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Risk Factor Clustering Among Adolescents Infected with or At-Risk for Chlamydia: A descriptive study

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Abstract

Elizabeth Wilson

Risk Factor Clustering Among Adolescents Infected with or At-Risk for Chlamydia: A descriptive study
(Under the direction of Dr. Richard Rothenberg, MD, MHP, FACP and Dr. Laura Salazar, Ph.D.)

STDs are a major public health epidemic in the United States with an estimated 19 million new cases occurring annually. Associated direct medical costs are estimated at $17 billion annually (CDC, 2010). Chlamydia is the most prevalent of all STDs and is also the most reported notifiable disease in the United States. While adolescents only account for an estimated 25% of the sexually active population, they account for nearly half of the 19 million cases. The higher prevalence of STDs among adolescents is most likely a reflection of multiple issues within a national socio-economic context. Additionally, the burden is even more disproportionate when examined by race. African American adolescents aged 15-19 experience the greatest burden of STDs.

The purpose of this study is to examine proportions of risk behaviors reported among groups and the differences that are found. From the estimation of differences that were determined substantial, an analysis of was conducted in order to determine if adolescents in the study population exhibit clustering in regard to risk behaviors for STD acquisition and describe the where the potential clustering occurs as well as identify which factors that may serve as important indicators for STD positivity among this population. This paper examines data that was collected as part of a National Institute of Health grant-funded project entitled: "Behavioral Clustering in Adolescents with STDs", conducted by Dr. Richard Rothenberg, Principal Investigator. This paper presents descriptive statistics for selected behavioral characteristics for four groups from the original study and each group's contacts. The proportions for each characteristic are also analyzed for to see if behavioral clustering occurs within and between groups.

The scope of this paper does not allow for the statement of conclusive results however, substantial differences did exist for variables among each sub group. Comparing data by group cluster and interview type proved to reveal the most about the study population. Negative males and their contacts may have extensive clustering as this group was only found to have substantial differences for two variables. Comparison of the positive and negative ego groups for both males and females also indicated clustering as only two (ego females) and three (ego males) variables were found to be substantially different. Proportions for variables regarding education, incarceration, sexual initiation, and number of partners were compared between several groupings of the study population. This paper recommends further analysis of the data in order to identify the patterns of assortativity which will be valuable in understanding the STD transmission dynamics among the social and sexual networks of the adolescents in the study population as well as have important implications on future research.

Risk Factor Clustering Among Adolescents Infected with or At-Risk for Chlamydia: A descriptive study

By Elizabeth R. Wilson

Bachelor of Science in Health Science Education, Community Health Education
from The University of Florida, May 2004

A Thesis Submitted to the Graduate Faculty of Georgia State University
in Partial Fulfillment of
the Requirements for the Degree

Master of Public Health
Atlanta, GA 30303
2011

Risk Factor Clustering Among Adolescents Infected with or At-Risk for Chlamydia: A descriptive study

By

Elizabeth R. Wilson

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Author's Statement

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Graduate Research Assistant, Partnership for Urban Health Research (PUHR)

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Additional Skills

- Proficient in: Microsoft Office, Outlook, EndNote
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CHAPTER I:

INTRODUCTION

1.1 Background

Sexually transmitted diseases (STDs) are a major public health epidemic in the United States with rates estimated at 19 million new cases each year. The direct medical cost associated with STDs in the US is estimated at $17 billion annually (CDC, 2011). Most STDs have few or no symptoms; however the effects of untreated STDs can be detrimental and irreversible. The burden of disease is disproportionately carried by adolescents and young adults age 15-24. The subgroup of African American adolescents aged 15-19 experience the greatest burden of STDs. According to the Centers for Disease Control & Prevention's (CDC) 2010 report, nearly half of the nineteen million STDs reported in the US each year occur among 15-24-year-olds. This is astaggering statistic considering that the same CDC report estimates that young people aged 15–24 years represent only 25% of the sexually experienced population (CDC, 2010). Because most STDs are easily cured if detected early on, there has been a push to include STD screening in routine medical care. However, the higher prevalence of STDs among adolescents is most likely a reflection of multiple issues within a national socio-economic context. These issues may include: barriers to accessing quality STD prevention services, including lack of insurance or other ability to pay, lack of transportation, discomfort with facilities and services designed for adults, and concerns about confidentiality (CDC, 2010). Additionally, sex education within schools is mainly dictated by the prevailing social fear of comprehensive sex education which has become and still is a highly political issue. All of these issues, combined with a greater prevalence of high risk behaviors among adolescents explain the disparity of STD prevalence

between age groups. These issues also disproportionately affect disadvantaged populations, such as African American communities, which will be further examined throughout this paper. Although individual choices and behavior contribute largely to the likelihood of acquiring a STD, these embedded socio-economic issues within the community greatly influence and many times diminish this individual power.

1.2 Purpose of the Study

Among adolescents, research has begun to document the contributing role of social networks to the epidemic (Fichtenberg, Muth, Brown, Padian, Glass, Ellen, 2009). The research that has been conducted has found that networks shape STD transmission, however, more work needs to be done (Fichtenberg, etal., 2009). This study was designed to further our understanding of these relationships and characteristics. The purpose of this study is to examine proportions of risk behaviors reported among groups and the differences that are found. From the estimation of differences that are determined substantial, an analysis of these differences will be conducted in order to answer the following questions:

.

1.3 Research Questions

This investigation will add to any existing literature on the relationship of social network factors with the acquisition of chlamydia. Questions addressed in this investigation will include:

- Do the adolescents in the study population exhibit clustering in regard to risk behaviors for STD acquisition?
- If clustering does occur, among what groups/variables does the clustering occur?
- What variables may serve as important indicators for STD positivity among the study population?

CHAPTER II:

REVIEW OF THE LITERATURE

The purpose of this literature review is to examine the epidemiology of chlamydia, the health indicator of interest in this study. Additionally, this review will examine the issues associated with STD acquisition among adolescents, specifically African American adolescents in order to better understand the variables that contribute to the disparity that exists between white and African American adolescents. This review will focus on the following areas: sexual and social network analysis, disassortative and assortative mixing, drug use, incarceration, condom use, and home/family life.

