

STI-TESTING AMONG COLLEGE STUDENTS:

WHAT IS THERE TO BE AFRAID OF?

by

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A Thesis Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Arts in Sociology

Middle Tennessee State University  
May 2014

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## ACKNOWLEDGMENTS

I would like to thank my thesis committee members, Jackie Eller, Brian Hinote and Angela Mertig, for providing me with mentorship and guidance during this project and throughout my time at MTSU. I am also thankful to my family for supporting me even from across the Atlantic; to Yannick for his willingness to proofread endless drafts of my thesis; and to my fellow graduate students, JaDee, Felicia and DaJuan for sharing my academic passions and struggles.

## ABSTRACT

In this work I explore attitudes of college students regarding sexually transmitted infections (STIs) and STI-testing as a preventive health practice. Since the existing research on STIs and STI-testing has tended to be greatly limited by the methodological specifics of particular research designs, I employ a mixed methods approach in the hope of constructing a more comprehensive image of social reality. Through a two-stage process of data collection, I investigate STI-testing practices of college students and factors shaping these practices. Among these factors are fear of disclosure, knowledge about sexual health and STIs, confidence in adequacy of knowledge and various demographic characteristics. My findings suggest that different sets of factors are significantly linked to STI-testing practices for students who had been tested for STIs once and for those who had been tested multiple times.

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## INTRODUCTION

Sexually transmitted infections (STIs) have become an issue of great importance in the contemporary global environment and in the United States. According to the Centers for Disease Control (CDC), there have been 1,307,893 new cases of chlamydial infections and 309,341 new cases of gonorrhea reported in the U.S. in 2010 (CDC 2010). The rates of chlamydia and gonorrhea in 2010 were 426 and 109 cases per 100,000 persons respectively. In both instances the rates increased in comparison to 2009. In its reports the CDC also devotes specific attention to primary and secondary syphilis: while the overall rates of syphilis are very low (4.5 new cases per 100,000 persons), it constitutes a significant health issue in specific settings, such as predominantly Black urban or poor rural communities. While the case reporting data on such infections as human papillomavirus and herpes simplex are not available, overall trends in STI occurrence suggest potential increases in the prevalence of these infections as well.

The rates of STI occurrence are traditionally the highest in the Southern region of the U.S. For example, the rate of chlamydia in 2010 in the South was 469 cases per 100,000 persons, which is higher than the national average. Similar trends can be observed for most of the other STIs. The South also accounted for more than 45% of new cases of syphilis in 2010. STIs also tend to disproportionately affect youth (people aged 15-24 acquire about half of all newly reported cases of STIs) and certain minority groups (African-Americans, Native Americans and Alaskan Natives and Hispanics). With few exceptions, the rates also tend to be higher for women than for men (CDC 2010).

While the rates of occurrence of the majority of known STIs in the U.S. can be considered low in comparison to other regions of the world, it is virtually impossible to keep track of all new cases of STIs: they are often transmitted asymptotically and remain undiagnosed and, therefore, unreported (Horowitz et al. 2010; Kahn et al. 2007; Nack 2008). STIs, if not treated in a timely manner, can cause permanent damage to a human body. Besides affecting the infected individuals, asymptomatic STIs pose an increased risk of transmission to others. The risk of unknowingly transmitting STIs can be minimized by STI screenings obtained by sexually active individuals on a regular basis regardless of the presence of symptoms. However, given the general reluctance of the American public to openly address sexual health issues within mainstream discourse, many individuals do not seek routine STI testing (CDC 2010). The fact that regardless of medical advances, STIs and sexually transmitted diseases triggered by STIs remain a public health issue, suggests the presence of a strong social component contributing to the continuation of the STI epidemics. Thus, not only medical or microbiological specifics of STIs, but also social structures influencing individual and collective attitudes and behaviors linked to STIs must be assessed in order to develop successful strategies of STI prevention and treatment.

The purpose of this study is to explore factors that can be potentially linked to an individual's decisions to seek screenings for sexually transmitted infections, namely, fear of disclosure of stigmatizing behaviors and/or conditions; levels and specifics of knowledge about sexual health; and levels of confidence in adequacy and accuracy of one's own knowledge. In order to examine these factors and their influence on STI testing decisions, I employ a mixed-method research design, where the main body of data



collected through self-administered quantitative surveys is supplemented by information obtained through several semi-structured qualitative interviews. The specific population of interest is students at a large public university in the mid-South.

## LITERATURE REVIEW

### *Fear of Disclosure as a Dimension of STI-stigma*

*STI-stigma as an identity threat.* Social and political discourse on sexually transmitted infections has been dominated by the HIV/AIDS problematic throughout the last few decades of the 20th century. However, as the awareness of the HIV/AIDS epidemic grew – at least in the more industrially developed countries – the issue of non-HIV STIs became more salient and began attracting the attention of social researchers. While the efforts of social movements and social activists have shaped relatively tolerant and more accepting attitudes towards persons living with HIV/AIDS, constructing an understanding of HIV/AIDS similar to that of cancer and other severe health conditions, the meanings of sexually transmitted infections remain attached to the idea of stigma and stigmatizing sexual behaviors (Balfe and Brugha 2010; Cunningham et al. 2002; Fortenberry et al. 2002; Gilamn 2007; Lichtenstein 2012; Nack 2002, 2008).

Stigma is a complex, multidimensional theoretical construct that has been approached from various angles within the STI problematic. Perhaps the most common conceptualization of stigma related to STIs is the idea of stigma as an identity threat. Most of the people diagnosed with STIs have to learn about their discreditable stigmatizing conditions “late in life” – at the time of diagnosis or, sometimes, when the

symptoms occur. At that point they have already “thoroughly learned about the normal and the stigmatized” (Goffman 1963:34), i.e., they have internalized the popular perception of STIs being a result of voluntary actions of the bearers and, hence, their full responsibility (Herek 2009). Most of the individuals who have been diagnosed with STIs do not have to face actual social consequences: their condition is not visible; hence, their stigma does not become discredited in the eyes of others. However, they still renegotiate their identity in light of their newly discovered condition and their preexisting perception of it.

Individuals diagnosed with STIs often end up dealing with a disrupted sense of self or spoiled identity. The latter is one of the main foci of the works of Nack (2002, 2008) who explores experiences of women living with incurable STIs, namely, herpes and human papillomavirus. To emphasize the strength of STI-related stigma in contemporary Western culture, Nack traces the roots of STI-stigma to early 20<sup>th</sup> century medical practices and the HIV/AIDS discourse of the 1980s:

Historical documents reveal that ... physicians had constructed a spectrum of culpability, positioning “innocent patients” at one end – those children and married women who had been infected via an adulterous husband – and infected married men and “problem girls” at the other end. ... Not only these “problem girls” contracted diseases willfully, but they were also the “major vector of disease” by virtue of their promiscuity and low morals. ... This view of women regained momentum in the 1980’s when early AIDS research studies viewed women “not as victims of a disease, but as risk factors to others,” and the public regarded HIV infections as “simply natural consequences of the way they choose to live...” (Nack 2008:9).

Indeed, the participants in Nack’s qualitative study tended to internalize culturally encrypted stigma. They adopted stigmatized perceptions of themselves, labeling themselves as irresponsible, foolish, dirty, slutty, unworthy, etc., thus developing spoiled

sexual identities. After being diagnosed with chronic STIs these women, who have established their sense of self via constant comparison to existing gender norms that imply high morals to be one of the key components of socially desirable femininity, were faced with the fear of being associated with the promiscuous “bad girls” (Nack 2002).

The female participants in several other studies displayed similar perceptions of STIs and the experience of having or being diagnosed with an STI. For example, East et al.’s (2010) study focusing specifically on young women who had a history of diagnosed sexually transmitted infection, discovered that many of the women did not consider themselves to be at risk of contracting an STI because they did not fit their own perceptions of women who get “these sorts of infections” (East et al. 2010:1995). Prior to their diagnoses participants constructed the image of women who contract STIs as deviant and promiscuous. After the diagnosis, however, they had to renegotiate their identities: the women felt foolish for engaging in risky sexual behaviors. All of the women took responsibility for contracting STIs, thus further internalizing an image of promiscuous and irresponsible “problem girls” and applying it to themselves. In a study on personal meanings of HPV and Pap test results conducted by Kahn et al. (2007), some of the participants, in particularly those with negative HPV results, attempted to distance themselves from the others with positive diagnoses by constructing them as dirty, nasty, unclean and unhealthy. At the same time, nearly all of these participants said that they would feel guilty for “not taking care of themselves” (Kahn et al. 2007:196) if they were to have a positive HPV test or even an abnormal Pap test, and that they would fear being associated with “dirty” people.

Like these studies, many other studies on STI-stigma as an identity threat, focus exclusively on women. Nack's historical analysis suggests that the construction of STI-related stigma is highly gendered: the culturally encoded STI-stigma for men can be drastically different in its origin and meaning, or, as some of the research suggests, there may be very little or no stigma attached to male infection. HIV/AIDS research conducted in Zimbabwe by Basset and Mhloyi (1991) suggests that in certain cultures having an STI for a man is regarded as rite of passage into manhood, a token of masculinity. However, there has been virtually no research on male STI-stigma within Western cultures.

*Discreditable stigma and fear of disclosure.* Another major dimension of STI-stigma is also linked to its potential change of status from discreditable to discredited: the stigmatized individuals fear that the others will become aware of their conditions and that the perceptions of these individuals by others will change dramatically. Public perception of STIs is constructed to awaken anger and moralism towards persons living with these conditions, rather than pity or empathy which are usually considered appropriate reactions to the majority of other damaging medical conditions (Herek 2009). As I mentioned before, most of the STIs, with few exceptions, do not cause significant transformation of the infected individual's physical appearance and behaviors. One's sexual partners may notice warts on one's genitalia or other signs of infection; however, an STI may never manifest itself visually in any way (Fraiz and Jones 1988; Horowitz et al. 2010). Hence, upon receiving a positive STI diagnosis, individuals are faced with a dilemma of disclosure: they have to choose whether to tell anyone about their conditions and, if they decide to disclose, choose whom to tell. Making the disclosure decision often becomes an anxiety-triggering process. The individuals, on one hand, are advised by

public health discourse to inform at least their current and previous sexual partners (Planned Parenthood 2013). On the other hand, stigmatized perceptions of STIs and stereotypical imagery of people who contract STIs put them at fear of anticipated negative reactions, from which the stigma-induced fear of disclosure emerges.

According to Chesney and Smith (1999), fear of stigma and potential discrimination may deter people at high risk for HIV from seeking routine testing and information about risk reduction. A more recent study by Cunningham et al. (2002) suggests that one of the ways to escape the uncomfortable feelings elicited by STI-stigma is to avoid treatment-related social conditions. Cunningham links high levels of perceived STI-stigma among African-American adolescents with decreased likelihood of seeking STI-related care, especially among females. Lichtenstein (2003) discovered a similar situation when examining STI-treatment and prevention practices in Alabama. She found that the respondents' willingness to seek sexual health treatment was directly and indirectly impacted by STI-related stigma and privacy concerns linked to potential disclosure.

According to Balfe and Brugha (2010), young adults may fear not only the potential necessity to disclose their STI-diagnosis, but also potential disclosure of STI-testing practices. Through a series of qualitative interviews, Balfe and Brugha discovered that individuals who decide to seek STI-testing tend to take measures in order to minimize the risk of other people finding out about their testing activities. Most of the participants of the study, however, chose to disclose to certain people (e.g., best friends or romantic partners), who then assisted the participants in maintaining a "virtuous" status. People to whom the testing activities were disclosed were perceived by the

participants as being open-minded, non-judgmental and able to maintain the confidentiality of information. Most of the participants, even those who did not express much distress in regard to disclosure, were concerned about a possibility of accidental disclosure to certain groups of people, such as their parents or other family members.

