? Circle the answer code for the statement that best describes your answer.

	Answer code
All of them	06
Most of them	05
Few of them	04
Very few of them	03
None of them	02
I do not know.	01

- 8 What is the means of communication you use most frequently with your close school friends? Circle the answer code for the statement that best describes your answer. Please choose only one.

	Answer code
Face-to-face communication	06
Telephone	05
Internet message	04
Mobile text message	03
Notes or written letters	02
Messenger	01
Other (please explain)	

Questions about Close Out-of-School Friends

- 9 Do you have close out-of-school friends? (Out-of-school friends are those friends who are not currently in school.)
- 01 Yes
- 02 No (If the response is no, go to question 17.)
- 10 How many close out-of-school friends do you have? _____
- 11 How many of your close out-of-school friends are:
- Female: _____
- Male: _____

- 12 List the name, gender, and age of up to FIVE of your close out-of-school friends. If you have fewer than five close out-of-school friends, list all of them.

Name	Gender	Age
1. _____	m f	___
2. _____	m f	___
3. _____	m f	___
4. _____	m f	___
5. _____	m f	___

- 13 How many of the friends listed in your answer to question 12 know each other? Circle the answer code for the statement that best describes your answer.

	Answer code
All friends know each other.	05
Most friends know each other.	04
Few friends know each other.	03
None of the friends know each other.	02
I do not know.	01

- 14 In one week, how frequently do you communicate with the friends listed in your answer to question 12? Circle the answer code for the statement that best describes your answer.

Frequency of communication	Answer code
Every day	05
Five to six days	04
Three to four days	03
One to two days	02
Less than once a week	01

- 15 In your perception, how many of your close out-of-school friends share information with you before sharing it with their other friends? Circle the answer code for the statement that best describes your answer.

	Answer code
All of them	06
Most of them	05
Few of them	04
Very few of them	03
None of them	02
I do not know.	01

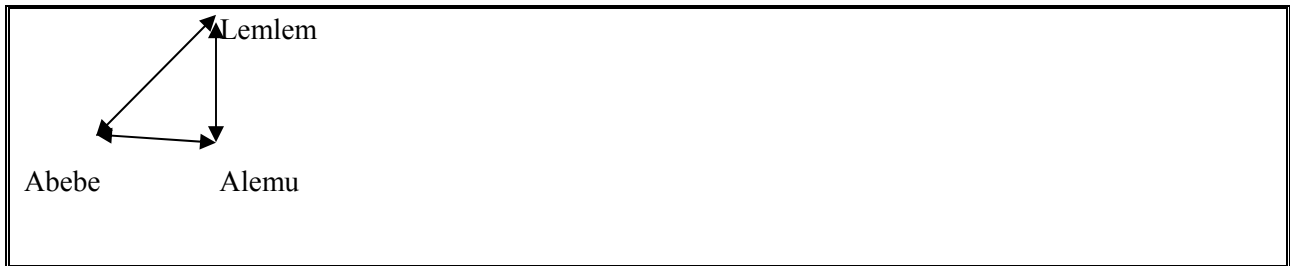
16 What is the means of communication you use most frequently with your close out-of-school friends? Circle the answer code for the statement that best describes your answer. Please choose only one.

	Answer code
Face-to-face communication	06
Telephone	05
Internet message	04
Mobile text message	03
Notes or written letters	02
Messenger	01
Other (please explain)	

Questions on Social Network Concepts

17 Below are five statements about the meanings and types of social networks. Check the box that indicates your level of agreement with each statement.

Note: Before you respond to the following questions, look at the following diagram. The figure shows the connections between three adolescents named Abebe, Lemlem, and Alemu. This is called a social network.



No.		Strongly agree	Agree	Undecided	Disagree	Strongly Disagree	I do not know.
17.1	A social network is a relationship an adolescent has with school or out-of-school friends.						
17.2	A social network is a relationship between an adolescent and family members.						
17.3	A social network is a relationship between an adolescent and extended family members.						
17.4	A social network is a relationship between an adolescent and people of the same religion.						
17.5	A social network is a relationship between an adolescent and neighbors.						

18 Below are five statements about the functions of friendship networks. Check the box that indicates your level of agreement with each statement.