2.1 Chlamydia:

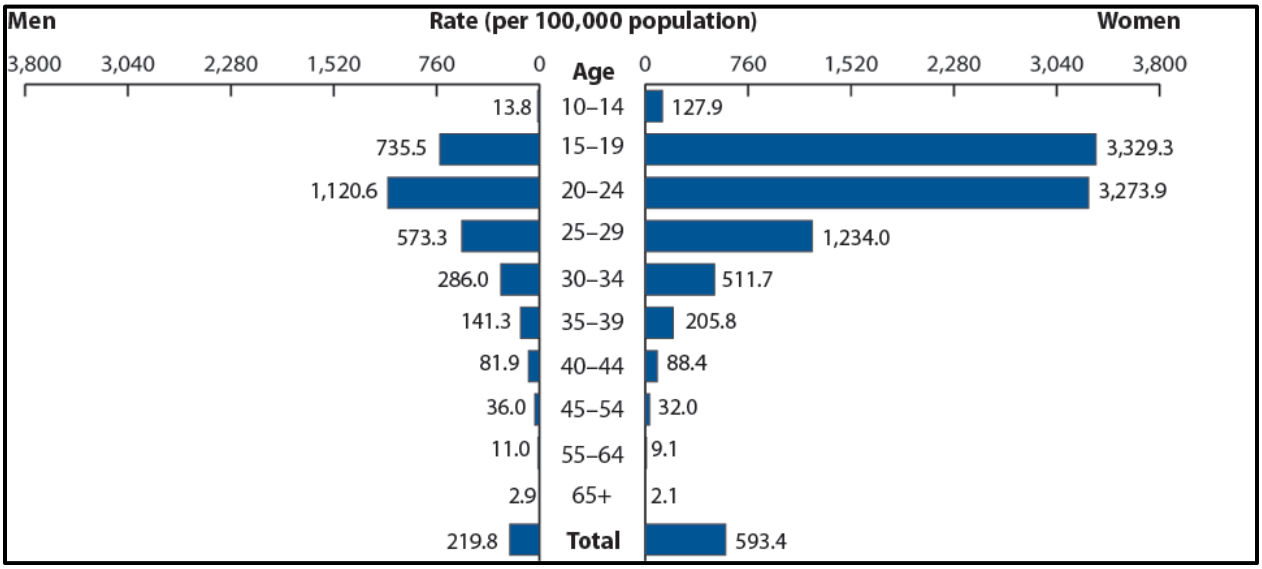
Chlamydia is a sexually transmitted infection caused by the bacterium, *Chlamydia trachomatis.* Chlamydia can be transmitted during vaginal, anal, or oral sex, or from mother to baby during vaginal birth. Signs and symptoms of chlamydia are often mild or absent and, when gone untreated, it can cause pelvic inflammatory disease (PID). PID can cause irreversible damage to a woman's fallopian tubes, uterus and surrounding tissue. Potential consequences of this level of damage are chronic pelvic pain, infertility, and ectopic pregnancy (which can be potentially fatal). Chlamydial infection may also increase the chances of becoming infected with HIV, if exposed. Among men, complications are rare but an infection can spread to the epididymis (tube that carries sperm from the testis) and cause pain, fever, and, even more rarely, infertility. Chlamydia can be treated with antibiotics. Chlamydia screening is recommended annually for all sexually active women 25 years of age and younger and for older women who are considered high risk. Women whose partners are not treated are at increased risk for

reinfection and so, screening is recommended every three months. (CDC, 2010) Currently, there are no screening recommendations for men.

2.2 National Prevalence & Trends:

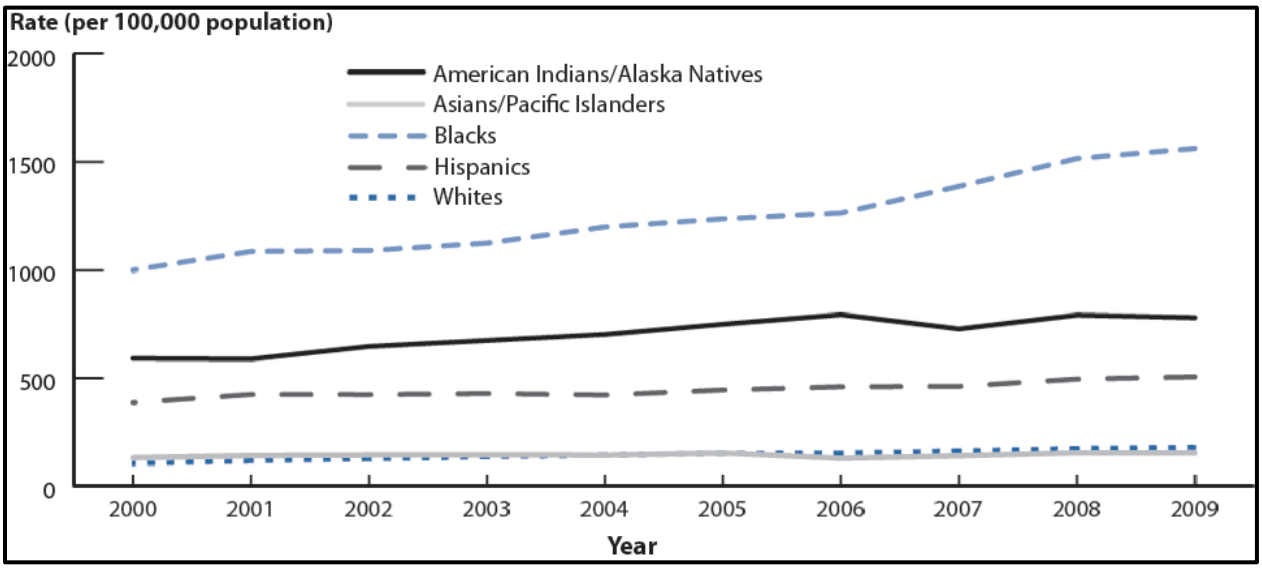
Chlamydial infection is the most commonly reported notifiable disease in the United States. Since 1994, it has made up the largest proportion of all STDs reported to CDC. In 2009, a total of 1,244,180 chlamydial infections were reported to CDC. This corresponds to a national prevalence rate of 406.3 per 100,000, up 2.8% from 2008. During 1990–2009, the rate of reported chlamydial infection increased from 160.2 to 409.2 cases per 100,000 population. This increase is attributed to many factors including: the expansion of chlamydia screening activities, the use of increasingly sensitive diagnostic tests, an increased emphasis on case reporting from providers and laboratories, and improvements in the information systems used for reporting. Chlamydia infection rates were nearly three times greater among women (592.2/100,000) than among men (219.3/100,000) with the greatest rates reported among women aged 15-19 (3,329.3/100,000) followed closely by women aged 20-24 (3,273.9/100,000) (See Figure 1.1). By race, rates were nearly eight times higher among African Americans compared to whites (1,559.1 and 178.8 per 100,000, respectively) (See Figure 1.2). By region, rates are highest in the South. (CDC, 2009) Due to the substantial prevalence of chlamydia in the United States, chlamydia positivity will be the focus of this study.

Figure 1.1. Chlamydia—Rates by Age and Sex, United States, 2009



Centers for Disease Control and Prevention, 2009

Figure 1.2. Chlamydia—Rates by Race/Ethnicity, United States, 2000–2009



Centers for Disease Control and Prevention, 2009

2.3 Georgia & Atlanta: Prevalence & Trends:

In 2009, 56,633 cases of STDs were reported in the state of Georgia, corresponding to an overall prevalence rate of 576.2 per 100,000 population. Of these cases, 40,139 were cases of chlamydia, which corresponds to a prevalence of 408.4 per 100,000 population. Among adolescents aged 13-19 years, 15,798 total cases were reported corresponding to a prevalence of 1,635.2 per 100,000 and among young adults aged 20-29, 19,563 cases were reported corresponding to a prevalence of 1,385.7 per 100,000. Within these two age groups, there exists a significant racial disparity. Among 13-19-year-olds, the prevalence rate for Blacks/African Americans was more than nine times greater than for whites: 2,080 vs. 219.8 per 100,000, respectively. Among 20-29-year-olds, the prevalence for Blacks/African Americans was nearly eight times that of whites: 1,894.8 vs. 238.6 per 100,000 respectively. Data were retrieved via the Georgia Department of Public Health OASIS (Online Analytical Statistical Information System).

The CDC has compiled state surveillance data to present the chlamydia percent positivity for women attending family planning clinics by age group for each state. Among women aged 15-19, the percent positivity for chlamydia in Georgia was 14.3. This is higher than almost all of the neighboring states—Florida: 11.1, Alabama: 13, and Tennessee: 7.4. In fact, only four states have higher percent positivity rates among women aged 15-19—Louisiana (16.9), Mississippi (17.1), New Mexico (14.4), and South Carolina (14.4) (CDC, 2010).