While the literature exploring fear of disclosure within the context of sexual health and sexually transmitted infections in particular is limited, available studies suggest that STI-related stigma not only facilitates the emergence of intrapersonal conflicts and renegotiation of identity, but also may be strongly linked – through fear of disclosure as its direct outcome and an important dimension – to individuals' decisions to seek routine STI-testing.

### *Health Knowledge as a Factor Influencing Health Behaviors*

*Effects of knowledge on health behaviors.* While social norms and expectations can affect individual choices and behaviors, their influence can be altered by knowledge individuals possess with regard to particular issues. In health contexts knowledge is often approached as a factor shaping individuals' perceived health risks and benefits of taking preventive or risk-reducing actions, as well as defining the extent of their exposure to external influence (Hingson and Strunin 1992; Janz and Becker 1984; Rosenstock, Strecher, and Becker 1988). The thesis about the importance of knowledge is supported by empirical research in sociology, psychology and medicine. Kenkel (1991) discovered that individuals who were more knowledgeable about health choices and outcomes tended to lead healthier lifestyles in comparison to their peers with lower levels of

knowledge on the topic. Hence, it can be concluded that an increase in level and quality of health knowledge is linked to increased frequency and quality of preventive practices. Similar links have been discovered in other studies involving specific groups selected based on their demographic characteristics, susceptibility to particular diseases or previous history of particular health conditions.

Health literacy and health knowledge were found to be linked to cervical cancer prevention among women in a study by Lindau et al. (2002). This research demonstrated that poor health literacy was associated with low levels of health knowledge, which in turn negatively influenced health behaviors aiming to reduce the risk of development of cervical cancer, namely, cervical cancer screenings. Several studies also found links between levels of knowledge about widespread chronic health conditions and likelihood of engaging in preventive behaviors for such conditions. Ievers-Landis et al. (2003) discovered that knowledge, along with family support, was a predictor of frequency of physical activity that served as a prophylactic against osteoporosis later in life. Similar relationships between knowledge about osteoporosis and likelihood of engaging in preventive behaviors were found among different age groups (Sedlak, Doheny, and Estok 2000; Taggart and Connor 1995).

Not all research, however, indicates the presence of a positive relationship between knowledge and behavior. Knight and Kirincich's (2002) study on college students' use of artificial tanning and tanning lamps showed that while about three quarters of the students in the sample were aware of long-term negative health outcomes of artificial tanning (e.g., accelerated aging of the skin, increased risk of skin cancers, etc.), the majority continued to use tanning lamps and other artificial tanning devices.

Based on their observation, the authors conclude that knowledge itself is not sufficient to induce positive health behaviors, especially if such behaviors are not viewed as desirable in micro and/or macro social contexts. When risky health behaviors are normalized and encouraged through social norms and expectations, individuals might engage in them to comply with said norms, despite knowing of potential adverse effects of such behaviors. Therefore, knowledge, while being an essential component of behavioral change, does not exist independently of the context and operates in conjunction with other factors.

Multiple studies that focus specifically on sexual health and STIs provide evidence for a positive relationship between knowledge and health choices and behaviors. St. Lawrence (1993) found that urban African-American adolescent girls' knowledge about AIDS and the means of protection from it – in particular, condoms – was linked to safer sexual health behaviors. She did not, however, discover the same relationship between knowledge and behavior among adolescent boys, thus highlighting potential mediating effects of other factors on the knowledge-behavior link. Takyi's (2001) study on knowledge and HIV/AIDS preventive behaviors among men in Ghana also showed a positive correlation between men's levels of knowledge about HIV/AIDS and their willingness to alter sexual behaviors by limiting numbers of sexual partners. Dell et al. (2000) discovered that low levels of knowledge about Human Papillomavirus and ways of preventing and the diagnosis of it were linked to limited attention to sexual health. Having surveyed inner-city high school students in Toronto, Canada, they found that 87% of the study population had heard about HPV. The students, however, were mostly unaware of potential consequences of the infection, namely, the risk of developing cervical cancer. Consequently, 85% of surveyed women reported having visited a clinic



within the past year, but only a third of them had talked about sexual health and/or had STI-screenings or Papanicolaou tests performed during those visits. Hence, in this case, limited knowledge predicted limited health practices.

Finally, Herek (2009) not only established a link between knowledge and individual health behaviors, but also emphasized the role of knowledge for internalization of STI-stigma. He states that people who are more accepting towards different sexual practices and who are more knowledgeable about HIV transmission, as well as those who personally know somebody with HIV, tend to manifest less AIDS-stigma than others. Thus, the findings of this study resonate with an idea that knowledge might serve as a mediator, altering the effect of cultural norms on behaviors.

*Health knowledge sources and channels of transmission.* As Hingson and Strunin state in their work on adolescents in context of the HIV/AIDS epidemic, “just as many people continue to smoke despite knowledge of smoking’s adverse health effects, many teenagers continue to engage in unprotected sex despite knowledge of risk behaviors associated with HIV transmission” (1992:21). Just as there are data on general health that contradicts the notion of a positive relationship between knowledge and preventive health behaviors, there are specific challenges to this assumption in context of sexual health. One of the issues that arises in this context is construction of knowledge within different branches of discourse and its distribution through different avenues, such as schools, medical institutions, public health campaigns, media, literature, etc.

In discussions of types and sources of sexual health knowledge, many authors working in the fields of sociology, psychology, education and public health pay specific attention to institutional channels through which sexual health information is transmitted,

namely, school or community-based educational programs (DiClemente 1992; Dodge, Reece, and Herbenick 2009; Kirby 2007; Santinelli 2006; Trenholm et al. 2008).

Community-based programs are often shaped by specific characteristics of areas in which they are developed and groups they are attempting to target. Hence, the opportunities for comprehensive scientific examination of these programs are limited. School-based sexual education programs, however, are regulated on state or national levels and function, though often in somewhat different forms, in all areas of the U.S. Many college-age Americans have been exposed to some form of sexual education through school. Therefore, it is important to consider the role of school-based sexual education in formation of sexual health knowledge, attitudes and behaviors, including those related to STI-testing.

According to the latest report on state policy produced by the Guttmacher Institute (2013), 22 states and the District of Columbia mandate sex education and 33 states mandate HIV education. In other states, sex and/or HIV education may still be available, but is not mandated. Only 12 states explicitly require instruction provided as part of school-based sexual education to be medically accurate; eight states require sexual education to be designed and administered in a way that is not biased against any race, sex or ethnicity. Finally, only two states – California and Louisiana – have policies that prohibit promotion of religion as part of school-based sexual education. As a result, sexual education programs in different states often can offer only limited information and may be saturated by religion.

School-based sexual education programs in the U.S. are generally categorized as being comprehensive, abstinence-plus or abstinence-only. The latter attracts particular

attention of researchers due to the specific guidelines regulating it and effects it has on formation of sexual health knowledge among students. Abstinence only education is defined under Section 510 of Title V of the Social Security Act as “educational or motivational program that:

- a) has as its exclusive purpose teaching the social, psychological and health gains to be realized by abstaining from sexual activity;
- b) teaches abstinence from sexual activity outside marriage as the expected standard for all school-age children;
- c) teaches that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems;
- d) teaches that a mutually faithful, monogamous relationship in the context of marriage is the expected standard of sexual activity;
- e) teaches that sexual activity outside of marriage is likely to have harmful psychological and physical effects;
- f) teaches that bearing children out of wedlock is likely to have harmful consequences for the child, the child’s parents and society;
- g) teaches young people how to reject sexual advances and how alcohol and drug use increase vulnerability to sexual advances;
- h) teaches the importance of attaining self-sufficiency before engaging in sexual activity”

(Title V, Section 510 (b)(2)(A-H) of the Social Security Act (P.L. 104-193) as cited in Santinelli 2006, Trenholm et al. 2008).

From 1998 to 2008 approximately \$87.5 million had been spent annually by federal government and states to fund programs that comply with the “A-H” definition (Trenholm et al. 2008). Even though empirical evidence of abstinence only programs is limited, they are widely employed in many states (Kirby 2007). According to Guttmacher Institute (2013), only 17 states and the District of Columbia require that information on contraception be included as part of sexual education curriculum. At the same time, 37 states require that the information on abstinence be provided, and 26 of those states require that abstinence be emphasized specifically as the primary means to prevent teen pregnancy and STI-transmission.

A comprehensive examination of various types of sex and STI/HIV education programs was conducted by Kirby (2007). Kirby selected 54 studies of the effectiveness of curriculum/school-based, clinician-patient interaction-based initiatives, stand-alone video and computer-based interventions and educational programs for parents and families. He then compared, among other things, the abstinence only and comprehensive curriculum-based programs in terms of their effects on particular sexual behaviors of the students. Namely, he sought to find out whether the programs were successful in encouraging students to delay first sexual contact; reduce frequency of sex, number of partners and sexual risk-taking; and increase condom and contraceptive use, as well as in lowering the rates of teen pregnancy, childbirth and sexually transmitted infections. While acknowledging that his sample of abstinence only programs is limited, Kirby concludes that even some “well-designed intensive abstinence-until-marriage programs are not effective in changing behaviors” (Kirby 2007:152).

The existing regulations on sexual education specifically allow for those in power to limit the access to information for those who need it to make informed decisions regarding their health. Providing questionable and severely limited information through school-based programs affect those who do not have access to other sources of knowledge or lack cultural capital to deliberately seek out such information. Hence, it affects underprivileged youth the most, thus further marginalizing them, while failing to reduce their susceptibility to sexually transmitted infections. Formal school-based sexual education, while important, is not the only source of sexual health information available to the majority of the U.S. population. Among other sources of such information can be communication with family and/or friends, various educational literature, on-line

resources, classes, community health programs, etc. The role of these sources in shaping attitudes regarding STIs and STI-testing decisions should also be considered.

*Feeling of knowing and confidence in adequacy of knowledge.* Another aspect of knowledge that is often included in psychological knowledge-related studies, but is not widely incorporated into the practice of sociological inquiry, is a concept of feeling of knowing (FOK). FOK refers to the individuals' feelings regarding existence of knowledge in their memory. In other words, one might feel that they know an answer to a particular question, despite not being able to recall the answer at a specific time (Hart 1965). FOK judgments can be reflective of actual knowledge individuals possess, but they can also be influenced by a multitude of other factors, such as, demographic characteristics or emotional states (Fischhoff, Slovic, and Lichtenstein 1977; Kelley and Lindsay 1993; Lundeberg, Fox, and Punčohař 1994). Psychological theories often view FOK as an important phenomenon in contexts of brain functionality and mnemonic processes (Koriat 1993).

In this study I am introducing the concept of confidence in adequacy of knowledge based on the FOK. Given the current issues in transmission of sexual health information outlined in the previous section of this paper, it is important to pay attention to potential discrepancies between the actual accuracy of knowledge and individual beliefs in its accuracy. Individuals who had only been exposed to certain sources of information and had no opportunities to learn from alternative avenues might be highly confident in accuracy and adequacy of knowledge they possess. However, due to their inherent biases, certain channels of information might limit and/or alter the information they present. Thus, there is a possibility that individuals might display high levels of

confidence in adequacy of knowledge, while not having an extensive knowledge base. One might not be uninformed, but misinformed, and such a sure-but-wrong belief may lead to behavioral consequences (Hunt 2003).

The relationship between perceived adequacy of knowledge and behaviors in health contexts has not yet been thoroughly examined and limited sociological literature on the topic is available. However, the inclusion of confidence in adequacy of knowledge as an independent variable is justified by the exploratory nature of this study and can potentially lead to further solidification of the concept.

### *Health Locus of Control*

Locus of control (LOC) is a social-psychological concept developed in the mid-1950s (Rotter 1954) and is used to describe the extent to which individuals perceive themselves as being in control of the events in their lives. LOC was initially conceptualized as a continuum with internality and externality on each end. It was adapted for health research specifically by Wallston and Wallston in the mid-1970s, who developed multidimensional health locus of control (MHLC) scales (Wallston, Wallston, and DeVellis 1978; Wallston and Wallston 1978, 1982). Health LOC explains relationships between locus of control and different health conditions, behaviors and outcomes.

