COMPONENTS OF THE HEALTH BELIEF MODEL AND HIV TESTING DECISIONS

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ABSTRACT

An individual infected with HIV may have no visible symptoms of the illness. Therefore, it is important for individuals who are sexually active to practice self-protective behaviors (e.g. discussing HIV testing with potential sex partners). The current descriptive study assessed the self-protective behavior of obtaining an HIV-antibody test within the framework of The Health Belief Model (HBM). Perceptions regarding susceptibility to HIV infection, severity of the disease, benefits or barriers to HIV-antibody testing, and personal self-efficacy for engaging in protective behaviors were assessed in "Testers" (those who have been tested for HIV infection) and "Non-testers" (those who have not been tested). Phase 1 of the current study validated the HIV Testing Attitude Scale (HTAS) using introductory psychology students and clients from the county health department (n=203). Six items not included on the original HTAS reached significance with correlations ranging from 0.39 to 0.52 and were added to the scale. In Phase 2, participants (n=362) recruited from three health facilities and introductory psychology students were assessed using the HTAS, Self Efficacy Scale, Health Locus of Control, AIDS Health Belief Scale, Social Desirability, and specific items measuring attitudes and perceptions towards self-protective behaviors. Significant differences between Testers and Non-testers were found in HTAS, SES, HLOC, AHBS, SD, age, education level, drug or alcohol use associated with sexual activity, age of first coitus, knowledge of self-protective behaviors, and perception of personal susceptibility. Limitations of the HBM to differentiate between those who have and those who have not been tested for HIV infection were discussed along with limitations of the current study and suggestions for future research.

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DEDICATION

This thesis is dedicated to the memory of my grandmother, who showed me the meaning of the word courage.

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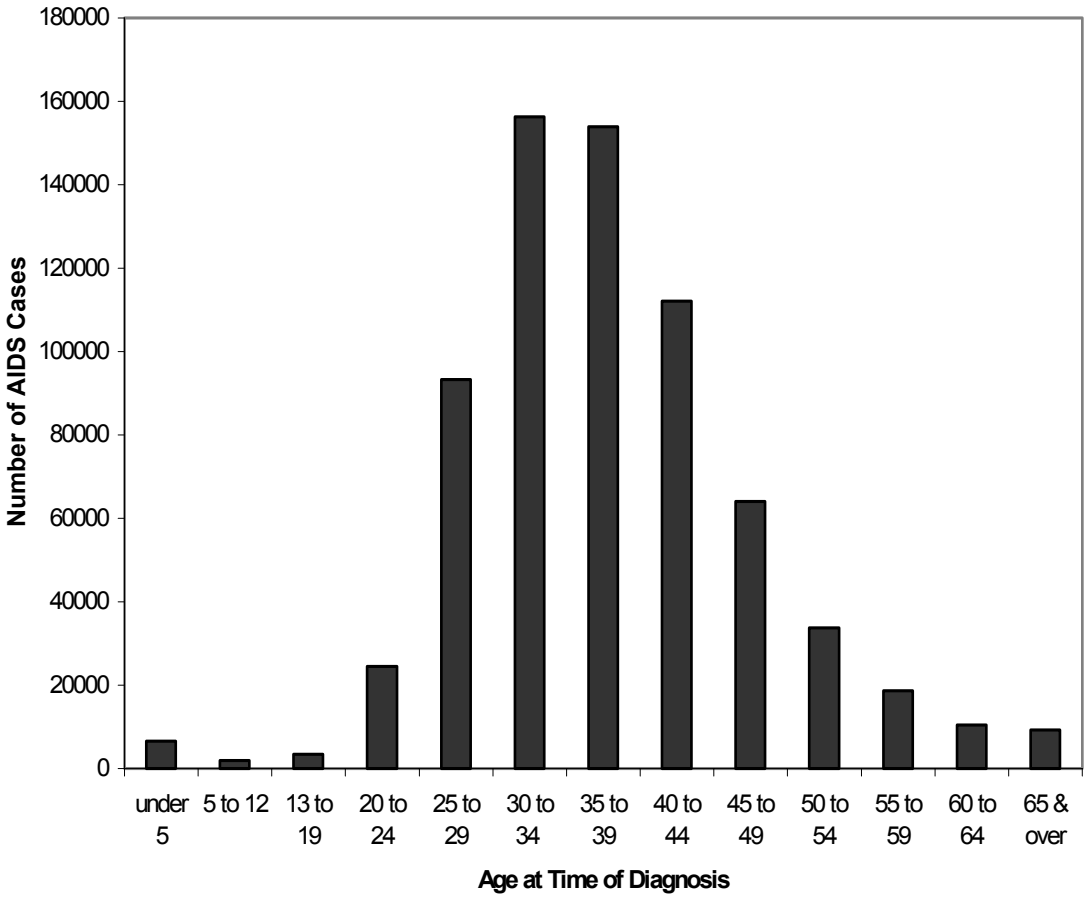
INTRODUCTION