No.		Always	Sometimes	Never	I do not know.
18.1	A friendship network allows adolescents to share information.				
18.2	A friendship network helps adolescents solve problems.				
18.3	A friendship network helps adolescent girls reduce the work burden at home.				
18.4	A friendship network allows adolescents to share their happiness or sorrow.				
18.5	A friendship network allows adolescents in a network to demonstrate their competence and fitness to adolescents in other networks.				
18.6	A friendship network helps adolescents reduce their engagement in antisocial behaviors.				
18.7	A friendship network allows adolescents to support each other academically.				
18.8	A friendship network allows adolescents to share resources.				
18.9	A friendship network helps adolescents build self-confidence.				
18.10	A friendship network helps adolescents find boy- or girlfriends.				

Questions about Your Social Networks

19 Are you a member of any social networks?

(In this study, a social network refers to the relationship between an adolescent and his or her school and out-of-school friends, family members, extended family members, persons with similar religious beliefs, and neighbors.)

01 Yes

02 No (If the response is no, go to question 28.)

20 Below are five types of social networks. Check the appropriate box to indicate whether or not you belong to each type of social network.

No.			
		I am a member.	I am not a member.
20.1	A friendship network		
20.2	A family network		
20.3	An extended family/kinship network		
20.4	A social network of persons of the same religion		
20.5	A neighborhood social network		

21 How many persons are there in each social network of which you are a member?

No.		Number of members (excluding yourself)	
		Female	Male
21.1	A friendship network		
21.2	A family network		
21.3	An extended family/kinship network		
21.4	A social network of persons of the same religion		
21.5	A neighborhood social network		

22 In which of the following social networks do you prefer to be a member? Please indicate in which networks you always want to be a member, you sometimes want to be a member, and you never want to be a member.

No.				
		Always	Sometimes	Never
22.1	A friendship network			
22.2	A family network			
22.3	An extended family/kinship network			
22.4	A social network of persons of the same religion			
22.5	A neighborhood network			

23 Five social network types and nine possible functions are described below. For each type of social network in which you are a member, indicate the functions that the network serves for you.

No.	Function	Type of social network				
		Friendship	Family	Extended family/kinship	Religious	Neighborhood
23.1	My social network(s) allows me to share information with other members					
23.2	My social network(s) helps me solve problems.					
23.3	My social network(s) helps me to reduce work burden at home.					
23.4	My social network(s) allows me to share my happiness or sorrow with other members.					
23.5	My social network(s) helps me measure my competence against that of other network members					
23.6	My social network(s) helps me reduce my engagement in antisocial behavior.					
23.7	My social network(s) helps me get academic support from other network members.					
23.8	My social network(s) helps me build self-confidence.					
23.9	My social network(s) helps me find a boy- or girlfriend.					

24 Of the types of social networks of which you are a member, identify the three that you most prefer to belong to by ranking them from first to third.

No.	Type of social network	Level of choice		
		1 st choice	2 nd choice	3 rd choice
24.1	A friendship network			
24.2	A family network			
24.3	An extended family/kinship network			
24.4	A social network of persons of the same religion			
24.5	A neighborhood social network			

25 How long have you been a member of the three types of networks to which you most prefer to belong? Check the box that best describes your answer.

No.	Type of social network	Level of choice			
		Less than six months	Six months to one year	One year to two years	More than two years
25.1	A friendship network				
25.2	A family network				
25.3	An extended family/kinship network				
25.4	A social network of persons of the same religion				
25.5	A neighborhood social network				

26 How strong are your relationships with members of the three networks to which you most prefer to belong? Check the box that best describes your answer.

No.				
		1 st choice	2 nd choice	3 rd choice
26.1	Very strong			
26.2	Strong			
26.3	Neutral			
26.4	Not strong			
26.5	Not very strong			

27 In your perception, how many of the members of each of the three social networks to which you most prefer to belong share information with you before sharing it with other members of the network? Check the box that best describes your answer.