Health locus of control (HLOC) was included in the analysis in multiple studies on health and health behaviors. For example, Roddenberry and Renk (2010) in their study on utilization of health services in college students found that HLOC served as a partial

mediator in the relationship between stress and illness. According to their research, levels of stress in a sample of college students were positively related to instances of illness: those who reported experiencing higher level of stress tended to become sick more often than their peers reporting lower levels of stress. Internal health locus of control, however, somewhat altered this relationship.

HLOC is also used in studies of sexual health and STIs. White et al. (2011) discovered that powerful others HLOC, along with age and race, were predictors of attitudes towards HIV/AIDS in a population of college students. Younger non-White participants exhibited more accepting attitudes towards persons with HIV/AIDS than older White students. High scores on powerful other MHLC subscales also predicted higher tolerance of persons affected by HIV/AIDS. As demonstrated in this and the previous example, HLOC scales are successfully used in research on different aspects of health in college student populations. In both cases, HLOC influences the major dependent variable whether directly or indirectly. Hence, it can be introduced as an independent variable in this study along with gender, race/ethnicity and socioeconomic status.

### *Gender, Race/Ethnicity and Socioeconomic Status*

Gender, race/ethnicity and socioeconomic status (SES) play significant roles in shaping the structure of contemporary American society. They become particularly salient in the context of health: gender differences, racial and ethnic disparities and socioeconomic determinants of health are well documented (Bird and Rieker 1999;

Gorman and Read 2006; Hankivsky 2012; Read and Gorman 2006, 2010). These defining characteristics and potential links between them are currently among the most important variables in health research, since they determine both the extent of environmental influence on individuals' health and their decisions regarding health-related practices. Therefore, the discussion of these factors must be included in this study.

Experiences of health and illness in the contemporary U.S. are different for men and women, for individuals with different ethnic backgrounds and persons occupying different positions in the socioeconomic hierarchy. For example, women in the U.S. are disproportionately affected by almost all bacterial and some of the viral STIs (CDC 2010). Some of the most prominent qualitative studies focusing on sexually transmitted infections also suggest the presence of gender-specific issues (Nack 2002). As Bird and Rieker note, gender differences in health contexts cannot be explained by purely biological or purely sociological reasoning, because “men and women are the product of their own biology, their social experiences in the stratified society and the gendered roles they may enact” (Bird and Rieker 1999:748). In discussions on health in general and sexual health in particular, conceptualization of gender as a social construct must be linked to biological specifics: while women and men are subject to different social norms and expectations, male and female bodies are affected differently by infections.

Race and ethnicity in health contexts are often viewed as being closely connected to SES: ethnic groups that occupy higher ranks of social hierarchy are expected to have overall better health than those occupying lower social positions. The data in most cases align with this assumption: morbidity rates are higher among African-American and Native American populations who also tend to experience poorer socioeconomic



conditions than their White and Asian peers (Bird and Rieker 1999; Read and Gorman 2006). Similarly, the rates of STI-prevalence tend to be higher for socially disadvantaged groups (CDC 2010; Laumann and Youm 1999). However, there is evidence indicating the presence of a potentially more complex relationship between gender, race, ethnicity and SES. For example, the Hispanic population tends to be healthier overall than non-Hispanic Whites and other non-White groups. At the same time, Hispanics tend to occupy lower positions in the social hierarchy and score lower than non-Hispanic Whites on various SES scales (Gorman and Read 2006).

SES itself is possibly the most important factor to be considered in health contexts. However, like many other social determinants of health, it presents serious conceptual, methodological and measurement challenges (McQueen 2009). While the concept of SES has been used in health research for a long time, it is often reduced to variables such as income or education level, which, on one hand, are measurable, but on the other, do not fully capture theoretical specifics of SES. Hence, there is a need for alternative approaches to assessing SES in empirical research.

Existing literature on sexually transmitted infections, STI-testing and factors that might be associated with STI-testing practices, as well as the lack of literature on certain aspects, such as confidence in adequacy of knowing, lead me to formulate the research questions described in the following section of this paper.

## RESEARCH QUESTIONS

This study addresses two key research questions: Are college students likely to seek routine STI-testing? And what factors influence their STI-testing decisions? Previous research and theorizing suggest two major factors that can potentially influence individuals' health decisions: 1) fear of disclosure as a dimension of culturally constructed STI-stigma and 2) an individual's actual and perceived level of knowledge about STIs and sexual health. Hence, the basic hypotheses that informed the development of my quantitative instrument were as follows:

H1: College students who express high levels of fear of disclosure are less likely to seek STI-testing than their peers with lower levels of fear of disclosure.

H2: There is a positive relationship between the college students' actual knowledge about STIs and their likelihood of seeking STI-testing.

H3. There is a relationship between the college students' perceived knowledge about sexual health and STIs – the extent to which they are confident in adequacy of their knowledge – and their likelihood of seeking STI-testing.

While addressing the problematic of knowledge, it is important to pay attention to the sources of said knowledge and channels through which it is transmitted. The sources often shape context and content of knowledge, thus heavily influencing the individuals' perceptions and views of the subject. Based on the literature, I chose to pay particular attention to school-based sexual education as an avenue through which knowledge about sexual health and STIs is transmitted. Hence, the following hypothesis:

H4: College students who received abstinence-only sexual education while at school are less likely to seek STI-testing than those who received comprehensive sexual education.

Finally, it is necessary to consider control variables: HLOC, gender, race/ethnicity, sexual orientation and SES. Existing studies suggest that these factors play

a major part in determining the individuals' health decisions and practices and thus have potential to alter, enhance or diminish the effects of the major independent factors.

Quantitative data collected through self-administered electronic surveys allows testing the hypotheses and answering initial research questions. However, given the potential sensitivity of the topic and limitations of a quantitative approach in general and this particular study design, introduction of a qualitative component can provide valuable insight into the participants' experiences. Addition of a second – qualitative – round of data collection also has potential to explore the factors and concepts that likely have influence on students' STI-testing decisions, but have not yet been sufficiently developed theoretically or empirically. Hence, the research questions that informed the qualitative block of this study not only echo main hypotheses, but explore additional aspects of STI-testing decision-making that cannot be assessed quantitatively. Among these aspects are the role of popular media as a channel of information about sexual health and STI-s; influence of the image of medical professionals on STI-testing decisions; the impact of personal experiences of STIs; effects of environment and socialization on sexual health behaviors, etc. The interview participants were asked to both reflect on their own experiences and share their opinions and thoughts about experiences of others. Thus, the qualitative data serve to saturate the quantitative data, giving it additional depth, as well as help discover different dimensions of the issue in question and situate it within a broader context.

## METHODS

### *Participants*

The data for this study were obtained through a two-stage data collection process using quantitative and qualitative methods, namely, surveys and in-depth interviews. The surveys were completed by students at a single large public university in the mid-South during the period from October 2013 to January 2014. Participation in the study was initially limited to currently enrolled students aged 18 to 30 years old. This specific age range was selected in an attempt to reflect the trend towards an increase in the average student age in the U.S. (Seftor and Turner 2002; Wyatt 2011). However, at the data analysis stage I discovered several surveys completed by students older than 30 and chose to include all respondents aged 18 to 35 in the final analysis. The survey sample was obtained through a convenience sampling strategy. The semi-structured qualitative interviews were conducted during February 2014 with six of the initial survey participants who volunteered to provide more information about their experiences with STIs, STI-testing and sexual health in general.

A total of 211 students submitted web surveys. After the cases with missing data and those that did not fit within the established age limits were removed, 157 completed surveys remained for analysis. The characteristics of the respondents are presented in Table 1. The mean age of the respondents was 22.1 years ( $SD=3.4$  years). The traditional college age students (18-24 years old) comprised 77% of the sample. Students who identified as female constituted 64% of all respondents, and male students represented 35%. One respondent chose to identify as gender neutral.

**Table 1. Demographic Characteristics of Survey Respondents**

Characteristic	Frequency	Percent (%)
<i>Age Distribution (N=157)</i>		
20 years and younger	63	40.1
21-24	58	36.9
25-29	31	19.7
30 and older	5	3.2
<i>Gender (N=150)</i>		
Women	96	64.0
Men	53	35.3
Gender neutral	1	0.7
<i>Class level (N=150)</i>		
Freshman	27	18.0
Sophomore	29	19.3
Junior	35	23.3
Senior	43	28.7
Graduate	15	10.0
Other	1	0.7
<i>College (N=145)</i>		
Basic and Applied Sciences	42	29.0
Behavioral and Health Sciences	34	23.4
Business	8	5.5
Mass Communication	6	4.1
Education	7	4.8
Liberal Arts	39	26.9
Other	9	6.2
<i>Race/ethnicity (N=149)</i>		
Black or African-American	32	21.5
White	92	61.7
Multiethnic/multiracial	15	9.6
Other	10	6.7
<i>Relationship Status (N=150)</i>		
Single	76	50.7
In a relationship, not living together	43	28.7
Living with partner	23	15.3
Married	7	4.7
Divorced or separated	1	0.7
<i>Sexual Orientation (N=157)</i>		
Bisexual	17	10.8
Heterosexual	122	77.7
Homosexual	11	7.0
Other	7	4.4
<i>Subjective Class Identification (N=150)</i>		
Lower Class	15	10.0
Working Class	50	33.3
Lower Middle Class	46	30.7
Upper Middle Class	39	26.0

First year students comprised 18% of the sample, sophomores – 19%, and juniors – 23%. Nearly 29% of the respondents were seniors and 10% were graduate students. Most of the students were enrolled in programs in the College of Basic and Applied Sciences (29%), Liberal Arts (27%) and Behavioral and Health Sciences (23%). Others were pursuing their degrees in Education, Business, Mass Communication and other smaller colleges, or had not yet declared their majors.

With respect to race/ethnicity, the majority of the sample – 61.7% – identified as White; 21.5% – as Black or African-American; 9.6% of chose more than one ethnic category. The remaining 6.7% identified with ethnic groups other than Black or White.

About half of the students reported their relationship status as single (50.7%). Another 44% reported having a partner. Less than 5% of the students reported their relationship status as married and only one was divorced or separated. Almost 78% of the sample identified as heterosexual. The remaining students reported being bisexual (10.8%), homosexual (7%) and “other” (4.4%).

With regard to subjective class identification about a third of the respondents identified with working class (33.3%). Lower middle and upper middle class were chosen as descriptive of their own status by 30.7% and 26% respectively. The remaining 10% of students identified with lower class.

Six participants for the qualitative round of data collection were recruited among those who completed the survey. The ages of interview participants ranged from 18 to 30 years. Three of the participants were women, the other three were men. There was only one non-white interviewee and only one who identified as non-heterosexual.

*Procedure*

Surveys were completed using an online instrument developed specifically for the purposes of this study. Recruitment flyers were posted on the university web portal designed to be used by current students, faculty and staff. The flyers were also administered in several classrooms and posted on bulletin boards in different university buildings. Since the survey did not involve collection of personal identifying information, the respondents were able to preserve their anonymity. However, upon completion of the survey they were offered an opportunity to participate in the second round of data collection. Those who chose to participate in the qualitative interviews were guaranteed confidentiality and were not required to disclose their real names or e-mail addresses linked to their student files. These respondents' surveys were not linked with information they provided in the interviews in any way, and they were compensated for their time with small value gift cards. The survey and interview instrument, as well as all supporting materials, were approved by the university Institutional Review Board.

I believe that a mixed methods research design fits the purposes of this study, since it allows obtaining potentially sensitive data from respondents through self-administered anonymous surveys, thus minimizing the likelihood of participants providing socially desirable responses to avoid judgment, and provides an opportunity to receive more extensive information from those who are ready to discuss the topic in a face-to-face interview setting.