One of the biggest public health concerns we face in the United States today is Acquired Immune Deficiency Syndrome (AIDS). Since the beginning of the AIDS epidemic in the early 1980's, the Centers for Disease Control and Prevention (CDC) has reported 831,112 cases of AIDS in the United States (Figure 1) and estimates that there are over 1 million cases of Human Immunodeficiency Virus (HIV) infection (CDC, 2003). HIV, the virus that causes AIDS, attacks and weakens the immune system of its host, causing him or her to become susceptible to innumerable opportunistic infections, which ultimately prove fatal. HIV is transmitted via very specific avenues of contact with contaminated body fluids (e.g. blood, semen, vaginal secretions, or human breast milk). While there is no cure or vaccine for HIV infection or AIDS at this time, there have been effective treatments available since the mid-90's to bolster and maintain the immune system of individuals infected with HIV (CDC, 1998). Commonly referred to as HAART (highly active antiretroviral therapy) or a "drug cocktail", the treatments are combinations of protease inhibitors and transcriptase inhibitors (Henkel, 1999), which interfere with the virus' ability to enter, reproduce or exit the host cell..

As with any virus, the consequences of HIV infection depend upon the ability of the immune system of its host to fight it off. During the initial stages of infection, individuals infected with HIV can look and feel healthy with no physical symptoms to suggest that they may be a health hazard to anyone with whom they come in specific contact (CDC, 1998). This latency period, which can last an average of seven years (CDC, 1998), is a challenge not only for health practitioners, but for health educators as well.

Figure 1. Number of AIDS Cases Reported by the CDC Through 2002



Prior to the onset of symptoms, the only way to determine that someone may be infected with the HIV virus is by obtaining a blood test, which screens specifically for the HIV-antibody. The HIV antibody test is an enzyme immunoassay (EIA) blood test that screens for antibodies created by the host's body as a response to the presence of the HIV virus (CDC, 1997). The EIA test is highly accurate and is followed by a confirmatory test to guard against the risk of a "false positive" test result (CDC, 1997). A positive HIV-antibody test only tells if a person is infected with HIV, it does not tell when the person was infected or when he or she will develop an opportunistic infection and be diagnosed with AIDS.

As with any illness or medical condition, the earlier the disorder is detected the better, and this holds true for HIV infection. Early detection of HIV serves two purposes. First, with the availability of effective treatments such as protease inhibitors and transcriptase inhibitors (Henkel, 1999), early medical intervention for HIV infection leads to improved health, which can result in a longer latency period. Second, early identification of the virus can lead to a decrease in the spread of the virus via an increase in preventive behaviors, and ultimately a reduction in the population incidence of HIV infection.

However, how is someone who feels fine and looks healthy convinced to engage in self-protective behaviors? Early education and prevention efforts regarding AIDS and HIV were largely information based and focused on risk education. The assumption of this approach was that a greater understanding of the behaviors associated with HIV transmission would result in an increase in HIV preventive behaviors (DiClemente, 1994). However, research does not support the idea that increased knowledge necessarily

leads to a behavior change (Baldwin & Whitley, 1990; Brafford & Beck, 1991; Jemmott, Jemmott, & Fong, 1992). In fact, research suggests that many individuals mistakenly believe that they are able to choose uninfected potential sex partners based upon their look of apparent health (Agocha & Cooper, 1999).

In addition to the dissemination of correct information regarding HIV and AIDS, there are specific behaviors routinely suggested for sexually active individuals to practice in order to guard against HIV infection via sexual intercourse. While these behaviors are commonly known as "safer sex," a more inclusive term may be self-protective or preventive behaviors as the list encompasses more than just sexual behaviors.