No.				
		1 st choice	2 nd choice	3 rd choice
27.1	Every member			
27.2	Most members			
27.3	Few members			
27.4	Very few members			
27.5	None of the members			

SECTION 2 Sexual Practice Questions

28 For each of the statements below, check the box that best describes your level of agreement.

No.		Strongly agree	Agree	Undecided	Disagree	Strongly disagree	I do not know.
28.1	Intimate kissing (not kissing for greetings) between members of the opposite gender is a sexual practice.						
28.2	Hugging members of the opposite gender is a sexual practice						
28.3	Watching sex videos and looking at pornographic pictures are sexual practices.						
28.4	Fondling the sex organs of another person is a sexual practice.						
28.5	Watching live sex is a sexual practice.						
28.6	Masturbation is a sexual practice.						
28.7	Sexual intercourse between members of the opposite gender is a sexual practice.						
28.8	Sexual intercourse between members of the same gender is a sexual practice.						

Questions on Personal Sexual Behavior

Responses required from boys only

29 Do you have a girlfriend right now?

01 Yes

02 No

03 I do not want to tell.

30 Have you ever had a girlfriend?

01 Yes

02 No

03 I do not want to tell.

Response required from girls only

31 Do you have a boyfriend right now?

01 Yes

02 No

03 I do not want to tell.

32 Have you ever had a boyfriend?

01 Yes

-
- 02 No
 - 03 I do not want to tell.

THE FOLLOWING QUESTIONS ARE FOR BOTH BOYS AND GIRLS

33 Please answer the eight questions below by placing a checkmark in the appropriate box for each question.

(A sexual practice in this study is defined as intimate kissing, hugging members of the opposite gender, watching sex videos and looking at pornographic pictures, fondling the sex organs of another person, watching live sex, masturbation, or sexual intercourse.)

No.		Yes	No	I do not want to tell.
33.1	Have you ever engaged in a sexual practice of any kind? If the response is no, go to question number 38.			
33.2	Have you ever intimately kissed someone (not kissing as a form of greeting)?			
33.3	Have you ever hugged a member of the opposite gender in the absence of others?			
33.4	Have you ever watched sex videos or looked at pornographic pictures?			
33.5	Have you ever fondled the sex organs of another person?			
33.6	Have you ever watched others have sex?			
33.7	Have you ever masturbated?			
33.8	Have you ever had sexual intercourse with a member of the opposite gender?			

34 For each sexual behavior listed below, please indicate your age when you first engaged in this behavior. If you forget how old you were, check the “I do not remember” box.

No.		Age	I do not remember.
34.1	Intimate kissing		
34.2	Hugging a member of the opposite gender		
34.3	Watching sex videos or looking at pornographic pictures		
34.4	Fondling the sex organs of another person		
34.5	Watching others have sex		
34.6	Masturbation		
34.7	Sexual intercourse with a member of the opposite gender		

35 For each of the sexual practices that you have engaged in, what was the reason that you engaged in it the first time? For each type of sexual practice, indicate which statement best describes your reason.

No.	Type of sexual practice	Reason						
		Peer influence	Curiosity	Forced	Financial gain	To express gratitude	To escape family pressure	To pull myself out of depression and frustration
35.1	Intimate kissing							
35.2	Hugging a member of the opposite gender							
35.3	Watching sex videos or looking at pornographic pictures							
35.4	Fondling the sex organs of another person							
35.5	Watching others have sex							
35.6	Masturbation							
35.7	Sexual intercourse with a member of the opposite gender							

36 Where were you when you first engaged in each of the sexual practices below? For each sexual practice in which you have engaged, indicate where it occurred the first time you did it.

No.							
		Parents' house	My friend's house	Park or recreation center	In a bar/hotel	At school	Another place
36.1	Intimate kissing						
36.2	Hugging a member of the opposite gender						
36.3	Watching sex videos or looking at pornographic pictures						
36.4	Fondling the sex organs of another person						
36.5	Watching others have sex						
36.6	Masturbation						
36.7	Sexual intercourse with a member of the opposite gender						

37 If you had your first sexual experience in a place other than those mentioned in question 26, where was it? Please describe the sexual experience and where it occurred.