### *Quantitative Measures*

*STI-testing practices.* The survey assessed the students' STI-testing practices through responses about frequency of undergoing STI-testing in the past, as well as reasons for seeking it (see Appendix B, questions # 12-14). I asked the students to indicate whether or not they have ever been tested for sexually transmitted infections, and if so, how many times they were tested. A question about frequency of testing was left open-ended, thus capturing responses indicating regularity of behavior. Several questions about reasons for seeking STI-testing were included to provide supplementary information and obtain a more complete picture of students' STI-testing practices.

*STI-stigma and fear of disclosure.* Levels of internalized STI-stigma were assessed through a seven-item scale developed specifically for the purpose of this survey (Cronbach's  $\alpha = 0.71$ ). Scale scores range from 11 to 32 with higher scores corresponding to higher levels of stigma-related fear. The scale includes two subscales: the first one encompasses four items addressing fear of disclosure in relation to generalized others, while the second one assesses fear of disclosure of STI-history to particular groups of people, e.g., family, medical professionals, etc. While rotated factor analysis shows the presence of two distinct factors, theoretical background, satisfactory value of Cronbach's  $\alpha$  and sufficient inter-item correlations justify the use of the seven-item fear of disclosure scale. In addition, the survey instrument also asks students about particular individuals or groups to whom the respondents would or would not be comfortable disclosing their own STI-status or STI-history (see Appendix B, questions #15-17).



*Knowledge about sexual health and STIs.* A nine-item scale was constructed in order to measure actual levels of knowledge about sexual health and STIs among the respondents (see Appendix B, question #8). Each of the items consisted of a factual statement based on the information about STIs available through CDC and Planned Parenthood web pages and the CDC STD-surveillance report (CDC 2010, 2013; Planned Parenthood 2013). The respondents were asked to mark each statement as true or false or indicate that they were not sure whether the statement was true. The individual items were then recoded into binary categories with “1” corresponding to correct responses, and incorrect and not sure/don’t know responses marked as “0”. The scores on the final nine-item scale range from 2 to 9 with higher scores corresponding to higher levels of factual knowledge.

The value of Cronbach’s alpha for the knowledge scale is 0.56; however, given the context of the measure, the use of the scale is justified despite this relatively low value. This measure does not introduce a new concept, but simply attempts to evaluate the respondents’ knowledge of certain facts. In this sense, it is similar to an exam or other forms of knowledge tests, which are not usually constructed with alpha in mind. Such values of alpha are sometimes accepted in exploratory studies or if only a few items are used to construct the scale (Lindmeier 2011). The low value of alpha in this case can also be due to the small sample size.

*Self-rated adequacy of knowledge.* Besides measuring the respondents’ knowledge of common facts about STIs, the survey also assessed the extent to which the students are confident in adequacy of their knowledge (see Appendix B, questions #3-5). The students were asked to rate three different aspects of their knowledge, and their

ratings comprise the final scale (Cronbach's  $\alpha = 0.80$ ). The scale scores range from 3 to 12 with higher scores corresponding with higher level of confidence in adequacy of knowledge.

*Sexual education.* The survey asked respondents to indicate if they had any kind of school-based sexual education. Those who reported having had some type of sexual education in school were prompted to indicate whether the program/class included information about abstinence, condoms as means of protection from unwanted pregnancy and sexually transmitted infections, and other forms of birth control, such as the pill, IUD, calendar method, etc. Thus I was able to determine the proportion of the sample that was exposed to abstinence-only sexual education programs as opposed to comprehensive programs. Although abstinence-only sexual education is an important variable to include in analyses of sexual health and health behaviors, it is excluded from further analysis in this case due to a lack of variance within the sample (see Appendix B, questions #7-10).

The survey also included questions regarding the students' familiarity with and their exposure to other sources of information about sexual health and STIs (see Appendix B, questions #11-12). Those who reported having been exposed to information outside of the school-based sexual education program were able to specify the source. In addition, the respondents were asked whether or not they had ever discussed STIs with their parents or primary caregivers and with medical professionals.

*Health locus of control scales.* In order to assess the specifics of the respondents' health locus of control, the survey adopts the Multidimensional Health Locus of Control scale (form B; see Appendix B, question #2) developed originally by Wallston and Wallston (1978). This measure incorporates three separate subscales for different

dimensions of health locus of control: internal, powerful others and chance. The MHLC scale was validated in multiple research projects dealing both with health behaviors and attitudes in general and sexual health in particular (Roddenberry and Renk 2010; White et al. 2011). There are currently three forms of MHLC: forms A and B are designed to be used on general populations and form C is tailored towards individuals with specific health conditions. The version used in this study is MHLC form B.

*Gender, race/ethnicity and sexual orientation.* The questions about the respondents' gender, race/ethnicity and sexual orientation reflect the idea that these characteristics are constructs that one can identify with, rather than objective features that individuals possess. The students were asked to identify with a particular gender or provide their own description of their gender identification by using the "Other" option. Similarly, describing their sexual orientation, the respondents were able to choose from four categories (Bisexual, Heterosexual, Homosexual and Queer) or provide a different description. Race/ethnicity was grouped into seven categories (American Indian or Alaska Native, Asian, Black or African-American, Hawaiian or Pacific Islander, Hispanic, White and Other) with a possibility to select more than one group. However, given the variance within the sample, some of the initial categories were collapsed (see Appendix B, questions #20-21).

*SES.* The survey collected data on the respondents' socio-economic status through a self-reported class identification measure (see Appendix B, question # 24), which included five categories (Lower Class, Working Class, Lower Middle Class, Upper Middle Class and Upper Class). None of the respondents selected the last category, which

is why it is not present in the final analysis. I also attempted to introduce alternative measures of SES, but they did not prove to be useful for subsequent analysis.

### *The Interviews*

I conducted six face-to-face interviews to supplement and add depth to the initial quantitative data. As previously mentioned, the participants were recruited from the initial sample of survey respondents. Prior to participation in the interviews, all subjects gave voluntary verbal consent (see Appendix C for consent script). The respondents were guaranteed confidentiality and pseudonyms were used in order to protect identifying information. The interview questions (see Appendix D) closely mirrored those of the initial survey, while allowing respondents more freedom in describing their attitudes and providing an opportunity for them to talk about their experiences.

The primary reason for introducing the interviews as a supplementary method in this research is to obtain a more in-depth understanding of social phenomena and assess additional aspects that could not be measured through a quantitative approach. While a quantitative survey method has its strengths, it is limited in that it only allows researcher to receive answers to questions that were asked. Semi-structured face-to-face interviews, on the other hand, encourage participants to share their thoughts, opinions and experiences that might not be directly related to particular questions. Thus, interviews provide additional context to questions that were included in the survey, as well as highlight the issues that were omitted from the quantitative instrument.

### *Data Analysis*

The analysis in this study is divided into two parts. The first part explores frequency of STI-testing practices among students and examines factors that influence STI-testing decisions based on the quantitative portion of the data. My analysis uses a multinomial logistic regression model with nominal dependent variable with three categories reflecting the respondents' history of STI-testing practices. Respondents who have never been tested for STIs were used as a control category, with two other categories comprised of respondents who have been tested once and those who reported having been tested multiple times. Independent variables include demographic characteristics, such as gender, race/ethnicity, etc., as well as fear of disclosure, knowledge about sexual health and STIs, level of confidence in one's own knowledge, experience of sexual education, health locus of control and others.

The second part of my analysis focuses on the qualitative portion of the data. In preparation for the analysis all six audio-recorded interviews were transcribed. Since the primary purpose of qualitative data in this study is to saturate initial quantitative findings, I first examined the interviews for specific topics mirroring major independent variables included in the survey and providing possible additional explanations about the role of these variables. After this, I inspected the data again in order to identify any emergent topics independent of the initial quantitative data.

## RESULTS

Almost a half (45.2%) of the sample reported having been tested for STIs at least once in their lifetime, and nearly 79% of these respondents said they were tested multiple times. Table 2 presents the odds ratios from the multinomial logistic regression model of STI-testing practices among college students. The model compares respondents who reported having been screened for STIs once and those who have been screened more than once with the reference group – respondents who reported never having been tested for non-HIV STIs. Given the limitations of the sample and exploratory nature of the study, the level of significance was set to 0.10.

For students who reported having been tested only once, significant associations were found for the following factors: knowledge about STIs; confidence in adequacy of knowledge; powerful others health locus of control; having discussed STIs with parents or primary caregivers; identifying as Black or with another non-White ethnic group; and identifying as working class. Some of the same factors – confidence in adequacy of knowledge, powerful others HLOC and having discussed STIs with parents – were also significantly associated with STI-testing for students who reported having been tested more than once. However, for this group gender, sexual orientation and chance HLOC became significant. Subjective class identification, race/ethnicity and knowledge about STIs did not show to be significant for these respondents.

**Table 2. Odds Ratios of Factors Affecting Students' STI-testing Practices**

Factor	STI-testing History	
	Tested for STIs once	Tested for STIs more than once
Knowledge about STIs	1.823*	1.412
Confidence in adequacy of knowledge	1.673*	0.778*
Discussed STIs with parents/primary caregivers	25.989***	2.669**
<i>Gender</i> <sup>a</sup>		
Woman	1.998	2.590*
<i>Race/ethnicity</i> <sup>b</sup>		
Black or African-American	80.109***	2.103
Other non-White	21.906**	0.806
<i>Sexual orientation</i> <sup>c</sup>		
Heterosexual	0.273	0.319**
<i>Subjective class identification</i> <sup>d</sup>		
Lower Class	0.190	3.720
Working Class	0.035**	2.025
Lower Middle Class	0.480	0.580
Chance HLOC	1.085	0.899*
Powerful Others HLOC	0.700**	1.110*
- 2Log likelihood		167.852
Model $\chi^2$		78.021****
Degrees of freedom		24

\*  $p < 0.10$     \*\*  $p < 0.05$     \*\*\*  $p < 0.01$     \*\*\*\*  $p < 0.001$

Reference category – respondents who reported never having been tested for STIs

Contrast categories: <sup>a</sup> male; <sup>b</sup> White; <sup>c</sup> non-heterosexual; <sup>d</sup> upper middle class.

Some of the independent variables that were initially hypothesized to be linked to STI-testing decisions and practices among students were not significantly associated with STI-testing for either of the categories of the dependent variables and were, therefore, excluded from the model. These variables are the level of STI-stigma/fear of disclosure, school-based sexual education and internal HLOC.

*Fear of Disclosure and STI-stigma*

Fear of disclosure as a dimension of STI-stigma was measured on a scale with scores ranging from 11 to 32 with higher scores reflecting higher levels of fear of disclosure. The distribution of scores was normal with the mean score of 21.28 (SD=4.02). There were no significant differences between the mean STI-stigma scores among groups with different gender, racial and subjective class identifications, as well as between groups with different sexual orientation. STI-stigma was not used as a factor in the final logistic regression model, since it was not a significant predictor for any of the categories.

Despite the fact that the regression model did not show significant associations between STI-testing practices and the respondents' scores on an STI-stigma scale, four of the interview participants mentioned stigma without any prompts from the interviewer. The term "stigma" was intentionally avoided both in the interview schedule and the quantitative questionnaire.

*Accidental disclosure.* Three of the interview participants named stigma and fear of being exposed to others and judged by others as possible barriers for STI-testing. While the male participants, Derek (22) and James (29), simply remarked on how "some people are more affected by the stigma of going to the clinic to begin with", Natalee (30) shared her impression of patients coming in for STI-screenings from the time she used to work at a medical facility:

And they're always scared to death that somebody's gonna find out that they've been there. Oh, what if somebody sees me going in? What if somebody sees me walking out? You're not gonna tell anybody I was here, are you? Well, no, there's medical confidentiality, I'm not gonna tell anyone you were here. ... Because there is a stigma associated with sex, you know, whether you're having it or



you're not having it, you're either a whore or a priest, there's no middle ground unless you're married.