2.4 The Importance of Sexual & Social Network Analysis:

The majority of research that has been done regarding health disparities in STD prevalence has focused on individual-level factors (Salazar, L. F., Bradley, E., Young, S.,

Daluga, N.A., etal., 2010). While it is important to understand adolescents' attitudes, knowledge, and behaviors on an individual level, this approach has not been effective in designing prevention efforts that translate to an effective population level intervention. Transmission of STDs is a result of not only an individual's risk factors but also of that individual's partner's risk factors (Youm & Laumann, 2002). Understanding and addressing population level trends cannot be achieved through analyzing the sum of effects of individuals but rather through an analysis of patterns of population exposure (Koopman & Lynch, 1999). Koopman and Lynch (1999) go on to say that "changing the pattern of connections between exposed and unexposed individuals can often affect population infection levels more than changing the exposure status of individuals in that population" (p. 1170).

Because sexual behavior is inherently social in nature, understanding the dynamics of STD transmission on a group or at the population level must involve an understanding of the overall social context as well as the structure of sexual networks within and between subgroups of the population (Adimora & Schoenbach, 2005). "Social context" encompasses the economic forces, demographic features, and other structural aspects of society that are outside the individual's control. "Community attributes – including poverty, rates of substance abuse, sex roles, norms for sex behavior, and prevalence of STIs – can increase the frequency of and risk associated with individual behaviors and can impede the ability of individuals to adopt preventative behaviors" (Adimora & Schoenbach, 2005, p. S117). For the purposes of this paper, sexual network is defined as a set of people linked directly or indirectly through sexual contact.

Social networks also play a distinctive role in transmission patterns. In their article, "Social Network Effects on the Transmission of Sexually Transmitted Diseases" (2002), Yoosik

Youm and Edward Laumann argued that because risk factors are socially constructed, ignoring the role of social factors, and social networks in particular, research on the spread of STDs is incomplete. Sexual behavior is one of the most socially diverse human activities and as a result, "risk factors regarding sexual behaviors are rooted in and consistently affected by social environments". Therefore, in order to fully understand the transmission dynamics and, ultimately, understand why disparities exist, it is imperative that researchers fully investigate the role of both social and sexual networks.

Examining individual risk factors alone does not adequately explain the differences between groups in regard to STD transmission. As evidenced in Hallfors, Iritani, Miller, and Bauer's (2007) article, "Sexual and Drug Behavior Patterns and HIV and STD Racial Disparities: The Need for New Directions", even when risk behaviors are similar in white and African American populations, STD rates remain higher among African American populations. Hallfors, et al. used data from the National Longitudinal Study of Adolescent Health (Add Health) and grouped 18-26-year-old participants into risk behavior pattern groups based on their reported sexual activity and drug use. Over a third of African Americans (37.6%) and only 12.7% of whites were grouped in the lowest risk group defined as "few partners, low alcohol, tobacco, and other drug use". Despite the fact that more African Americans were grouped in the lowest risk group, their odds of STD or HIV infection were still 7.8 times the odds for whites (Hallfors, et al., 2007). Having established the importance of utilizing a social and sexual network framework, I would like to examine some of the areas of risk within this framework that will be the focus of this analysis.

2.5 Disassortative and Assortative Mixing:

One area that has provided insight into understanding the existing disparities has been partner selection. Partner selection plays a substantial role in transmission dynamics, and it is an aspect that has been shown to have unique characteristics for different subgroups. Research has shown that patterns of dissortative and assortative partner selection greatly influence STD prevalence within groups. For instance, Yuom & Laumman suggested that an explanation for the racial disparities that exist may be due to African American's partner selection being dissortative in regard to age and assortative in regard to race (2002). Dissortative is defined as the choosing of partners that are different from themselves, either in sexual experience, age, or a variety of other variables.

2.5.1 Number of Partners and Concurrency

Yuom & Laumman found that African Americans who had only one partner during the past year were five times more likely to choose African American partners who have had four or more partners in the last year (2002). Disassortativity in terms of number of concurrent partners has also been a factor that has been discussed in other studies. In their article "Concurrent partnerships among women in the United States" (2002), Adimora, Schoenbach, Bonas, Martinson, Donaldson, and Stancil found that data from the1995 National Survey of Family Growth indicate that the prevalence of concurrent partnerships is greater among black women than among white women (21% versus 11% in the preceding five years). This finding has been further explored by Adimora, et al. in their study "Concurrent sexual partnerships among African Americans in the rural South" (2004) in which they found that among their study participants,

black men showed a higher prevalence of concurrent partnerships than black women (51% versus 31% in the preceding five years).

2.5.2 Race

Several studies have found that African Americans experience a high level of racial assortativity in regards to partner selection. A sexual network study of low-income, urban Detroit youth found that among the study population, 97.4% of African American women's married/live-in partners and 93.2% of African American men's married/live-in partners were also African American. Similarly high percentages were found for "knew well" and "casual" partnerships (Ford, K., and Norris, A., 1997). Youm & Laumman also suggested that STDs may remain within the African American population because their partner choices are more racially assortative than other groups (2002). This is also a reflection of the residential segregation that exists (and is discussed elsewhere in this paper) which encourages racial assortativity partner selection within African American communities.

2.5.3 Age

Disassortative age between partners has also been studied as a factor contributing to the disproportionate rates of STDs experienced by women. It is a social norm in the United States for women to be younger than their male partners however, when the woman is an adolescent, this age difference can be problematic. The difference between a 15-year-old girl and an 18-21-year old man is much more substantial than three to six years which is a reflection of such factors as maturity, life experience, social position, financial resources and physical size. Consequently, relationships of this nature are inherently unequal, and the young women may therefore be less empowered to negotiate the situation in terms of protection or abstinence and may also be

vulnerable to abuse and exploitation by their partners (Darroch, J.E., Landry, D.J., and Oslak, S., 1999). Darroch, Landry and Oslak used data from the CDC's National Survey of Family Growth to examine the prevalence and degree of disassortativity in regard to age and found that young women under 18 were significantly more likely than older women to have a partner 3-5 years older (1999). One study that investigated this among a study population of black and Hispanic youth found that minority female adolescents with partners 3 or more years older were younger at first intercourse (13.8 years versus 14.6 years), less likely to use a condom at first intercourse (63% versus 82%), less likely to use condoms during their most recent sexual intercourse (29% versus 44%), during the past 6 months (44% versus 66%), and since becoming sexually active (37% versus 56%) (Miller, K.S., Clark, L.F., and Moore, J.S., 1997).

2.6 Crime and Incarceration:

The US has one of the highest rates of incarceration in the world; in fact, it is four times the world average (Hartney, 2006). This can be attributed to the criminalization of social issues, such as drugs, violence, abortion and poverty-related crimes. Because race and class are so closely intertwined in the US, it is not surprising that almost one-third of black men between the ages of 20 and 29 years are in jail, in prison, on probation, or on parole (Adimora and Schoenbach 2005). There is a significantly disproportionate number of incarcerations experienced by black and Latino men and women. Incarceration both directly and indirectly affects sexual network dynamics. Directly, it interrupts existing partnerships, and puts both partners at risk of forming new sexual connections. In the case of the incarcerated, these connections may be coercive and are among a population that experiences much higher rates of HIV and STDs. Incarceration of an individual may also mean loss of income for a dependent or

family and, upon release, a person with a prior conviction has a much harder time regaining employment. These effects contribute to the higher rates of unemployment in African American communities and perpetuate the concentration of poverty within these communities as well.