SECTION 3 Demographic and social characteristics

Personal information

PLEASE CIRCLE THE APPROPRIATE RESPONSE

- 38 What is your gender?
- 01 Male
02 Female
- 39 How old are you?
- 01 16 years 03 18 years
02 17 years 04 19 years
05 Other _____
- 40 Where is your place of residence? (Write the sub-city in Addis Ababa where you live.) _____
- 41 What was your academic rank during the last semester?
- 01 1–3
02 4–6
03 7–9
04 10 above _____
- 42 Have you ever been held back a grade?
- 01 Yes
02 No
03 I do not want to tell.
- 43 Have you ever been withdrawn from school?
- 01 Yes
02 No
03 I do not want to tell.
- 44 Have you ever attended classes at a school other than your current school?
- 01 Yes
02 No
- 45 What are your plans for the future?
- 01 Complete high school and get technical training
02 Complete high school and go to college
03 Complete high school and get a job
04 Other: _____

Parental information

46 With which of your parents do you communicate/interact the most often?

- 01 With my mother
- 02 With my father
- 03 With both parents
- 04 I am not sure.

47 Of the following issues, which one do you talk about with your parents? Put a checkmark in the appropriate space.

	Yes	No
Academic issues		
Relationships with friends		
Reproductive health		
Selection of boy- or girlfriends		
Managing money		
Selection of social network members		
Plans for the future		

48 Which of the following statements best describes how your parents treat you when you make a mistake?

- 01 They always tell me not to make the mistake again.]
- 02 They sometimes give me advice, but other times they shout at me.
- 03 They sometimes give me advice, but other times they hit me.
- 04 They sometimes shout at me but other times hit me.
- 05 They always hit me.
- 06 I do not want to tell.

Appendix B2: Case Interview Guidelines

Introduction

Good morning/afternoon.

My name is Wassie Kebede. I am a doctoral student in Addis Ababa University, School of Social Work

I am planning to conduct an in-depth case interview with students from New Era and Bethlehem schools on adolescent social networks and their sexual practices. Ninth-grade students from the two schools participated in a survey in June 2008. You are one of the students who has been selected for the interview. To select students for the interview, I asked your peers at your school to suggest students who have good communication skills. I also asked them to tell me the names of those students who have good relationships at school. I also asked them to tell me the names of model students who participate in extracurricular activities such as sports, social clubs, health clubs, etc. You are one of those students who fulfilled the selection criteria.

The interview I am going to conduct with you is the major component of my dissertation project. I have nineteen questions to discuss with you. Our discussion will take about an hour and a half. The first five questions focus on your friendship/network relationships. The next five questions focus on sexual practices. The last question focuses on your personal background.

The outcomes of our discussion will be confidential. This means I will not give your name to anyone else, including the other students involved in the interviews. The results of the interview will only be reported in aggregate form; that is, they will be combined with the answers given by other students. This means that if I need to present individual cases in my report, I will use letters such as A, B, or C, or numbers such as 1, 2, or 3, to represent individual cases. This ensures confidentiality and anonymity for those who are interviewed.

To facilitate the discussion and remember all the points that you raise during our discussion, I want to use a tape recorder to record each interview. I am asking for your permission to use a tape recorder to record your voice during the interview. If you give me permission and I use the tape recorder, my plan is to destroy the cassettes no more than two months after I

complete and defend the dissertation at Addis Ababa University. Although it may occur later for some reason, I plan to destroy the cassettes on September 30, 2009.

I am now asking for your permission to start the interview. If you agree to be interviewed, please sign the assent form after you have read it. Your signature on the assent form will be our mutual agreement. As I mentioned on the telephone, your parents will also sign the consent form, which is on the same page as the assent form that you will sign.

Part 1 Questions on social network relationships

- 1 Explain your understanding of friendships and relationships or networks among adolescents.
- 2 Tell me about your friendships at school and outside school.
- 3 How many friends do you have in your social circle? Choose five close friends out of all the friends you have and list their names. Tell me the criteria you used in choosing these friends.
- 4 Tell me about the activities you do with your five close friends.
- 5 On a sheet of paper, draw a diagram of your relationships with your five close friends and the activities you do with each of them.
- 6 Tell me about your daily communication with your parents and the influence of your interactions with members of your friendship and other social networks on how you choose friends and whether or not to participate in different activities. Do they encourage or discourage these things? How?
- 7 With whom do you prefer to make friends in terms of gender, age, place of residence, and education level? Why do you prefer having friends with these characteristics? Do you belong to networks in which you prefer that members have different characteristics than those you listed? How influential are you in your friendship network and on what do you base your answer? (Ask for any measurement based on the the participant's perceptions.)
- 8 If you believe that members of your social networks communicate with you first before sharing with the rest of the members of the network, what evidence do you have?
- 9 What antisocial behaviors have you observed among adolescents in the community where you live?