While not mentioning stigma directly, two other female participants also referred to the fear of others finding out that one went to the clinic in the first place. For example, Diana (21) suggested that “maybe they are afraid of what people might say if they find out that they had this or that they went to a place to get tested for it. ‘Cause people my age, they talk and start rumors and stuff, and they say things that are like very nasty. So that could also be like being afraid of what others might have to say about them.”

In all of the cases mentioned, fear of potential disclosure and stigma is presented as a potential barrier that might prevent people from getting tested for sexually transmitted infection. These findings resonate with existing studies that treat fear of disclosure as a factor deterring individuals from seeking STI-testing (Balfe and Brugha 2010; Chesney and Smith 1999; Cunningham et al. 2002; Lichtenstein 2003).

Ben (21) mentioned stigma in a somewhat different context. Rather than associating it with fear that others might find out, he used it as a reason why seeking support of others is important for individuals with incurable STIs, such as HIV: “...there is a stigma surrounding HIV and people infected with HIV. So you just need a group that you can talk with, that you can interact with, that can help you with it, more or less.”

*Voluntary disclosure.* While Ben was the only participant who made a case for voluntarily disclosing one's STI-positive status to others, all of the participants emphasized the importance of disclosing this information to one's current and, possibly, former sexual partners. All of the interviewees agreed that sharing this information is a step that one must take as soon as possible after being diagnosed with an STI.

The survey also contained regarding about telling one's past and current sexual partners about one's STI-diagnosis. I initially intended to include these questions in the general fear of disclosure/stigma scale. However, these two items did not correlate strongly with other items in the scale and were, therefore, excluded. Nearly 80% of the respondents indicated that they agreed or strongly agreed that telling one's partner about an STI is the right thing to do. Similarly, 55% of the survey respondents agreed or strongly agreed that if one is diagnosed with an STI they should try and talk about it with their previous sexual partners. Many respondents also indicated that they themselves would be comfortable telling about having an STI to specific groups of others: more than 71% of participants would be ready to disclose their STI-status to close friends and more than 91% would be comfortable telling a doctor or a nurse about it. On the other hand, less than 40% of respondents would be willing to talk about their STI-status with their parents or primary caregivers and less than 30% would disclose to their siblings. About 74% of the respondents would absolutely not want an extended group of friends to find out if they had been diagnosed with an STI.

It appears that the majority of the study participants accept the necessity or desirability of disclosure to particular others. Very few are inclined to conceal information about their STI-history from sexual partners and medical professionals. However, the interviewees indicated that despite understanding the importance of sharing this information with certain people, they might still be concerned about a possibility of involuntary disclosure that may occur. All of the interviewees mentioned that telling one's partner about contracting a sexually transmitted infection can lead to a conflict.

Hailey (29) elaborated on why she thought the conflict may occur and undermine not only the intimate relationship, but relations with others in one's social group as well:

And then if they have one and they have to go tell their partner, and they don't want their partners to see them differently in that relationship... Or feel like they are accusing them of having an STI and passing it on. I mean, then you have this whole blow up of "Are you sleeping around?" 'cause if they're asymptomatic, they're like, well, it can't be me, I don't have it, you know. So it could, I mean, it could implode their social life somewhat. ... If they tell their partner and their partner doesn't think they have ... it, and they think: "Hey, this person is sleeping around on me, we're gonna break up." They go and tell their friends why. And then everyone is like, oh my gosh, this person is disgusting. Rumors start to spread about them and all of a sudden ... people stop wanting to hang out with them because they think, oh, they have an STI, they are a terrible horrible person. Or like, if I'm around them, I'm gonna get it.

Overall it appears that matters of accidental or voluntary disclosure and potential consequences of disclosure play a part in shaping the interview participants' attitudes about STI-testing and STI-experiences overall. The survey data, however, failed to produce evidence for a relationship between STI-stigma and STI-testing practices. The discrepancy between the information obtained during the interviews and the results of quantitative analysis may be explained by limited sample size and/or imperfections of the quantitative measure or non-representativeness of the interview sample.

#### *Knowledge and Confidence in Adequacy of Knowledge*

Respondents' knowledge about sexually transmitted infections was measured on a 9-point scale. The mean score on the knowledge scale was 8 (SD=1.25), reflecting overall high levels of knowledge about STIs among respondents. No significant differences were found between the mean knowledge scores of respondents who specified different genders, sexualities, racial or ethnic groups and social classes. Another scale was

introduced to measure students' confidence in adequacy of their knowledge about STIs. The scores for adequacy of knowledge scale ranged from 3 to 12 with a mean score of 6 (SD=6.05). Similarly, there were no significant differences between the mean confidence scores for male and female respondents, respondents who identified with different racial/ethnic groups and respondents with different SES. There was, however, a significant ( $p < 0.10$ ) difference in confidence in adequacy of knowledge scores between those who identified as heterosexual and those who identified as non-heterosexual. The mean score for heterosexual respondents was somewhat higher than that for non-heterosexual participants. Correlation analysis indicated the presence of a weak negative relationship between the knowledge and confidence in adequacy of knowledge scales (*Pearson's r* =  $-0.26, p < 0.01$ ).

In the logistic regression model, knowledge about STIs served as a significant factor linked to STI-testing practices for respondents who reported having been tested for sexually transmitted infections only once ( $OR = 1.823, p < 0.10$ ). Hence, those who scored higher on the knowledge scale were more likely to be tested once than not tested at all. However, the data did not provide evidence for the existence of a similar significant relationship for respondents who have undergone STI-testing multiple times. Confidence in adequacy of knowledge, on the other hand, was significant for both groups of respondents (OR for those tested once = 1.673, OR for those tested multiple times = 0.778,  $p < 0.10$ ).

The interviews provided little context for the relationships between knowledge, confidence in adequacy of knowledge and attitudes regarding STI-testing. All of the interview participants considered STI-testing to be an important part of health

maintenance, and all participants who were sexually active said they have been tested for sexually transmitted on a regular basis. With regard to knowledge about sexual health and STIs, all were able to recall a few names of common sexually transmitted infections (chlamydia, gonorrhea, herpes, HPV, etc.), symptoms, ways of transmission and ways of protection. Several participants mentioned the drug-resistant gonorrhea virus, thus indicating their awareness of current news on the topic.

While all interviewees thought that they probably knew a little more about STIs than the majority of students on campus, they still did not think their knowledge was comprehensive enough. Five of the participants indicated that they would not mind learning more about sexually transmitted infections and/or were actively seeking out information about them. For example, Diana said she was trying to keep up with information about STIs because she was aware of the fact that “they [STIs] change so rapidly and like there’s more and more symptoms coming out and they evolve, so they are like more resistant to something. I don’t think that I’ll ever stop wanting to know more. I don’t think that I know enough, ‘cause there is always something new that’s popping up.” For Natalee, her children were one of the main reasons why she generally kept up with “where biology is going”; she mentioned frequently visiting health-themed web-sites and being subscribed to several scientific journals that provided her with information on new developments in the fields of biology, medicine and public health. Ben, Derek and James explained wanting to learn more about STIs by their curiosity and “always willing to learn new stuff”.

The interview participants evaluated their knowledge of STIs as being sufficient, yet were not overly confident that the knowledge they possessed was comprehensive.

This might partially explain the negative correlation between the quantitative measures of knowledge and confidence in adequacy of knowledge. The interviews also provide a possible explanation for negative association between the confidence in adequacy of knowledge and STI-testing practices among respondents who reported having been tested more than once: a belief that there might be infections of which they were unaware have lead these respondents to adopt STI-testing as a continuous health practice.

### *Sexual Education and Other Sources of Knowledge*

The majority (84.9%) of the sample reported having had some type of school-based sexual education. Almost 70% of the respondents indicated that their sexual education programs contained information about abstinence from sexual activity outside of marriage as a way to prevent unwanted pregnancy and STIs; 65% said their sexual education programs included information about condoms; and almost 46% reported having heard information about other methods of birth control, such as birth control pills, patches, vaginal rings, etc., in their sexual education classes. In addition, nearly 67% of the sample reported having been exposed to information about sexual health and STIs outside of the school setting. Among the additional sources of information were various web resources, college classes, community and college-based health events and programs, popular media, etc. Several students reported having learned about sexual health through employment in health services or independent research they were conducting. About 43% of the students reported having had a conversation about sexual

health and STIs with their parents or primary caregivers and 38% said they had consulted a doctor or a nurse regarding sexual health.

School-based sexual education did not show to be a significant predictor of STI-testing practices and was excluded from the logistic regression model. The interview participants' accounts of their experiences with school-based sexual education provide limited potential explanations for the absence of a relationship between sexual education and STI-testing practices. Interviewees who have had sexual education in school did not describe it as being particularly useful or informative. Despite the fact that all but one participant remembered that their sexual education classes contained some information about condoms, they still thought that the school was just "trying to push the big abstinence thing on everyone." Hailey, who first heard about sexually transmitted infections at a science class in junior high school, said that "... in high school everything was kind of brushed under the rug ... We may have had like a day where they did the sex-talk." James not only regarded sexual education in his school as not being very informative when it came to STIs and STI-prevention, saying that it focused mostly on unwanted pregnancy prevention, but also noted that the school did not seem open about the idea of sexual education at all:

They told us about safe sex, but they didn't mention what everything was. ... I know in my school they kind of split up the classes when you have like sex ed, but the teacher...the class was supposed to go in place of like your reading class for a week, but ... my teacher didn't want us to have sex ed, so like in 8<sup>th</sup> grade we didn't have sex education. ... I know in high school I had like a health class and they went over it. It was about like pregnancy prevention. They didn't really talk much about herpes or anything like that. ... They mentioned birth control methods and they've mentioned condoms. They mainly talked about, I guess, how babies were made, but they didn't really talk about the downside. And as far as abstinence, I think it was more of kind of like a half-ass negotiation, where it's

like we know kids are probably gonna have sex, so let's teach them. But I don't think anybody was too happy about them teaching us that.

Hence, while many respondents had some type of sexual education in school, there is a chance that their programs did not contain sufficient information about sexually transmitted infections and, therefore, did not affect STI-testing outcomes.

While formal school-based sexual education did not influence STI-testing practices among students, having had a conversation about STIs with parents or primary caregivers was significantly associated with STI-testing practices both for respondents who reported having been tested once and those who have been tested multiple times. However, the questionnaires did not provide information about time order of these events: there is no way to know if participants who discussed STIs with parents or primary caregivers did so before seeking STI-testing or afterwards.

#### *Gender, Race/ethnicity, Sexual Orientation and SES*

*Gender and STI-testing.* While gender did not show to be significantly related to STI-testing practices among respondents who were only tested once, it appeared to be a significant factor predicting likelihood of undergoing screening for sexually transmitted infections multiple times. According to the logistic regression model, women were significantly more likely to be tested for STIs several times ( $OR = 2.490, p < 0.10$ ). While there was no discrepancy between men and women when it came to one-time STI-testing, women were more likely to adopt STI-testing as a part of their health behavior.



An assumption that women treat their sexual health “responsibly” and are more likely to seek STI-testing echoed through several interviews. For example, Diana, when asked who she thought was more likely to get tested, men or women, replied:

I think women are more likely to go ... I don't know, 'cause we're curious. Our bodies are changing as much as they are, and so we know there's something wrong, so it's like a reason for us to go and check out every little thing that happens.

James suggested that women might take testing and sexual health overall more seriously, because “they're more at risk, they have more organs down there that are at risk”. Hailey also thought that women would be more likely to be tested, because they “do have to go and get annual exam and ... do PAP smears ... They're probably gonna know sooner, just because of that”. Another interviewee's experience resonated with Hailey's opinion: an STI-test was suggested to her by a gynecologist during a prophylactic visit.