Among adolescents, involvement with the criminal justice systems has been associated with an increase in sexual risk behaviors such as engaging in sexual intercourse at a younger age, having a larger number of sexual partners, and using condoms less often when engaging in sexual intercourse (Bryan and Stallings, 2002).

2.7 Family/Home Life:

Parent-child relationships and levels of interaction have been found to be significant predictors of STD acquisition among adolescents. Crosby, et. al. conducted an 18-month prospective study of 217 African American adolescent females examining their level of perceived parental monitoring and STD positivity at baseline, 6, 12 and 18 months. Perceived parental monitoring was assessed through a 2-item measure which asked: 1) how often parents knew where they were when they were not at home or at school, and 2) how often parents knew whom they were with when not at home or at school. Nearly half (47.4%) of the adolescents who perceived infrequent parental monitoring tested positive for chlamydia at least once during the 18-month study vs. 33.6% among those perceiving more frequent monitoring. They also reported an adjusted odds ratio of 1.8 for chlamydia among adolescents who perceived infrequent parental monitoring vs. more frequent. For all STDs, adolescents who perceived infrequent parental monitoring experienced an odds ratio 2 times higher than that of those who perceived more frequent parental monitoring (Crosby, 2003). An area for future research would

be to examine transient life-styles (where adolescents either do not have a stable home life or are in fact homeless) in association with risk behaviors and health outcomes.

This review examined the epidemiology of chlamydia in the United States and in Georgia. Additionally, this review discussed the evolution of STD research, the social constructs of sex and the factors have been found to be meaningful. While this review examined the concept of assortativity, the scope of the data analysis described in the following pages was limited in its' ability to fully investigate this relationship. There are potentially infinite areas of research that have implications for the study population however, this review focused on the areas that seemed to have the greatest relevance to the study that serves as the basis of this paper.

CHAPTER III:

METHODS AND PROCEDURES

This paper examines data that was collected as part of a National Institute of Health grant-funded project entitled: "Behavioral Clustering in Adolescents with STDs". This project was conducted by Dr. Richard Rothenberg, Principal Investigator, Dr. Ralph DiClemente, Dr. Richard A. Crosby, and Mark Brown. The following section will detail the methods which were used for gathering the original data set.

This paper presents descriptive statistics for selected behavioral characteristics for four groups from the original study and each group's contacts. The proportions for each characteristic are also analyzed to see if behavioral clustering occurs within and between groups.

3.1 Background on Source Study: "Behavioral Clustering in Adolescents with STDs"

3.1.1 Study Design & Enrollment:

The study aimed to recruit a community (street)-based representative sample of the social and sexual networks of forty 15-year-old boys and girls living in DeKalb County, Georgia. The forty participants comprised 10 infected (with an STD) and 10 uninfected of each sex. Participants were recruited through the offering of free STD testing; those who were positive for chlamydia or gonorrhea infection were enrolled in the study along with a sample of those who were uninfected. The study used the estimated prevalence of 20% for chlamydia and gonorrhea among both boys and girls in the target population to determine that 50 boys and 50 girls would be screened in order to find 10 positive girls and 10 positive boys. The first 10 of each who were positive and agreed to participate were enrolled in the study. However, after screening over 200 boys, only 7 positive boys were found and agreed to participate. Chlamydia and gonorrhea

positivity were used as markers for STD infection in general as they are likely to be the most prevalent and thus serve as the best indicators for high risk behaviors. The initial thirty-seven adolescents were asked to generate an additional ten people who were part of their close social/sexual/drug-using network. The final sample size was 280. Each of the initial 37 served as the center (termed "index respondent") of a "cluster" of contacts. The "cluster" itself will be referred to as "infected" if the index respondent was positive, "uninfected" if the index respondent was negative. Repeat interviews were given over time, which permit analysis of the relevant variables in the presence or absence of transmission within these clusters. Each of the 40 index respondents was interviewed, and information on demographic, health behavior, and psychosocial factors, and, as noted, contacts were collected. Based on what was known from concurrent studies at the time, it was anticipated that adolescents would name up to 10 people, of whom approximately four would be close friends or sex partners who could be found and enrolled in the study. The index respondents were interviewed at 6-month intervals, and contacts were generated and enrolled only at every other interview over a period of three years (during the respondents' 16th, 17th, and 18th year of life). This was done in order to provide network configurations once a year for three years as the participants proceed from mid to late adolescence, with interval measures midway between the waves of contact ascertainment. Though state law in Georgia permits testing and treatment of minors 15-17 years of age without parental consent, parental consent and respondent assent were sought for the initial screening, as well as for enrollment in the study. This study was approved by the IRB at Emory University, Atlanta, Georgia.

3.1.2 Data and specimen collection:

Participants were given a plastic, preservative free, sterile urine specimen cup and instructed to obtain the first voided portion of the urinary stream, or they were provided with swabs and transport media for collection of a vaginal specimen. The laboratory tests were performed by the Emory University School of Medicine, Department of Pathology, Medical Laboratories using standard, approved diagnostic tests.

3.1.3 Data Sources:

The information included in this section describes the mechanisms by which data was gathered in this study. Table 3.1 displays the variables used for this paper.

Table 3.1. List of variables used in analysis

Variable	Coding	Type
Group	PosMale, NegMale, PosFemale, NegFemale	Categorical
Are you currently enrolled in school?	yes=1, no=0	Categorical
Ever been expelled from school?	yes=1, no=0	Categorical
Ever been arrested?	yes=1, no=0	Categorical
Spent time in jail, last 6 months?	yes=1, no=0	Categorical
Are you currently on parole or probation?	yes=1, no=0	Categorical
Any family member ever in jail?	yes=1, no=0	Categorical
Any family member currently in jail?	yes=1, no=0	Categorical
Any friends ever spent time in jail?	yes=1, no=0	Categorical
How old were you the first time you had sex?	Age	Mean
How old was your partner the first time you had sex?	Age	Mean
Was it your boyfriend/girlfriend the first time you had sex?	yes=1, no=0	Categorical
Did you or your partner use drugs the first time you had sex?	yes=1, no=0	Categorical
Did you use alcohol the first time you had sex?	yes = 1, no = 2	Categorical
Have you ever used condoms?	yes=1, no=0	Categorical
Would you have sex without a condom?	yes=1, no=0	Categorical
Was a condom used the last time you had sex?	yes=1, no=0	Categorical