Part 2 Questions on sexual activities

- 10 What activities do you perceive to be sexual activities (probe for kissing, hugging, watching sex videos, watching others have sex, masturbation, sexual intercourse). Why?
- 11 Tell me about a special friend at school or in your village with whom you spend time, go out for tea, and share your feelings, and/or whom you date. Share some details about him or her, such as age, education level, and place of residence.
- 12 Tell me about how you started your relationship with your special friend, as well as your perceptions of your current relationship and its advantages and disadvantages.
- 13 Tell me about the connections between your friends and the individuals with whom you are involved in romantic relationships, including ways in which your friendships influence your romantic relationships and/or ways in which your romantic relationships affect your friendships.
- 14 Tell me if you ever engaged in any of the sexual activities that we discussed earlier. Tell me why and how you engaged in these activities. (Probe for reasons for sexual engagement and the settings in which it started.)
- 15 Describe your daily communication with your parents. How does this influence your romantic relationships? Does it encourage or discourage them? How does it encourage or discourage them?
- 16 What sexual activities do you think adolescents report to engaging in freely? Why do you think they do so? Explain your reasons for thinking this based on your personal understanding or any available materials.

Part 3 Personal information

- 17 Tell me your age, plans for the future, and place of residence. Please also describe your school performance and your communication with your parents/guardians.

THANK YOU FOR PARTICIPATING IN THIS INTERVIEW

Appendix C: Informed Consent and Assent Forms

Parents/Guardians Assent Form

Dear Parents/Guardians!
 This is a study conducted by researchers from Addis Ababa University School of Social Work Purpose: The purpose of this study is to understand adolescents’ social networks and their sexual behavior.
 Participants: There are 197 ninth-grade students from New Era and Bethlehem schools (females and males) who will participate in the study. Your child is one of these participants.
 How participants were selected: Children were selected randomly from the school registration roster.
 Benefits and risks: If your child participates in the study, he or she will get 10 Birr for transportation costs. Your child will not face any risk at all from participating in the study.
 Confidentiality: Your child will be provided with a list of questions that he or she will be asked to respond to in writing. He or she will not be asked to write down her or his name. All the information he or she provides will be kept confidential. Data will be stored in a safe place to which no one will have access except the researchers.
 Participation: Participation is voluntary. Your child may only participate if you give us your consent and the child volunteers to participate in the study. After consenting, you are free to decide to withdraw your child from the study.
 Data use: Data from the study will help the researchers write a dissertation. The schools and community planners may use findings of the study for planning purposes.
 Reporting findings: At the end of the study, you will be invited to a meeting to discuss the findings.
 Contact: If you have any questions, please contact Wassie Kebede, the principal investigator, at 0911442701 or 014190572.
 If you are willing to permit your child to participate in the study, please sign and return this form.

Female parent/guardian	Male parent/guardian
Name _____	Name _____
Signature _____	Signature _____
Date _____	Date _____

Student Assent Form

Dear Student!

This is a study conducted by researchers from Addis Ababa University School of Social Work. Purpose: The purpose of this study is to understand your social networks and sexual behavior.
 Participants: There are 187tenth-grade students from New Era and Bethlehem schools (females and males) who will participate in the study. You are one of these participants.
 How participants were selected: Students were selected randomly from the school registration roster.
 Benefits and risks: If you participate in the study, you will get 10 Birr for transportation costs. You will not face any risk at all from participating in the study.
 Confidentiality: You will be given a list of questions that you will be asked to respond to in writing. You will not be asked to write your name on the questionnaire. All the information you will provide will be kept confidential. Data will be stored in a safe place to which no one will have access except the researchers.
 Participation: Participation is voluntary. You may only participate if you give your consent to participate in the study. After consenting, you are free to decide to withdraw from the study.
 Data use: Data from the study will help the researchers write a dissertation. The two schools and community planners may use findings of the study for planning purposes.
 Reporting findings: At the end of the study, you will be invited to a meeting to discuss the findings.
 Contact: If you have any questions, please contact Wassie Kebede, the principal investigator, at 0911442701 or 0114190572.
 If you are willing to participate in the study, please sign and return this form.

Name _____
 Signature _____
 Date _____