Natalee was able to share some of her own observations. She said that women appeared to be coming in for STI-testing much more often than men. However, unlike Hailey, James and Diana, who linked the possibility that women are more likely to get tested to the specifics of women's bodies, Natalee approached the topic from a different perspective:

Girls seem to be more conscientious and they seem to think that the responsibility always lies with them. Men don't care and they don't wanna know. They wanna do what they wanna do and they don't really care about it at all, especially when they are asymptomatic. They are like, well, you know, if I'm not having any symptoms, then it is okay. And they really take all that as far as they can go ... And sometimes even if they do have a little something going on, they tell themselves that it's nothing. If it burns just a little bit, oh, I must be having kidney trouble. They really just don't deal with STIs at all, they don't even think about it ... The most men I saw in the clinic were ones whose girlfriends had come in to be tested, come up with something and then made their boyfriends come in.

This quote illustrates Natalee's understanding of different attitudes men and women might hold with regard to sexual health and sexually transmitted infections, and social norms from which these attitudes stem. Other participants also showed awareness of social norms and possible social pressure when talking about general experiences of sexual health and overall sexuality. Derek mentioned that "culturally it's more acceptable for men to just have a lot more sex with a lot of different people and there is not as much of a negative stigma behind STIs as there [is] for women." Hailey also brought up the gendered norms regulating sexuality in the context of STI experience:

Well, for men, I don't know if it carries the same ... ramifications, potentially. So the man has an STI, okay, he's got an STI. I mean, if he told one of his friends, they're not gonna care so much, they'll be like, yeah, you slept with a bunch of women, good for you. For females it's more internal, it's more how people gonna judge me, they'll think I slept around, they'll think I'm a slut or whatever. They'll attach some derogatory name to it even if they're not. That's just how they feel like they'll be perceived often times. And that goes back to the whole cultural norm you see like in movies, and television, and all of that stuff.

All of the participants mentioned the discrepancies between men and women, whether it was in specific contexts of STI-screening or within broader discussions of sexuality and interpersonal relationships. Though not everyone could provide personal examples of experiencing gendered social pressure, they all seemed to be acutely aware of its existence. Some were able to recall stories that happened to someone they knew, while the others noticed the presence of gendered norms in culture and media. Overall, the interviews further reinforce the significance of gender in the context of sexual health.

*Race/ethnicity and STI-testing.* Respondents' racial/ethnic identification was significantly associated with STI-testing practices among participants who reported having been tested for sexually transmitted infections once. For these participants,

identifying as Black/African-American or with any other non-White group was linked to an increased likelihood of being tested for STIs once as opposed to not being tested at all. Racial/ethnic identification, however, was not a significant factor for those who have been tested for sexually transmitted infections multiple times.

Interviewees were not able to provide additional information about potential links between race/ethnicity and STI-testing practices. Some White participants suggested that there might be differences in the attitudes regarding sexual health and STIs among different ethnic groups or within different cultures. They could not, however, elaborate much on what those differences might be. The only non-White interview participant, Diana, who identified as Black, did not think there were racial disparities in attitudes regarding STI-testing:

I know my family is [open], but I have friends who are black and their families aren't open, like you can't talk about it. Then I know my roommate, she's White, and her family, they don't talk about sex, her parents, they like freak out. And then I have a White friend from back home and like her family is very open. So I think it just varies from family to family based on like their own experiences.

*Sexual orientation and STI-testing.* Sexual orientation was another factor significantly associated with STI-testing practices. The association was present only for respondents who reported having been tested multiple times. Identifying as heterosexual significantly decreased participants' likelihood of being tested for STIs multiple times as opposed to the reference group ( $OR = 0.319, p < 0.05$ ).

One of the possible explanations for differences in STI-testing practices between students who identify as heterosexual and those who consider themselves non-heterosexual (homosexual, bisexual, queer, etc.) is a higher level of awareness about sexual health and health risks among the LGBTQ community. One of the male

interviewees who was involved with an LGBTQ student organization on campus said that he was able to learn the most about STIs from educational seminars offered by this student group and partnering organizations. He also thought that despite the fact that discussions about sexual health within the LGBTQ community tend to focus on HIV/AIDS, rather than non-HIV STIs, members of the LGBTQ community might be more likely to seek STI-testing because “there’s more visibility of STIs or more discussion of STIs within the community.” However, this was the only interviewee who reported having predominantly same-sex sexual contacts, so it was not possible to compare his experiences and opinions to those of other LGBTQ students.

*SES and STI-testing.* Finally, socially-economic status was significantly linked to STI-testing practices only among respondents who reported having been tested once. Among this group, identifying with the working class was associated with a decreased likelihood of being tested once as opposed to not being tested at all. A few interviewees briefly mentioned SES and its components (income, education, etc.) as factors they thought to be potentially associated with disparities in attitudes about sexual health and STIs and STI-testing practices. However, they were not able to provide more extensive information regarding the role of these factors.

### *Health Locus of Control*

Table 3 presents respondents’ mean scores on different dimensions of the health locus of control scale: internal HLOC, chance HLOC and powerful others HLOC. The mean score for internal HLOC subscale among respondents’ was higher than the mean

scores for chance and powerful others externality subscales. However, internal HLOC was not significantly associated with STI-testing practices.

**Table 3. Mean Scores for Health Locus of Control Subscales**

Subscale	Mean	S.E. Mean	SD
Internal HLOC	26.25	0.31	3.72
Chance HLOC	17.57	0.35	4.26
Powerful others HLOC	19.75	0.35	4.30

Powerful others HLOC was significantly related to STI-testing practices both for students who have been tested for STIs once ( $OR = 0.700, p < 0.05$ ) and those who reported having been tested several times ( $OR = 1.110, p < 0.10$ ). For those who indicated having been tested once the relationship between powerful others HLOC and STI-testing was negative: higher powerful others HLOC scores were associated with lower likelihood of being tested once as opposed to not being tested at all. However, increase in the powerful others HLOC score was linked to an increased likelihood of being tested several times in comparison to the reference category. Chance health locus of control was significantly associated with STI-testing practices among respondents who reported having been tested for STIs more than once ( $OR = 0.899, p < 0.05$ ).

### *Beyond the Questionnaire*

One of the biggest advantages of using qualitative methods to supplement quantitative data is that it allows one to not only deepen the knowledge constructed from the initial quantitative data, but also to explore the aspects of the phenomena not

accounted for in the quantitative design. In this research I was able to identify two distinct themes that emerged from the qualitative portion of the data. I believe that both of these themes can be explored further in college student populations.

*STI-jokes and derogatory speech.* Three of the interview participants mentioned having had experiences of communication in some sort of group setting where STIs were mentioned in order to insult somebody or simply make a joke. Natalee brought this up in response to the question on whether or not any conversations about STIs had been going on in her high school and among her friends:

Really the biggest discussions that ever went on in my high school about STIs, that I am aware of, were...mean boys picking on other people they didn't like and spreading, you know, rumors and saying, oh, that person's nasty, don't talk to them, they have, you know, herpes or whatever. And they were making it up. I'm not sure these boys really knew what herpes was. But the most conversation that ever happened in my high school between the students was using the idea of STIs as a way to bully other people they didn't like and disparage people they didn't like.

Later in the interview she mentioned again that where she grew up "STDs were taunts ... there were disparaging remarks if anybody thought you had anything or if anybody started a rumor that you had anything, you know, it was gonna go on forever."

Derek also spoke of STIs used as insults or jokes. He mentioned that he picked up some information about sexual health and STIs from talking to his friends. When asked to elaborate on that he said:

It's usually like as jokes and stuff, not so much as like, so and so contracted... Actually, sometimes it's like that, like if we know of someone that has something, it might come up, but not as much as like in general conversation. ... I guess it really depends on who it is and like the feelings towards them to begin with. Like if it's someone that we like then it's more favorable. But I personally usually not judgmental about it, but sometimes friends are like: "Oh, that person needs to be more careful"... There is one where someone I know, I think they had a

threesome with a couple of people, and then it later turned out that she had chlamydia and then all of them ended up having it. And that was a little funny.

Natalee's and Derek's accounts are told from two different perspectives. While Natalee clearly disapproves of the "mean boys" behavior, Derek identifies with his friends and agrees that STIs can be "a little funny", even though he is "personally usually not judgmental about it." While the stories are somewhat different, they capture the shared attitudes regarding sexually transmitted infections as something to be treated as a joke or used as an insult, rather than a serious health risk.

James described encountering similar attitudes both among his friends and within an on-line gaming community. Similarly to Derek, he felt the need to distance himself from people who make STI-jokes/insults on-line:

If you're around a group of friends or something, I mean, like they might joke about somebody having herpes or...just in a joking way. Or if a girl is easy or, you know, seen as like a slut, they might make a joke that she has gonorrhea or whatever. That's also like a good way to insult people if you're like on-line on the internet or if you're playing a multi-player. There's a joke about people, kind of a joke and an insult about people having, you know, herpes. Mainly herpes is like the big one, and the AIDS is kind of like the more serious joke. ... we get mad at each other. I mean, I usually don't joke about it, 'cause I mean, I just don't care to joke about it. But somebody does make a joke that, you know, you have AIDS or whatever, and that's supposed to be some type of insult. ... it's not uncommon for somebody to just, you know, they either make jokes about your mom or they make jokes about you having herpes. Stuff like that.

Derek and James talked about STI-related "insult jokes", while Natalee mentioned "taunts" and bullying. It appears, however, that they are describing similar phenomena taking place in different settings: jokingly "accusing" others of having sexually transmitted infections contributes to perpetuating STI-related stigma, presenting STIs as something one ought to be ashamed of or something one ought to keep a secret. In addition, these respondents' stories further emphasize the difference in attitudes

regarding sexually transmitted infections as opposed to other diseases, communicable or not. Indeed, it is hard to imagine a group of friends making jokes about someone they know getting the flu, high-school students gossiping about their classmates catching the common cold or gamers accusing their opponents of contracting a stomach virus. While sexually transmitted infections and diseases that might develop from them constitute a public health risk, they are often not perceived as such. Instead, individuals adopt the perception of STIs as mere results of the bearers' voluntary actions and/or lifestyles (Herek 2009).

*On-campus health services and health promotion.* All of the interview participants touched upon the issues related to the student health clinic on campus and the services it offered. This topic typically came up in context of discussing cost and accessibility of STI-testing for youth in general and students in particular. All interviewees said they were aware of the affordable testing services offered at the student clinic and several indicated having used them in the past because of the low price and convenience. However, they also expressed concerns regarding the health promotion on campus and general awareness of the student population about the health center and its facilities.

Diana and Hailey mentioned the clinic when asked about potential barriers to STI-testing for students, such as cost and/or accessibility. The first reaction for almost all of them was to say that for students accessibility was not an issue because the necessary services were offered at the student health center for relatively low prices. However, they were quick to note that many students were probably not using the clinic's services to their full extent. Diana recalled that she had been attending the university for about a year



before learning that there was a full functioning clinic on campus. She suggested that other students could also be “not really aware of the stuff they [student health center] are able to do ... don’t think about them as like a real doctor’s office.” Similarly, Hailey, when asked about the role of cost and accessibility in shaping students’ STI-testing practices, said:

... I mean, there are a lot of students on this campus, I don’t know if they even realize we have health services here. I mean, or if they do, they think, oh, maybe it’s just for a cold, they don’t realize we have a gynecologist on staff, who can test you for anything when you come in for your annual check-up ... who can run all these tests if you have an issue.

Diana, Hailey and a few other interviewees noted that they did not think there was enough sexual health promotion on campus, especially when it came to advertising affordable STI-testing services offered by the student health center. They suggested that students’ lack of knowledge about these services might be preventing them from seeking testing on a regular basis. They emphasized the need for more active promotion of sexual health on campus, as well as the need for advertising sexual health services offered at the student clinic. James suggested that students might be somewhat aware of the services available, but prefer not to think about sexual health risks and, therefore, end up avoiding STI-testing:

... I think that the main thing is advertising it, getting people to point at it, because... I don’t think a lot of people really think about STIs, I don’t think they really focus on the bad things, the quote-unquote bad things. I don’t think that they, maybe they just keep it in the back of their mind and they don’t realize that until there is a sign that says STI-testing, you know.