Self-protective behaviors include discussing sexual history with potential sex partners, negotiating the use of condoms with sex partners, refusing sexual intercourse without condoms, abstaining from alcohol or drug use before or during sex, having an HIV-antibody test, and discussing HIV-antibody testing with potential sex partners (Bandura, 1992). While much research has been conducted regarding the preventive behavior of condom use (e.g. Albarracin, Fishbein, Middlestadt, 1998; Basen-Enquist & Parcel, 1992; Brafford & Beck, 1991; Brien, Thombs, & Mahoney, 1994; Bruce, Shrum, Trefethen, & Slovik, 1990; Caron, Davis, Wynn, & Roberts, 1992; Henrich, 1993; Mahoney, Thombs, Ford, 1995), limited research has been done regarding the self-protective behavior of obtaining an HIV-antibody test (Anastasi, Sawyer, & Pinciaro, 1999; Goodman, Chesney, Tipton, 1995; Miller, Hennessy, Wendell, Webber, Schoenbaum, 1996; Rothman, Kelly, Weinstein, O'Leary, 1999; Wilson, Jaccard, Minkoff, 1999).

At particular risk for HIV exposure, and therefore infection, are adolescents. Adolescence is a time of increased risk of exposure to HIV due to increased sexual activity with a greater potential for multiple sex partners (Brafford & Beck, 1991). In fact, Basen-Enquist and Parcel (1992) found that by the age of 17, 57% of adolescents in an urban setting reported being sexually active, and of those 15-24 year olds who were sexually active, only 20% reported any condom use at all. Consequently, the rationale for focusing on older adolescents aged 18-24 with respect to HIV and AIDS is two-fold. First, adolescents are engaging in behaviors that put them at risk for exposure to HIV and other sexually transmitted infections. Second, accounting for the latency period of HIV, the majority of 25-29 year olds currently infected with HIV at this time were most likely infected while they were adolescents.

Theoretical Perspective

Many theoretical approaches have been used in HIV and AIDS prevention research. The Theory of Reasoned Action (Fishbein, Middlestadt, Hitchcock, 1994), Theory of Planned Behavior (Ajzen & Madden, 1986), Information-Motivation-Behavior Model (Fisher & Fisher, 1992; Fisher, Fisher, Misovich, Kimble, Malloy, 1996), AIDS Risk Reduction Model (Catania & Kregels, 1990), and the Health Belief Model (Rosenstock, Stretche, & Becker, 1988) have been used to try and understand why some people engage in HIV self-protective behaviors while others do not. These theories have overlapping constructs related to attitudes, beliefs, and intentions, which have been assessed to understand behavior, specifically self-protective behavior. While some of the theories focus on long-term behavior change, others assess short-range behavioral issues. The Health Belief Model is theory that has historically been used to assess screening or

preventive behaviors and will be used as a framework in this study.

Health Belief Model

The Health Belief Model (HBM) was developed in the 1950's to explain the public's failure to participate in screening programs to detect tuberculosis (TB) (Rosenstock, Stretcher & Becker, 1994). While there were numerous screening sites set up for individuals to obtain screening X-rays, few individuals actually took advantage of these opportunities. The HBM was the resulting theory that helped explain this lack of participation in preventive behaviors. The public's reaction to the TB health crisis during the 1950's is alarming in its resemblance to the HIV/AIDS epidemic today. Individuals who were at risk for TB were able explain lack of participation in prevention via perceptions about the disease and personal susceptibility, time constraints, finances, fear of the procedure, or other barriers to the behavior (Rosenstock et al., 1994). Today, there are many opportunities for individuals to participate in HIV preventive behaviors, specifically obtaining an HIV-antibody test. However, statistics show that few individuals actually participate in HIV screening opportunities (Kalichman & Hunter, 1993). Consequently, the tenets of the HBM may prove particularly well suited to the assessment of this HIV preventive behavior and understanding the lack of public participation.

The HBM posits that in order for a behavior change to occur, three factors regarding health-related action must be present. An individual must feel threatened by his/her current behavior, believe that a specific change in behavior will be beneficial by resulting in a valued outcome at an acceptable cost, and must feel that she or he is competent to implement the recommended change (Rosenstock et al., 1988). These

components are particularly salient when dealing with HIV infection. Specifically, a person must feel that there is a realistic, not just statistical, probability of contracting HIV as a result of his or her current behavior. There may be individuals who are at risk for HIV infection who simply do not perceive themselves to be at risk because they are not members of groups that have been disproportionately affected by HIV and AIDS, such as gay men or IV drug users. However, the CDC reports indicate that HIV infection via heterosexual contact is on the rise for men and women (Table 1; CDC, 2003).