The interview instrument is based on the principal investigators' epidemiologic and social network instruments and a series of specific scales that were developed by the research team. The psychosocial scales include assessment of family and social environment, aspects of condom use, response bias, mental status, and peer norm influences and can be obtained from the original study. The final instrument is culturally sensitive, and tailored to the specific needs and interests of adolescents. It contains information on civil status, demography, medical history and health seeking behavior, self-reported sexual and other behaviors and network variables. The risk portion of the questionnaire was designed to elicit specific information on practices that are conducive to STD/HIV transmission, but investigated as well the risks for HIV posed by drug use. In the network section, questions about specific practices with specific individuals were asked: the researchers requested an enumeration of the sexual and social partners they have had in the past 6 months (as well as shorter, nested intervals of 1 month or 3 months, depending on the specific item), and ask for specific behavioral information (e.g.: The last time you had sex with this person did you use a condom?). Social partners are defined as the respondents' close personal friends and confidants; family members were ascertained in a separate portion of the questionnaire. They asked persons explicitly about the potential for overlap in sexual activity with two or more partners (concurrency). This approach provided empirical documentation as to whether the potential for transmission actually occurred between all possible pairs of sexual partners (Did you have sexual contact with A, then with B, then with A again?). The researchers also asked about duration of contact (first and last exposure). Finally, the researchers asked a direct question of respondents regarding persons they may have had sex with "at the same time," distinguishing such activity from group sex. In keeping with the researchers other studies, they also asked for matrix information, that is, the relationships known to the respondent about all

possible pairs of his or her partners. Whether accurate or not, participants' assessment of their partners' activities provides some insight into the participants' assessment of their own risk. The research interview was finalized during the first four months of the study, and field tested during months 5 and 6. Though many of the epidemiologic and social network questions are standard, the construction of scales for measurement of the psychosocial factors of major interest (family and social environment, a number of measures related to condom use, partner communication, factors affecting response bias, mental status, and peer normative influences required measures of internal consistency for all scales to determine their utility for this population. Items that did not correlate well with the entire scale were deleted. The net result was a questionnaire that took approximately 60 minutes to administer.

3.2: Procedures

As gathered from examining the interview instruments, the resulting data set from the original study was quite extensive. Based on the review of the literature and the scope of this paper, the purpose of this analysis was determined. This analysis will examine the proportions of risk behaviors reported, and compare these proportions between sub groups of the data in order to identify what patterns, if any, of behavioral clustering occurs. The term clustering is used to describe concentrations of like behaviors among groups. For example, it would be expected that among positive respondents, proportions of risk behaviors would be higher than among negative adolescents.

For the initial analysis, a variable ‘group’ was created which created four sub groups: positive males, negative males, positive females, negative females. The data was then sorted by the ‘group’ variable and the SAS procedure “PROC TABULATE” was used in order to

determine which variables would be of interest (See Table 4.1). For the additional two stratifications of the data, the same SAS "PROC TABULATE" procedure were used but were sorted according to different variables- gender and interview type and then by group cluster and interview type. Group cluster was a variable used to classify respondents into groups based on gender and chlamydia positivity. Interview type, is the variable used to classify the ego (index respondent), first generation contact (the ego's interviewed contact), and second generation contact (the first generation contact's contact).

3.3 Analysis

For all analyses SAS v. 9.2 was employed. Microsoft Excel 2010 was used for the presentation of tables and figures.

3.3.1 Descriptive Statistics

Descriptive statistics were calculated for all variables selected.

3.3.2 Benchmark Used for Making Comparisons

Due to the scope of this analysis and the structure of the data, tests of significance were not feasible. Instead, to determine which comparisons would be considered noteworthy, a benchmark of a difference of 20% or greater between compared proportions was established. This number was based on the number of subjects in each grouping. Based on the available sample sizes, which varied between groupings of the data, the approximate minimal detectable difference between seeds and contacts is around 20% at an alpha level of 0.1. The minimal detectable differences for the other comparisons is smaller, since those sample sizes are larger. Thus, 20% is a reasonable screen for looking at the data and making an estimate as to whether the values are close or far apart and what the patterns might be.

CHAPTER IV:

RESULTS

The purpose of this study is to examine proportions of risk behaviors reported among groups and the differences that are found. From the estimation of differences that are determined substantial, an analysis of these differences will be conducted in order to answer the following questions:

- Do the adolescents in the study population exhibit clustering in regard to risk behaviors for STD acquisition?
- If clustering does occur, among what groups/variables does the clustering occur?
- What variables may serve as important indicators for STD positivity among the study population?

4.1 Descriptive Statistics

4.1.1 Characteristics of study population

The final data set that was used for the analysis included 280 participants, comprised of 114 females and 166 males. Table 4.1 displays the characteristics of the study population which is sorted by 'group'. 'Group' was defined by gender and chlamydia positivity status. For all selected variables, responses coded as '99'-'refused' or '96' – 'don't know' were recoded as missing. In regard to race, the study population was homogeneous. Nearly all (n=272) of the respondents identified their race as Black (African American), with 5 identifying themselves as Black (non-specific) and 1 as Hispanic (Black).

Table 4.1. Number (n) & Proportions (%) Reported for Selected Variables by Group

Characteristics	Negative Females n (%)	Positive Females n (%)	Negative Males n (%)	Positive Males n (%)
n	**89**	**25**	**148**	**18**
Age*	18.7	17.2	17.7	17.6
Race (%)				
Black (African American)	86 (96.6)	23 (92)	145 (98.6)	18 (100)
Black (non-specific)	3 (3.4)	1 (4)	2 (1.4)	0 (0)
Hispanic (Black)	0 (0)	1 (4)	0 (0)	0 (0)
Living Situation				
Person lived with most of the time 1:				
Mother	52 (59.1)	20 (80)	109 (74.1)	12 (70.6)
Father	5 (5.7)	1 (4)	3.1	0 (0)
Other	21 (23.4)	3 (12)	9 (6.1)	0 (0)
Education				
Currently enrolled in school?	58 (65.2)	19 (76)	94 (63.9)	8 (44.4)
Ever been expelled from school?	15 (17.1)	5 (20)	33 (22.6)	6 (33.3)
Incarceration				
Ever been arrested?	23 (25.8)	10 (40)	78 (53.1)	12 (66.7)
Spent any time in jail, past 6 months?	9 (11.4)	6 (25)	39 (28.7)	10 (62.5)
Are you currently on parole or probation?	11 (14.1)	2 (8.7)	21 (15.4)	5 (31.2)
Any family member ever in jail?	60 (67.4)	18 (72)	90 (61.6)	11 (61.1)
Any family member currently in jail?	22 (24.7)	9 (36)	36 (24.7)	9 (50)
Any friends ever spent time in jail?	52 (58.4)	16 (64)	108 (73.9)	17 (94.4)
Sexual Initiation				
How old were you the 1st time you had sex?*	13.6	14.3	13.5	12.8
How old was your partner the 1st time you had sex?*	15.9	15.5	14.6	15.1
Was it your boyfriend/girlfriend the 1st time you had sex?	69 (81.2)	21 (84)	86 (61.4)	10 (55.6)
Was it your friend the 1st time you had sex?	44 (51.7)	10 (40)	81 (57.9)	14 (77.8)
Did you or your partner use drugs the first 1st you had sex?	6 (6.82)	1 (4)	5 (3.4)	1 (5.6)
Did you use alcohol the 1st time had you sex?	2 (2.7)	0 (0)	2 (1.7)	1 (9.1)
Condom Use				
Have you ever used condoms?	82 (93.2)	24 (96)	137 (93.8)	18 (100)
Would you have sex without a condom?	24 (27.6)	10 (40)	35 (23.9)	11 (61.1)
Was a condom used the last time you had sex?	53 (60.9)	13 (52)	111 (77.1)	13 (72.2)

*Indicates that this variable is reported as a mean.

4.2 Characteristics of Risk Behaviors by Gender and Interview Type

For this analysis, the data were sorted by gender and interview type. Interview type, variable 'typeint' is defined as: ego (index respondent), first generation contact (the ego's interviewed contact), and second generation contact (the first generation contact's contact). For purposes of this analysis, 'typeint' was recoded, combining first and second generation contacts in order to create a dichotomous output with categories 'ego' and 'contact'. For all selected variables, responses coded as '99' – 'refused' or '96' – 'don't know' were recoded as missing. Table 4.2 presents the entirety of the results from this analysis. For ease in analysis, Tables 4.3 – 4.5 display the variables and corresponding proportions that were determined to be substantial using the benchmark of 20% previously described.