Ben said that while many students are likely to know that the services were available, they might be unaware of the fact that the modern testing procedure itself is

fairly quick and easy. The only sexual health promotion event interviewees were able to recall was an annual campus event called Tunnel of Love.

The participants' opinions regarding sexual health promotion and sexual health services on campus are particularly important in context of this research. While the exploratory nature of the study and its various limitations make it difficult to draw large-scale conclusions about factors predicting students' STI-testing practices, the interviewees' thoughts regarding the work of the student health center can be used as a basis for improving sexual health promotion strategies on campus.

## CONCLUSION

The findings in this paper suggest that knowledge about sexually transmitted infections, confidence in adequacy of knowledge, communication with parents/primary caregivers, gender, racial/ethnic identification, sexual orientation, subjective class identification and health locus of control are among the factors shaping STI-testing decisions among college students. Different sets of factors were found to be significant for students who have only been tested once and those who reported having been tested for sexually transmitted infections multiple times. For the first group, knowledge, confidence in adequacy of knowledge, communication with parents, race/ethnicity and powerful others HLOC were significant predictors of STI-testing practices. For respondents who have been tested for STIs multiple times significant factors were confidence in adequacy of knowledge, communication with parents, gender, sexual orientation, chance HLOC and powerful others HLOC. Thus, confidence in adequacy of

knowledge and communication with parents/primary caregivers about STIs and powerful others HLOC remained significant factors for both groups.

It is interesting that while discussing STIs with parents or primary caregivers was positively associated with STI-practices for both groups of respondents, other factors significant for both groups displayed different relationships to the dependent variable. Confidence in adequacy of knowledge was positively associated with STI-testing for those who were tested once: higher scores on the confidence scale were linked to increased likelihood of being tested once in relation to the reference category. For those who were tested multiple times, however, the relationship was negative: higher scores on confidence scale were associated with lower likelihood of being tested multiple times as opposed to not being tested at all. Similarly, powerful others HLOC was negatively linked to the likelihood of getting tested once and positively linked to the likelihood of being tested multiple times.

The interviews provided a possible explanation for some of the differences in factors influencing one-time and repeated STI-testing. Several interview participants, while evaluating their own knowledge about sexually transmitted infection and sexual health as somewhat more extensive than that of the general student population, stated that their knowledge was not complete, i.e., they were not aware of specifics of particular infections, new infections, current epidemiological situation, etc. It appears that having sufficient knowledge basis actually led these respondents to doubt the extent of their knowledge and be concerned about potential risks they might not be aware of. This observation can help explain the negative link between the confidence scale scores and STI-testing practices among survey respondents who reported having been tested once.

It appears that the differences in factors influencing STI-testing practices among students who were tested once and those who were tested multiple times are linked to the specific nature of testing practices. Individuals who reported having been tested only once might have chosen to seek STI-testing because they felt that they were exposed to risks of contracting STIs (e.g., had unprotected sexual intercourse) or because they were experiencing symptoms that they thought could be caused by an STI. Those who reported having been tested multiple times have likely adopted STI-testing as a part of their health lifestyle.

Fear of disclosure as a dimension of STI-stigma, which was initially hypothesized to be positively related to the likelihood of STI-testing, was not found to be significant within the multinomial logistic regression model. The interviews, however, suggested that fear of disclosure as a reflection of STI-stigma was an important issue for the participants. They also accentuated the gendered nature of STI-stigma and different ways in which it affects men and women. With most of the previous research on the role of stigma in shaping STI-testing practices and attitudes regarding STIs being qualitative, the discrepancy between the quantitative and qualitative data can be explained by the imperfections of the quantitative measure or lack of representativeness in survey and/or interview sample. The case of STI-stigma was the only instance in this research where quantitative and qualitative data appeared to contradict each other; quantitative analyses of other factors linked to STI-testing practices generally aligned with the content of the interviews.

The small sample size and non-random sampling strategy were the major limitations in this research. The small sample size affected the calculations by

introducing large degree of error, and the non-random sample does not allow for generalization of the findings to larger populations. However, as an exploratory study, this project highlighted certain aspects of STI-testing practices and overall attitudes regarding STIs and sexual health that can be further investigated. In addition, the introduction of the interviews as a method of data collection allowed obtaining participants' feedback regarding student health services and sexual health promotion on campus. This information can be shared with the office responsible for health promotion and used as a basis to implement changes into existing health promotion strategies.

### LIMITATIONS

There are two major limitations in this study. First, a non-randomized sample selection may have introduced selection effect. There is a possibility that certain groups of students are underrepresented in the sample, and thus the results may not be reflective of the study population (Aday and Cornelius 2011). Some students might have chosen to participate because they were already familiar with the topic through their course of study: more than 18% of the sample reported majoring in biology, health sciences, health education or pre-medicine. Three out of six interview participants mentioned their major and/or previous or current research project they were involved in among the reasons for volunteering to participate. Another interviewee mentioned her previous experience of working at a clinic where she often assisted nurses in administering care to patients who came in for STI testing, as well as those who were diagnosed. This participant demonstrated the highest level of investment in the topic due to her employment history

and personal experience of being diagnosed with a sexually transmitted infection. While those who volunteered to share their stories in the interviews are likely to be more interested in the topic than the rest of the sample, it is likely that pre-existing interest served as one of the selection factors for survey participation.

The second major limitation is the relatively small sample size. The initial sample of 211 students was reduced to 157 due to the large number of cases with missing data. A small sample size affects statistical calculations by introducing higher degree of error (Field 2007). Similarly, small sample size can introduce biases in logistic regressions, thus causing overestimation of odds ratios (Nemes et al. 2009). While the information obtained is still valuable in context of a pilot study, it is virtually impossible to judge the true reliability of certain measures.

The scope of this research is intentionally limited to non-HIV and non-hepatitis STIs for several reasons. First, while both HIV and hepatitis, though typically included in the category of sexually transmitted infections, are often transmitted non-sexually, e.g., through a blood transfusion. Second, social attitudes towards HIV and hepatitis in contemporary Western cultures differ from attitudes regarding other STIs. While HIV/AIDS in particular has a long history of stigma and discrimination attached to it, the efforts of social movements during the last few decades have led to an increase in tolerance towards persons with HIV/AIDS and the condition as well. Most of the other sexually transmitted infections remain heavily stigmatized (Gilamn 2007).

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APPENDICES

## APPENDIX A: IRB Approval

Institutional Review Board  
 P.O. Box 134  
 Middle Tennessee State University  
 Murfreesboro, Tennessee 37132  
 Office: (615) 898-5005



October 1, 2013

Alla Chernenko (ac5w@mtmail.mtsu.edu)  
 Department of Sociology and Anthropology

Protocol Title: **STI-testing among College Students: What is there to be afraid of?**  
 Protocol Number: **14-069**

Dear Investigator(s),

The MTSU Institutional Review Board (IRB), or a representative of the IRB, has reviewed the research proposal identified above and determined that the study poses minimal risk to participants. The proposal qualifies for an expedited review under 45 CFR 46.110 Category 4.

Approval is granted for one (1) year from the date of this letter using potential participants from the general MTSU undergraduate student population and the MTSU psychology research pool.

According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance. If you add researchers to an approved project, please forward an updated list of researchers and their certificates of training to the Office of Compliance (Box 134) before they begin work on the project. Any change to the protocol must be submitted to the IRB before implementation.

Please note that any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918.

Upon completion of the study you will need to submit an end-of-project report to the Office of Compliance. The report form can be found on the IRB website. Complete research means that you have finished collecting and analyzing data. Should you not finish your research within the one (1) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires **October 2<sup>nd</sup>, 2014**.

Also, all research materials must be retained by the PI or faculty advisor (if the PI is a student) for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me 615-898-5878 or [andrew.owusu@mtsu.edu](mailto:andrew.owusu@mtsu.edu).

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Owusu".

Andrew Owusu Ph.D.  
 Associate Professor  
 Department of Health and Human Performance  
 Middle Tennessee State University  
 P.O. Box 96  
 Murfreesboro, TN 37132



## APPENDIX B: Survey Questionnaire

**This survey deals with the attitudes and opinions of MTSU students regarding sexual health and health behaviors, namely, routine testing for sexually transmitted infections (STIs). For the purposes of this study, STIs are defined as infections that are passed from one person to another during sexual contact, EXCLUDING HIV/AIDS.**

**Please remember that your responses are completely anonymous and that your name or any other personal information will not be directly linked to your responses in any way. YOU MUST BE 18 YEARS OR OLDER TO PARTICIPATE IN THIS SURVEY.**

**Your participation in this research is voluntary. You are free to withdraw from this study at any time. By proceeding to complete the survey, you indicate that you freely and voluntarily consent to participate in the study.**

1. In what year were you born? \_\_\_\_\_
2. Each item below is a belief statement about your medical condition with which you may agree or disagree. For each item, please circle the response that represents the extent to which you agree or disagree with that statement. Please try to answer every item and make sure that you circle ONLY ONE response per item. This is a measure of your personal beliefs, so there are no right or wrong answers.

		Strongly Disagree	Moderately Disagree	Disagree	Agree	Moderately Agree	Strongly Agree
1.	If I become sick, I have the power to make myself well again.	SD	MD	D	A	MA	SA
2.	Often I feel that no matter what I do, if I am going to get sick, I will get sick.	SD	MD	D	A	MA	SA
3.	If I see an excellent doctor regularly, I am less likely to have health problems.	SD	MD	D	A	MA	SA
4.	It seems that my health is greatly influenced by accidental happenings.	SD	MD	D	A	MA	SA
5.	I can only maintain my health by consulting health professionals.	SD	MD	D	A	MA	SA

6.	I am directly responsible for my health.	SD	MD	D	A	MA	SA
7.	Other people play a big part in whether I stay healthy or become sick.	SD	MD	D	A	MA	SA
8.	Whatever goes wrong with my health is my own fault.	SD	MD	D	A	MA	SA
9.	When I am sick, I just have to let nature run its course.	SD	MD	D	A	MA	SA
10.	Health professionals keep me healthy.	SD	MD	D	A	MA	SA
11.	When I stay healthy, I'm just plain lucky.	SD	MD	D	A	MA	SA
12.	My physical well-being depends on how well I take care of myself.	SD	MD	D	A	MA	SA
13.	When I feel ill, I know it is because I have not been taking care of myself properly.	SD	MD	D	A	MA	SA
14.	The type of care I receive from other people is what is responsible for how well I recover from an illness.	SD	MD	D	A	MA	SA
15.	Even when I take care of myself, it's easy to get sick.	SD	MD	D	A	MA	SA
16.	When I become ill, it's a matter of fate.	SD	MD	D	A	MA	SA
17.	I can pretty much stay healthy by taking good care of myself.	SD	MD	D	A	MA	SA
18.	Following doctor's orders to the letter is the best way for me to stay healthy.	SD	MD	D	A	MA	SA

3. How much do you think you know about sexual health and STIs in comparison to your peers? (*Check one*)

I know much more than my peers

I know a little more than my peers

- I know about as much as my peers
- I know a little less than my peers
- I know much less than my peers

4. How extensive do you think your knowledge about sexual health and STIs is? (*Check one*)

- Very extensive
- Somewhat extensive
- Not extensive
- Not extensive at all

5. How confident are you in the accuracy of your knowledge about sexual health and STIs? (*Check one*)

- Very confident
- Somewhat confident
- Not quite confident
- Not at all confident

8. Below are several statements regarding sexual health and sexually transmitted infections. To the best of your knowledge, determine whether the statements are accurate. Make sure that you circle only one response per item. Please do not be concerned if you are not sure whether some of the statements are accurate. “Not sure/don’t know” responses are just as useful to us as other answers.