Thus, the HBM takes an individual's past experience and characteristics into account as a pre-existing component of the model. An individual's perceptions of a specific disease are founded in an individual's background and allow for assessment of issues salient to that individual. Figure 2 provides a summary of the components of the HBM (Rosenstock et al., 1994). Perceived susceptibility refers to a person's perception of his or her risk of becoming infected with HIV. Perceived severity of the disease gauges feelings regarding the seriousness of AIDS. Taken together, perceived susceptibility and severity account for a person's perception of the threat of HIV infection or AIDS. Perceived benefit indicates a person's beliefs regarding the efficacy of the self-protective behavior. Perceived barriers refer to an individual's perception of the negative aspects of the self-protective behavior. Cues to action account for internal and external events that trigger performance of the behavior, in this case obtaining an HIV-antibody test. Finally, self-efficacy refers to a person's beliefs regarding his or her ability to successfully obtain an HIV-antibody test.

Rosenstock and colleagues (1994) suggested that everyone may not perceive personal threat in the same way. Some may have a "sequential assessment" and only

Table 1.

Cumulative Cases of HIV Reported by the CDC Through 1999 by Exposure Type

Exposure Category[1]	Male	Female	Total
Men who have sex with men	36823 (45)	0	36823 (33)
Individuals who inject drugs	11678 (14)	6390 (21)	18068 (16)
Men who have sex with men and inject drugs	5139 (6)	0	5139 (5)
Heterosexual contact:	5407 (7)	12151 (40)	17558 (16)
Sex with an injecting drug user	1232	3,547	4,779
Sex with a bisexual male	0	936	936
Sex with a person with hemophilia	14	108	122
Sex with transfusion recipient with HIV infection	81	92	173
Sex with HIV-infected person; risk unspecified	4080	7,468	11,548
Hemophilia/coagulation disorder	436 (1)	18 (<1)	454 (<1)
Recipient of blood transfusion/tissue	350 (<1)	375 (1)	725 (1)
Other/risk not reported or identified	21850 (27)	11377 (38)	33236 (30)
Total	81683 (100)	30311 (100)	112003 (100)

Note: Table information is given in frequency(percent)

1 - Exposure category refers to the specific type of exposure reported by an individual who has tested positive for HIV