Table 4.2. Risk Behavior Proportions by Gender and Interview Type

Characteristic	Male Ego	Males Contact	Female Ego	Female Contact
Currently enrolled in school?	81.3%	59.3%	95.0%	61.7%
Ever been expelled from school?				
Ever been arrested?	56.3%	54.7%	15.0%	31.9%
Spent any time in jail, past 6 months?	18.8%	34.3%	10.0%	15.7%
Any family member ever in jail?	68.8%	61.1%	80.0%	66.0%
Any family member currently in jail?	18.8%	28.9%	50.0%	22.3%
Any friends ever spent time in jail?	62.5%	77.9%	55.0%	60.6%
How old were you the 1st time you had sex?*	12.8	13	13.8	14.6
How old was your partner 1st time you had sex?*	14.1	14.7	15.6	16.6
Was it your bf/gf 1st time had sex?	75.0%	58.7%	85.0%	81.1%
Was it your friend the 1st time you had sex?	43.8%	62.2%	20.0%	55.6%
Did you or your partner use drugs the 1st time you had sex?	0.0%	4.0%	5.0%	6.5%
Did you use alcohol 1st time you had sex?	0.0%	2.5%	0.0%	2.6%
Ever used condoms?	100.0%	94.0%	100.0%	92.5%
Would you have sex w/o a condom?	31.3%	27.5%	15.0%	33.7%
Was a condom used, the last time you had sex?	87.5%	75.5%	65.0%	57.6%

*Indicates that this variable is reported as a mean.

Using a difference in proportions of 20% or greater, there were not too many indications of behavioral clustering when grouped by gender and interview type alone. For both sexes, proportion of reported current enrollment in school was greater among the ego group than among their contacts. This was the only variable in which a substantial difference between males and their contacts was found in this stratification of the data. This may indicate that the males in this study exhibit clustering of risk behaviors.

Table 4.3. Males: Ego & Contact Group Comparisons

	Ego	**Contact**	**Net Diff.**
Currently enrolled in school?	81.3%	59.3%	**22%**

For females, four variables exhibited substantial differences. Ego respondents reported higher proportions of current school enrollment, having used a condom the last time they had sex, and a lower proportion reported their first time having sex was with a friend. However, a greater proportion of ego respondents reported having a family member currently in jail. These differences may suggest that females and their contacts do not exhibit behavioral clustering.

Table 4.4. Females: Ego & Contact Group Comparisons

	Ego	**Contact**	**Net Diff.**
Currently enrolled in school?	95%	61.7%	**33.3%**
Any family member currently in jail?	50%	22.3%	**27.7%**
Was it your friend the 1st time you had sex?	20%	55.6%	**35.6%**
Was a condom used the last time you had sex?	87.5%	65%	**22.5%**

When looking at ego males and females, substantial differences were found among four variables. A greater proportion of males reported having ever been arrested, having sex for the first time with a friend, and using a condom the last time they had sex. A greater proportion of females reported having a family member currently in jail. This comparison does not provide a clear indication of clustering but suggests that the ego groups may not be that different from each other.

Table 4.5. Comparison of Ego Groups	**Male Ego**	**Female Ego**	**Net Diff.**
Ever been arrested?	56.3%	15%	**41.3%**
Any family member currently in jail?	18.8%	50%	**31.2%**
Was it your friend the 1st time you had sex?	43.8%	20%	**23.8%**
Was a condom used the last time you had sex?	87.5%	65%	**22.5%**

4.3 Characteristics of Risk Behavior – Proportions by Interview Type and Group Cluster

The third stratification of the data examines risk behaviors by interview type and group cluster (results are displayed in Table 4.6). 'Group cluster' is a variable that categorized the data into four groups: 'Negative Males', 'Negative Females', 'Positive Males', and 'Positive Females'. Once the data were sorted into these four groups, it was further sorted by interview type – 'typeint' (as described in the previous analysis). Tables were then created for the same variables from the previous analysis. This analysis identified a greater number of substantial differences than the previous two. This further stratification of the data allowed for comparisons between seven groupings: ego and contact groups for positive females, negative females, positive males and negative males; female ego groups; male ego groups; and positive and negative ego groups of males and females. These comparisons will be displayed in Tables 4.7 – 4.14.

Table 4.6. Risk Behavior Proportions by Interview Type and Group Cluster

	Negative Males		Negative Females		Positive Males		Positive Females	
	Ego	**Contact**	**Ego**	**Contact**	**Ego**	**Contact**	**Ego**	**Contact**
Currently enrolled in school	90.0%	70.1%	90.0%	46.2%	66.7%	61.5%	100.0%	70.0%
Ever expelled	20.0%	14.6%	20.0%	28.6%	33.3%	36.0%	10.0%	13.3%
Ever been arrested	50.0%	33.0%	10.0%	59.3%	66.7%	61.5%	20.0%	33.3%
Spent any time in jail, past 6 months	0.0%	15.1%	0.0%	40.2%	50.0%	38.9%	20.0%	17.2%
Any family member ever in jail	80.0%	60.8%	90.0%	64.4%	50.0%	57.7%	70.0%	70.0%
Any family member currently in jail	10.0%	19.6%	50.0%	30.0%	33.3%	34.6%	50.0%	30.0%
Any friends ever spent time in jail	50.0%	66.0%	60.0%	77.8%	83.3%	80.8%	50.0%	60.0%
How old 1st time you had sex*	12.7	13.7	13.5	13.5	13	13.1	14.1	14.2
How old partner 1st time you had sex*	13.6	14.9	15.8	15.8	14.8	16.4	15.4	15.4
Was it your bf/gf 1st time had sex	90.0%	68.5%	90.0%	66.7%	50.0%	76.0%	80.0%	58.6%
Was it your friend first time sex	20.0%	64.0%	20.0%	50.0%	83.3%	88.0%	20.0%	51.7%
You or your partner use drugs 1st time	0.0%	2.1%	10.0%	9.9%	0.0%	4.0%	0.0%	0.0%
Did you use alcohol 1st time	0.0%	1.2%	0.0%	3.7%	0.0%	20.0%	0.0%	0.0%
Ever used condoms	100.0%	90.6%	100.0%	93.4%	100.0%	100.0%	100.0%	96.7%
Would you have sex w/o a condom	20.0%	18.6%	30.0%	45.1%	50.0%	20.8%	0.0%	27.6%
Was a condom used, last time had sex	90.0%	76.6%	60.0%	58.9%	83.3%	80.0%	70.0%	63.3%

*****Indicates that this variable is reported as a mean.

Among positive females, a greater proportion of ego respondents reported current enrollment in schools, having a family member currently in jail, and their first time having sex being with their boyfriend or girlfriend. Ego respondents reported a substantially lower proportion of having sex for the first time with a friend and if they would have sex without a condom. This suggests that positive females and their contacts may not exhibit clustering of risk behaviors. (Table 4.7)

Table 4.7. Positive Females: Ego & Contact Group	**Ego**	**Contact**	**Net Diff.**
Currently enrolled in school?	100%	70%	**30%**
Any family member currently in jail?	50%	30%	**20%**
Was it your boyfriend or girlfriend the 1st time you had sex?	80%	58.6%	**21.4%**
Was it your friend the 1st time you had sex?	20%	51.7%	**31.7%**
Would you have sex without a condom?	0%	27.6%	**27.6%**

Negative ego females reported a greater proportion of current enrollment in schools, having any family member ever in jail and currently in jail, and having had sex for the first time with their boyfriend or girlfriend. Ego respondents reported a lower proportion of having spent any time in jail in the past six months, and having had sex for the first time with a friend. This suggests that negative ego females differ in risk behaviors from their contacts.