	True (The statement is completely accurate)	False (The statement is somewhat or completely inaccurate)	Not sure/ don't know if statement is true or false
1. STIs are among the most common infections in the U.S.	T	F	NS
2. STIs always cause specific symptoms, such as discharge or itching.	T	F	NS
3. Non-barrier birth-control methods (e.g., birth-control pills, patch or ring) do not provide protection from STIs.	T	F	NS
4. All STIs can be successfully cured.	T	F	NS

5. STIs can be transmitted through all types of intercourse, including vaginal, oral and anal.	T	F	NS
6. Only the people who have too many sexual partners are at risk of STIs.	T	F	NS
7. Condoms provide a 100% protection from all STIs.	T	F	NS
8. The most reliable way to avoid STIs is to abstain from sex.	T	F	NS
9. None of the known STIs are life-threatening.	T	F	NS

7. Did you have any kind of school-based sexual education prior to entering college?  
(Check one)

- Yes  
 No (please skip to question 9)  
 Not sure/do not remember

8. Did your sexual education program(s) contain information on any of the following?  
(Please check all that apply).

- Abstinence from sexual activity outside marriage as the only certain way to avoid teenage pregnancy and sexually transmitted infections  
 Condoms as means of preventing pregnancy and sexually transmitted infections  
 Other methods of birth control (e.g., birth control pills, birth control patch, vaginal ring, birth control implant, IUD, calendar method, etc)

9. Have you ever been exposed to other sources of information about sexual health and STIs? (e.g., on-line resources, educational literature, TV-shows, community health programs, etc.). (Check one)

- Yes (please specify) \_\_\_\_\_  
 No  
 Not sure/do not remember

10. Have you ever had a conversation with your parents/primary caregivers that included discussion of STIs? (Check one)

- Yes  
 No  
 Not sure / do not remember

11. Have you ever consulted a doctor or nurse about STIs? (*Check one*)

- Yes  
 No  
 Not sure / do not remember

12. Have you ever been tested for non-HIV/AIDS STIs? (*Check one*)

- Yes  
 No (*please skip to question 15*)

13. How many times have you been tested for non-HIV/AIDS STIs? \_\_\_\_\_

14. The following items deal with potential situations in which one might choose to get tested for STIs. Please indicate how likely you are to get tested in each of these situations. Make sure you only circle one response per item. Only choose “N/A” when the situation as a whole does not apply to you, for example, you have never experienced symptoms of STIs, never had unprotected sexual contact, etc.

I tend to get tested for STIs...

		Never	Sometimes	Usually	Always	N/A
1.	Upon experiencing symptoms that might be caused by STIs.	N	S	U	A	N/A
2.	Before starting a sexual relationship with a new partner.	N	S	U	A	N/A
3.	After starting a sexual relationship with a new partner.	N	S	U	A	N/A
4.	After having unprotected sex (i.e., vaginal, oral or anal sex without a condom, female condom or dental dam)	N	S	U	A	N/A
5.	When required due to employment or military service.	N	S	U	A	N/A
6.	Regularly, every year.	N	S	U	A	N/A
7.	Regularly, more often than once a year.	N	S	U	A	N/A

8.	Other ( <i>please specify</i> ) _____	N	S	U	A	N/A
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15. Each item below is a statement about disclosing personal information about STIs. For each item, please circle the response that represents the extent to which you agree or disagree with that statement. Please make sure that you circle only one response per item. We are interested in your personal opinion on the topic, so there are no right or wrong answers.

		Strongly Disagree	Disagree	Neither disagree, nor agree	Agree	Strongly Agree
1.	If someone is diagnosed with an STI, they should make sure that their family does not find out.	SD	D	N	A	SA
2.	If one finds out they have an STI, they can turn to their close friends for support without fear of being judged.	SD	D	N	A	SA
3.	Others will think less of a person who has an STI.	SD	D	N	A	SA
4.	There is no shame in telling a doctor or nurse that you have or had an STI.	SD	D	N	A	SA
5.	Others will be disgusted by someone who has an STI.	SD	D	N	A	SA
6.	Telling your partner that you have an STI is the right thing to do.	SD	D	N	A	SA
7.	People usually think that those who have STIs are unclean.	SD	D	N	A	SA
8.	If one finds out they have an STI, they should try and talk about it with their previous sexual partners.	SD	D	N	A	SA
9.	Others will think that those who have STIs are promiscuous.	SD	D	N	A	SA
10.	If one is to seek testing and treatment for an STI, they better make sure no one they know finds out about it.	SD	D	N	A	SA

16. To answer this question, imagine yourself in a hypothetical situation in which you are sexually active and find out that you have an STI. Would you be comfortable talking about it to...*(Check all that apply)*

- Close friend(s)
- An extended group of friends
- Current sexual partner(s)
- Past sexual partner(s)
- Parents/primary caregivers
- Siblings
- Other family members *(please specify)* \_\_\_\_\_
- Medical professionals
- Casual acquaintances
- Other *(please specify)* \_\_\_\_\_

17. In the same hypothetical situation, who would you absolutely not want to find out about it? *(Check all that apply)*

- Close friend(s)
- An extended group of friends
- Current sexual partner(s)
- Past sexual partner(s)
- Parents/primary caregivers
- Siblings
- Other family members *(please specify)* \_\_\_\_\_
- Medical professionals
- Casual acquaintances
- Other *(please specify)* \_\_\_\_\_

**The last part of the survey aims to collect background demographic information in order to understand your responses to the previous questions. Remember that your responses are completely confidential and that neither your name nor other identifying information will be directly linked to your responses in any way.**

18. Are you a...*(Check one)*

- Freshman
- Sophomore
- Junior
- Senior
- Other *(please specify)* \_\_\_\_\_

19. What is your major? \_\_\_\_\_

20. Do you identify as...

Female

Male

Other (*please specify*) \_\_\_\_\_

21. Do you identify as... (*Check one*)

Bisexual

Heterosexual

Homosexual

Queer

Other (*please specify*) \_\_\_\_\_

22. Which of the following best describes your current relationship status? (*Check one*)

Single

In a relationship, not living together

Living with partner

Married

Divorced or separated

Other (*please specify*) \_\_\_\_\_

23. Which of these groups do you identify with? (*Check all that apply*).

American Indian or Alaska Native

Asian

Black or African-American

Hispanic or Latino(a)

Native Hawaiian or Other Pacific Islander

White

Other (*please specify*) \_\_\_\_\_



24. Which of the following, in your opinion, best describes your economic status? (*Check one*)

- Lower class
- Working class
- Lower middle class
- Upper middle class
- Upper class

25. Thinking back to the time when you were growing up, was there a television set in your household? (*Check one*)

- No
- Yes, just one
- Yes, more than one, but not in every room
- Yes, in every room of the household

26. Thinking back to the time when you were growing up, was there a computer (desktop or laptop) in your household? (*Check one*)

- No
- Yes, just one
- Yes, more than one, but not one for every member of the household
- Yes, one for every member of the household

**Thank you for your participation!**

**If you have any additional comments that you would like to share with us, please use the space below. For any questions contact Alla Chernenko at [ac5w@mtmail.mtsu.edu](mailto:ac5w@mtmail.mtsu.edu).**

## APPENDIX C: Interview Consent Script

The following information is provided to inform you about the interview and your participation in it. Do not hesitate to ask any questions you may have about this interview and the information provided. Also, you will be given a copy of this consent form. Your participation is voluntary and you are also free to withdraw at any time.

The overarching goal of this research project is to explore the factors influencing the students' STI-testing decisions. Similarly to the survey that you have completed earlier, this interview deals with the attitudes and opinions of MTSU students regarding sexual health and health behaviors, namely, routine testing for sexually transmitted infections (STIs). While some of the questions you will be asked during this interview closely resemble those included in the survey, the interview format will allow you to express your thoughts and opinions more freely and devote more attention to the issues you find the most important.

You are being asked to participate in this interview because we value your experiences and believe that these experiences will greatly enhance our understanding of STI-testing practices among college students. This interview will take from one to two hours. Your responses will be audio taped.

If you should become emotional when sharing your experiences we will pause to let you recover if desired or stop if you choose to do so. However, this is an opportunity to share your story and hopefully enjoy yourself as well.

You will be compensated for this interview with a \$10 Starbucks gift card.

All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised. Your information may be shared with the MTSU Institutional Review Board, the Office of Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

If you should have any questions about this interview please feel free to contact Alla Chernenko at [ac5w@mtmail.mtsu.edu](mailto:ac5w@mtmail.mtsu.edu) or my Faculty Advisor Jackie Eller at [jackie.eller@mtsu.edu](mailto:jackie.eller@mtsu.edu). For additional information about giving consent or your rights as a participant in this interview, please feel free to contact the Office of Compliance at (615) 494-8918.

By proceeding to take part in this interview you indicate that you understood all the information provided, that all your questions have been answered and that you freely and voluntarily choose to participate in this interview.

## APPENDIX D: Interview Guide

*Introduce yourself; explain the purpose of the interview; explain the rules of the interview; provide an informed consent form (if did not do so beforehand), etc. Make a small talk about, for example, school (ask them what their major is, how are classes going, when are they going to graduate, etc.) to establish rapport. Suggest that some questions may be similar to those they have encountered filling the survey.*

### 1. What do you know about STIs?

*If reluctant to start, suggest they name a few of the infections they know about. Prompt to talk about symptoms, consequences and means of protections: insert short questions (e.g., What about the symptoms of...?) where necessary.*

### 2. Do you remember how you first learned about STIs?

*Depending on the answer, probe for other sources of formal or informal STI-education:*

Did you talk about STIs with friends?

With parents/primary caregivers?

Older siblings?

Teenagers and young adults often talk about sex with their friends. Do you discuss these topics with your friends? Are those your high school/hometown friends, or somebody you've met while in college?

Maybe you have heard something about it on TV?

Some parents give their kids age-appropriate books about sexuality, did you have any of those? At what age? Was there anything about STIs?

Did you ever look up information on STIs or just stumbled upon it online?

3. Ask if the interviewee did not bring it up answering to a previous question. If they did, use suggested prompts when appropriate:

Did you have sexual education at school? What topics did it cover?

Many people tell interesting stories about their sexual education. Do you remember any of those? Maybe a particular lesson or topic that was interesting or memorable in some way?

4. Where do you think you have learned the most about sexually transmitted infections?

About sex in general?

Do you think you know a lot or a little about STIs? Why do you think so?

Would you like to know more? If yes, do you know where to get information?

5. Have you ever been tested for STIs?

*If they have never been tested:*

- i. It is understandable, many students are reluctant to go there. What about you? Why do you choose not to go?

Do you think you might somehow get an STI? Why or why not?

Are you concerned that somebody would find out if you would go to get tested? Who would you absolutely not want to find out about it? Why?

- ii. Do you go to see the doctor often at all? Why or why not?

Some people are afraid to go to the doctor, especially with more private issues, because they've heard stories or maybe have a friend or a friend of a friend who had bad experience with medical professionals. Do you know any such stories? Do you believe in them?

*If they have been tested:*

- i. Have you been tested just once or multiple times? How often do you get tested?
- ii. Many students and young people these days are very reluctant to go get tested for STIs. What do you think might be the reasons for that?

*Probe for potential reasons such as cost of testing, availability, etc. if necessary.*

6. If a person is diagnosed with an STI, what should they do? Should they tell anybody? Who should they tell? Would you tell anybody, if, in a hypothetical situation, you would get an STI? Who would you inform? Would you be comfortable telling them? Why or why not?

7. Do you think someone might fear disclosing – telling somebody that they have an STI – to the point that it prevents them from getting tested?

8. Do you think the experiences with STIs and STI-testing are the same or different for *guys and girls*?

What about the people of different *age*, say, teenagers and college students, or young adults?

Do you think that *race and ethnicity* matter?

The *family* in which she or he grew up?

Do you think certain people would be more ready to get tested than the others?

Who would that be? Who would be the most reluctant to get tested?

9. Would you like to add anything else that I think I should know? It is okay if it is not about testing itself. Maybe there is some thoughts you just feel like sharing?