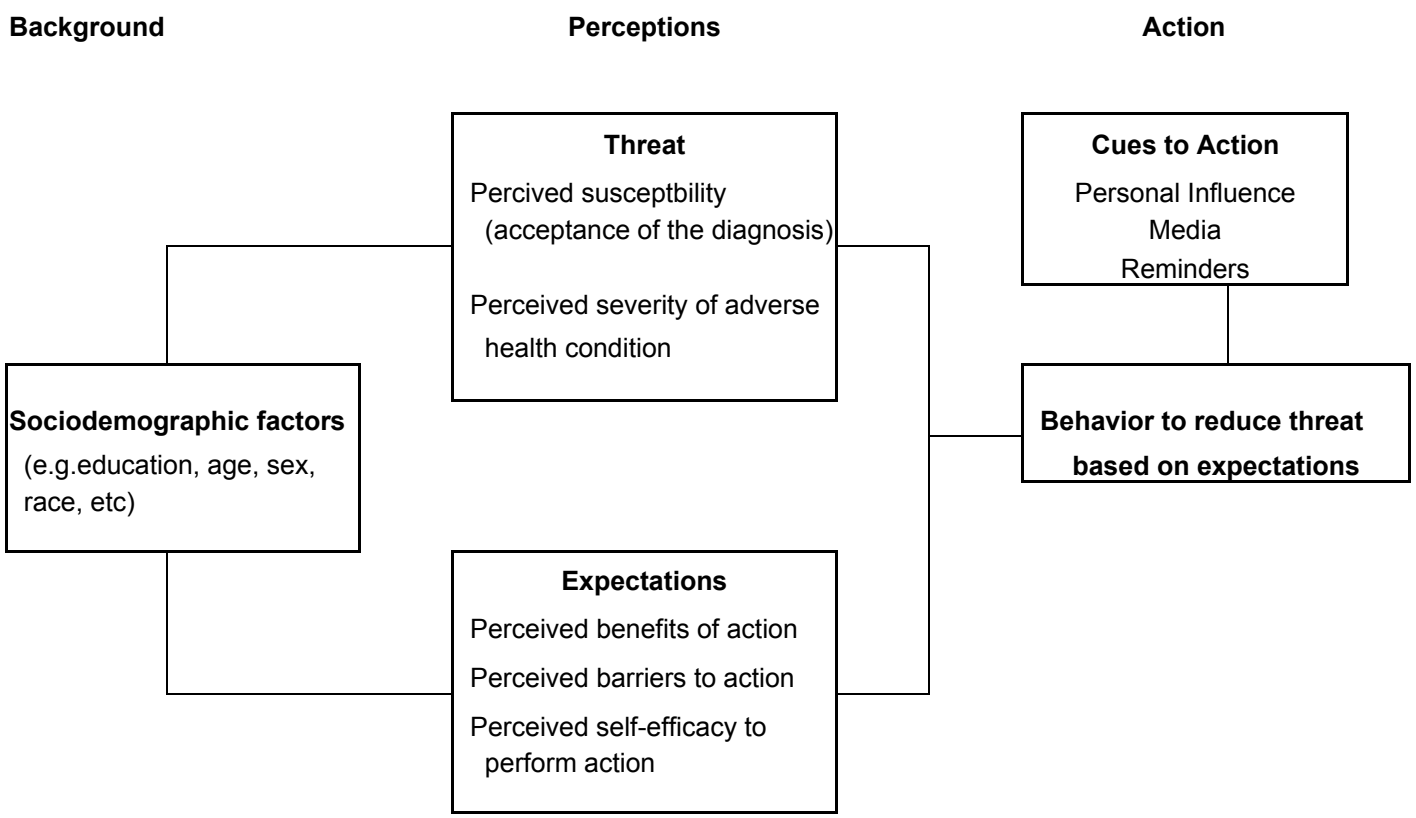


Figure 2. Schematic Representation of the Components of the Health Belief Model

subjective threshold. Consequently, if perceived severity is low, then personal susceptibility would never actually be considered. However, if perceived severity of AIDS is high, then personal susceptibility is assessed and whether or not to perform self-protective behaviors (i.e., have an HIV-antibody test) is considered. Under a state of high-perceived severity, perceived susceptibility will be a stronger predictor of intent to engage in self-protective behaviors rather than a predictor of actually engaging in preventive behaviors (Rosenstock et al., 1994). This is due to the fact that other issues, addressed by other components of the HBM, such as self-efficacy, will become salient and determine whether or not the individual will follow through on the perception of threat.

The other process suggested by Rosenstock and colleagues (1994) for assessing perceived threat is "multiplicative assessment", by which both perceived susceptibility and perceived severity are considered simultaneously and multiplied together. The resulting amount helps the individual make a decision about whether or not to engage in the appropriate behavior. Specifically, multiplicative assessments influence the way an individual processes risk-based prevention messages. If perceived susceptibility and perceived severity of the disease are both high, chances of engaging in self-protective behaviors are also high. However, if either perceived susceptibility or perceived severity is sufficiently low, then perceived threat is also low, as are chances of the individual engaging in the behaviors (Rosenstock et al., 1994).

Past research assessing the components of the health belief model with sexuality or HIV-related issues have generally focused on the self-protective behavior of condom use rather than HIV-antibody testing, and generally on college students as participants. In

a study investigating attitudes about AIDS, homosexuality and condoms among college students, Bruce et al. (1990) found mixed results regarding the utility of the Health Belief Model to understand AIDS related behavior. Although participants in the study reported believing AIDS to be a severe illness and that condom use can help prevent the spread of HIV infection, they did not perceive themselves as susceptible to AIDS nor did they feel compelled by environmental cues to change their behavior (e.g. condom use).

Similarly, Basen-Enquist (1992) used components from the Health Belief Model (perceived susceptibility and perceived barriers to behavior change), Social Learning Theory, the Theory of Reasoned Action, and theories of cognitive coping style to investigate predictors of "safer sex" in a college population. Regression analysis showed that perceived susceptibility was significantly related to increased intention to use condoms while perceived barriers were significantly related to decrease in actual as well as intended condom use (Basen-Enquist, 1992).