Table 4.8. Negative Females: Ego & Contact Group	**Ego**	**Contact**	**Net Diff.**
Currently enrolled in school?	90%	46.2%	**43.2%**
Ever been arrested?	10%	59.3%	**49.3%**
Spent any time in jail in the past six months?	0%	40.2%	**40.2%**
Any family member ever in jail?	90%	64.4%	**25.6%**
Any family member currently in jail?	50%	30%	**20%**
Was it your boyfriend or girlfriend the 1st time you had sex?	90%	66.7%	**23.3%**
Was it your friend the 1st time you had sex?	20%	50%	**30%**

Looking at the two groups of ego females, a greater proportion of negative females reported having ever had a family member in jail and if they would have sex without a condom. The latter difference is surprising as it would be expected that a greater proportion of positive females would report that they would have sex without a condom. Aside from this, the two groups do not appear to be substantially different from each other. Additionally, this may indicate that chlamydia positivity does not serve as a marker for females in the study population. (Table 4.9)

Table 4.9. Females: Ego Group	**Ego$^-$**	**Ego$^+$**	**Net Diff.**
Any family member ever in jail?	90%	70%	**20%**
Would you have sex without a condom?	30%	0%	**30%**

Comparing positive ego males and their contacts, a greater proportion of ego males reported being currently on parole or probation, and that they would have sex without a condom. Ego males reported a lower proportion for having had sex for the first time with their boyfriend or girlfriend. These differences indicate that positive males and their contacts may not exhibit clustering in regard to risk behaviors.

Table 4.10. Positive Males: Ego & Contact Group	**Ego**	**Contact**	**Net Diff.**
Are you currently on parole or probation?	50%	22.2%	**27.8%**
Was it your boyfriend or girlfriend the 1st time you had sex?	50%	76%	**26%**
Would you have sex without a condom?	50%	20.8%	**29.2%**

Negative ego males reported a greater proportion of having had sex for the first time with their boyfriend or girlfriend and a lower proportion for having had sex for the first time with a friend.

Table 4.11. Negative Males: Ego & Contact Group	**Ego**	**Contact**	**Net Diff.**
Was it your boyfriend or girlfriend the 1st time you had sex?	90%	68.5%	**21.5%**
Was it your friend the 1st time you had sex?	20%	64%	**44%**

Comparing the positive and negative ego groups for males, these groups differ on several variables. Negative males reported a greater proportion of current enrollment in school, having any family ever in jail, and having had sex for the first time with their boyfriend or girlfriend. Negative males reported a lower proportion of having spent any time in jail in the past six months, being currently on parole or probation, having any family member currently in jail, having had sex for the first time with a friend, and if they would have sex without a condom. These differences suggest that negative males differ substantially from positive males. Additionally, this suggests that incarceration and partner selection may be indicators of chlamydia positivity.

Table 4.12. Males: Ego Group	**Ego$^-$**	**Ego$^+$**	**Net Diff.**
Currently enrolled in school?	90%	66.7%	**23.3%**
Spent any time in jail, past six months?	0%	50%	**50%**
Are you currently on parole or probation?	0%	50%	**50%**
Any family member ever in jail?	80%	50%	**30%**
Any family member currently in jail?	10%	33.3%	**23.3%**
Any friends ever spent time in jail?	50%	83.3%	**33.3%**
Was it your boyfriend or girlfriend the 1st time you had sex?	90%	50%	**40%**
Was it your friend the 1st time you had sex?	20%	83.3%	**63.3%**
Would you have sex without a condom?	20%	50%	**30%**

Male & Female Ego Group Comparisons:

Looking at positive ego males and females, these groups differ on several variables. Positive ego males reported a greater proportion of having ever been expelled from school, having ever been arrested, having spent any time in jail in the past six months, having had sex for the first time with a friend, and if they would have sex without a condom. Positive ego males reported a lower proportion of current enrollment in school, and having had sex for the first time with their boyfriend or girlfriend.

Table 4.13. Positive Ego Comparisons	**M Ego^{+}**	**F Ego^{+}**	**Net Diff.**
Currently enrolled in school?	66.7%	100%	**33.3%**
Ever been expelled from school?	33.3%	10%	**23.3%**
Ever been arrested?	66.7%	20%	**46.7%**
Spent any time in jail in the past six months?	50%	20%	**30%**
Are you currently on parole or probation?	50%	10%	**40%**
Any friends ever spend time in jail?	83.3%	50%	**33.3%**
Was it your boyfriend or girlfriend the 1st time you had sex?	50%	80%	**30%**
Was it your friend the 1st time you had sex?	83.3%	20%	**63.3%**
Would you have sex without a condom?	50%	0%	**50%**

Between negative ego groups, there were only three substantial differences. Males reported a greater proportion of ever having been arrested and having used a condom the last time they had sex. Males also reported a lower proportion for currently having any family member in jail.

Table 4.14. Negative Ego Group Comparisons	**M Ego$^-$**	**F Ego$^-$**	**Net Diff.**
Ever been arrested?	50%	10%	**40%**
Any family member currently in jail?	10%	50%	**40%**
Was a condom used the last time you had sex?	90%	60%	**30%**

4.4 Summary of Results

The scope of this paper does not allow for the statement of conclusive results. However, substantial differences did exist for variables among each sub group. Comparing data by group cluster and interview type proved to reveal the most about the study population. Negative males and their contacts may have extensive clustering as this group was only found to have substantial differences for two variables. Comparison of the positive and negative ego groups for both males and females also indicated clustering as only two (ego females) and three (ego males) variables were found to be substantially different.

CHAPTER V:
DISCUSSION AND CONCLUSION

The purpose of this study is to examine proportions of risk behaviors reported among groups and the differences that are found. From the estimation of differences that were determined substantial, an analysis of was conducted in order to determine if adolescents in the study population exhibit clustering in regard to risk behaviors for STD acquisition and describe the where the potential clustering occurs as well as identify which factors that may serve as important indicators for STD positivity among this population.

These comparisons have been examined among several sub groups and the variables of substantial difference in proportion have been described. The major findings, limitations, recommendations, and conclusions are summarized below.

5.1 Summary of Findings

This section will present the summary of findings by category of variables.

5.1.1 Education

This study examined the variables ‘currently enrolled in school’ and ‘ever been expelled from school’. The substantial differences found in proportions for these variables are summarized here. A substantial difference for having ever been expelled was only found for one grouping: positive ego males reported a greater proportion than positive ego females. Thus, clustering may occur among other groups. Females report higher proportions of current school enrollment than do their contacts however, positive ego females report higher proportions than do negative ego females. Negative ego males report a greater proportion of current enrollment than do positive ego males. To sum, the findings from this analysis of the data suggest that

females and their contacts do not cluster around current enrollment in school however, clustering may occur for males. Additionally, clustering may also occur for having ever been expelled

5.1.2 Incarceration

Six variables were studied in regard to incarceration. For negative ego females and their contacts, substantial differences were found for four of these six, indicating that incarceration is not an important factor for clustering among this group. When comparing positive and negative ego males, substantial differences were found for five of the six variables. This is also indicated in the comparison between positive ego males and females in which four of the six variables showed substantial differences. This indicates that incarceration factors are important indicators for positivity among males in the study population. Clustering may occur among: positive ego females and their contacts, among positive and negative ego females, positive males and their contacts, and negative ego males and their contacts.

5.1.3 Sexual Initiation

Five variables were examined in regard to the adolescents' sexual initiation. 'Was it your boyfriend or girlfriend the first time you had sex?' and 'was it your friend the first time you had sex?' were the only two variables in which substantial differences were seen. The only comparisons in which this was not a potential indicator for chlamydia positivity was between positive and negative ego females and among positive and negative ego males. This suggests that among the study population, clustering may occur for 'how old were you' and 'how old was your partner' the first time you had sex, and for 'did you or partner use drugs' and 'did you use alcohol' the first time you had sex.

5.1.4 Condom Use

For condom use, three variables were used. 'Would you have sex without a condom?' was a variable of importance for every comparison except for three: negative females and their contacts, negative males and their contacts, and negative ego males and females. This indicates that clustering may occur for this variable among these groups. 'Was a condom used the last time you had sex' was the only other variable in which substantial differences occurred and this was only found to be an important factor between negative ego males and females. For all other groups, clustering may be indicated for this variable. No substantial differences were found for 'ever used condoms', suggesting that this is a variable that all groups were clustered.

5.1.5 Number of Partners

For number of partners, negative ego males had significant clustering for 'in the past year, how many partners?' in relationship to their contacts. For positive ego females, their contacts were more likely to have had significantly more lifetime sexual partners.

5.2 Study Limitations

Limitations of this study are largely due to the limited scope of the data analysis. The analysis used in this study can only describe differences in proportions and so cannot make any statements of conclusive findings. Another limitation may stem from the fact that the study population was fairly homogenous. Additionally, because the range of the number of subjects in each group was so great, the benchmark used to measure differences in this analysis is large. While differences and clustering patterns within and between groups can be detected, a wide range of significant findings are not available and thus, this study was unable to find conclusive evidence to establish the existence of behavioral clustering.

5.3 Broader Implications of Study

It is important to address and discuss some of the broader issues that have both led to and perpetuate the marked disparities in sexual health in the United States. Although the majority of epidemiological research regarding disparities in sexual health has focused on individual risk behaviors, it is evident that these disparities are deeply embedded in a larger, socio-political system. Racism is an issue that greatly influences and perpetuates inequality among power dynamics. Incarceration rates and the prison system are measures that make evident the many underlying socio-political issues that are rooted in racism. This system perpetuates inequalities between races because it is still based on a power dynamic of oppression and control that dates back to the founding of the United States. Although public health researchers have worked hard to identify solutions to eliminate disparities in regard to social class, race, age, etc., they are many times just applying a band-aid on a gaping wound.

5.4 Recommendations

As discussed extensively within the review of the literature, assortative mixing is an important factor in STD transmission dynamics. Unfortunately, analysis of the level of assortativity or disassortativity was not feasible for this paper but would be a valuable analysis for further understanding the role of social and sexual network dynamics between groups.

Additionally, it is important understand that, among the study population, chlamydia status may not be an important marker for sexual risk. While some variables did show substantial differences between positive and negative groups, still many did not. This indicates that STD positivity may just be a reflection of timing of the screening versus a true distinction of

risk behavior differences. This should be further investigated but does speak to the importance of screening all adolescents.

5.5 Conclusion

In conclusion, this study has sought to examine the clustering of behavioral patterns among adolescents and their contacts in an urban setting. Proportions for variables regarding education, incarceration, sexual initiation, and number of partners were compared between several groupings of the study population. While some substantial differences in proportions between groups were identified, as well as potential clustering for some risk behaviors, this study was not able to provide conclusive evidence regarding the clustering of behaviors. This paper recommends further analysis of the data in order to identify the patterns of assortativity which will be valuable in understanding the STD transmission dynamics among the social and sexual networks of the adolescents in the study population as well as have important implications on future research.

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APPENDIX A

The Adolescent Health Study: Social Network Matrix 11/03/00

X.1 Please tell me the FIRST and LAST NAMES of all people who you have had close personal contact during the **past 6 months.**

X.2 How would you describe your relationship with this person? For example: mother, father, friend, sex partner, boyfriend, or friend?

X.3 Please tell me how long you have known this person?

X.4. How often have you seen this person **in the last 6 months**? **(SECTION A)**

X.5 What is the **age** of this person?

X.6 To which **ethnic group** or **race** does this person belong?

X.7 What is the **gender** of this person? **0…Male** **1…Female**

X.8 Does the person you listed **work** full-time or part-time and/or is this person enrolled in **school**?

X.9 Please rate the strength of your relationship with each person **on a scale from 1-10**
1 means (don't like the person at all) 10 means (best friend).

X.10 Based on what you know, has this person **ever** had sex, by ever I mean in his/her entire lifetime?

X.11 Based on what you know, has this person had sex **in the past year** (12 months)?

X.12 Based on what you know, how many different sex partners has this person had **in the past year**?

X.13 Have **you ever** had sex with is person? **0…No** **1…Yes**

X.14 How often do you use a condom with this person? **(SECTION B)**

X.15 **If yes to X.13**, when did you first have sex with this person **(date)**?

X.16 When was the last time that you had sex with this person **(date)**?

X.17 How many times did you have oral sex with this person **in the last 6 months**? **(SECTION A)**

X.18 How often did you use a condom during oral sex with this person? **(SECTION B)**

X.19 How many times did you have vaginal sex with this person **in the last 6 months**? **(SECTION A)**

X.20 How often did you use a condom during vaginal sex with this person? **(SECTION B)**

X.21 Based on what you know, does this person take drugs? **0…No** **1…Yes**

X.22 **If yes**, do you use drugs with this person? **0…No** **1…Yes**

X.23 Based on your knowledge of how sexually transmitted diseases are spread, what is this person's risk of getting a sexually transmitted disease? **(SECTION C)**

RACE/ ETHNIC GROUP

00= American (non-specific)
01= Asian/Pacific Islander
02= Black (African American)
03= Black (Caribbean)
04= Black (non-specific)
05= Hispanic (black)
06= Hispanic (white)
07= Native American Indian/Alaskan Native
08= White (European)
09= White (non-specific)
10= Mixed: Black/White
11= Mixed:
12= Other

OCCUPATIONAL SITUATION

00= Full Time Student
01= Part-Time Student
02= Unemployed/ Don't Work
03= Employed/ Hrs. Unknown
04= Full-Time/ More than 30 hrs
05= Wk Full-Time & Attend School
06= Part-Time/ Less than 30 hrs
07= Wk Part-Time & Attend School
08= Day Care/ Kindergarten
09= Retired
10= Disabled
11= Volunteer Work
12= Home Duties/ Child Care
13= On leave from work because of Maternity Leave, Strike, Furlough, or Disability Leave
20= Other (Specify)

(SECTION A) **X.4, X.17, X.19**

0…Not at all

1…Once or Twice

2…Three to Six times

3…At least a couple of times a month

4…Weekly

5…Daily

(SECTION B) **X.14, X.18, X.20**

1…Always

2…Usually

3…Sometimes

4…Rarely

5…Never

(SECTION C) **X.23**

1…High

2…Medium

3…Low

4…None

5…Already Infected