Mahoney, et al. (1995) tested the ability of components of the Health Belief Model (perceived susceptibility, perceived benefits, and perceived barriers), self-efficacy, and other "behavioral" and demographic variables to distinguish between three groups of condom users (nonusers, sporadic users, and consistent users) among college students. By using principal components analysis, Mahoney et al. (1995) found that perceived susceptibility and perceived barriers are multidimensional constructs. Perceived susceptibility reliably broke down into two factors: perceived susceptibility–partner and perceived susceptibility–self. Four factors emerged from perceived barriers: turnoffs, hassles, execution, and relationship concerns. While the variables of the study showed mixed results in the ability to discriminate between the three types of condom users, the

components of the health belief model used were moderately able to distinguish between the three groups of condom users, and were most effective at discriminating sporadic condom users (Mahoney et al., 1995).

Thus, the components of the Health Belief Model have had mixed success in prediction of condom use. Unfortunately, there is limited published research available assessing the components of HBM with the protective behavior of obtaining an HIV-antibody test. However, the addition of mastery or self-efficacy as a component of the Health Belief Model may improve its usefulness as a framework by which to investigate preventive behaviors, specifically HIV-antibody testing decisions.

Self-Efficacy

Initially, the Health Belief Model did not include self-efficacy as a component as the model was originally used to explain preventive actions, primarily screening visits, which were seen as requiring little ability on the part of the individual (Rosenstock et al., 1988). However, once the HBM was applied to chronic illnesses that required long-term health-related behavior change, self-efficacy, as a component of the HBM, helped account for the initiation and maintenance of behavioral change (Bandura, 1994) which would not have been accounted for by the HBM without self-efficacy.

As a separate construct, self-efficacy has received much attention in the research of HIV-related issues. Specifically, self-efficacy states that given appropriate skill and adequate incentive, efficacy expectations are major determinants of an individual's choice of behavior, amount of effort he or she will exert, and how long he or she will persist in difficult situations (Bandura, 1977). The components of self-efficacy are level, generality, and strength. Level indicates a person's expected performance attainment.

Generality refers to the notion of global vs. specific efficacy. Global efficacy, indicating the number of areas in which a person sees themselves as capable, can be seen as an individual's overall or comprehensive feeling of competence or ability, while specific efficacy refers to the competence a person feels within a specific domain or situation. Strength applies to the confidence a person has that once having attained a certain level, and then, after attaining that level, move on to a higher or more difficult level (Bandura, 1977).

According to Bandura (1994), an individual's belief in his or her personal efficacy to exercise control over and regulate his or her own sexual behavior plays a crucial role in whether or not the idea of changing risky behavior will be considered. In other words, if an individual does not have control over his or her own behavior, there is little motivation to even try to change that behavior. Within the framework of self-efficacy, there are four interactive components of self-directed change for self-protective behaviors: information, personal determinants, behavior, and environment (Bandura, 1994).

Though it may seem quite obvious, in order to increase self-protective behaviors, individuals need to have knowledge of what those behaviors actually are. By increasing the public's awareness and knowledge of health risks associated with not practicing preventive behaviors, they may be prompted to examine their own behavior. Once the idea of susceptibility to HIV infection has become incorporated at the personal level, the focus is on development of self-regulative skills to translate concern or fear into self-protective behavior. For an individual to become efficacious at any skill, it must be practiced and guided with corrective feedback (Bandura, 1992). Finally, the individual must have a support group, which approves of and encourages the desired behavior

change. Although the ability to persevere and succeed in the face of difficult and challenging circumstances is an indication of high self-efficacy (Forsyth & Carey, 1998), initially, the behavior changes must be reinforced and encouraged to increase the probability of maintenance of the behaviors (Bandura, 1994).

Wulfert & Wan (1993) also reported the importance of peer comparison by developing a "Self-efficacy Model of Safer Sex". They found that self-efficacy mediates sexual attitudes, condom outcome expectancies, peer comparison, and perceived vulnerability. Specifically, sexual attitudes referred to an individual's attitude or opinion regarding condoms. While individuals may think condom use is a good idea, they tend to forget about using condoms when highly aroused (Wulfert & Wan, 1993). Positive condom outcome expectancies enhanced an individual's self-efficacy, while negative outcome expectancies reduced self-efficacy. People form beliefs about their own capabilities by comparing themselves to others who are similar and by observing how they behave. Finally, knowledge alone does not motivate behavior change but may act as cue to heighten perceived vulnerability. People integrate knowledge, outcome expectancies, emotional states, social influences and past experiences to judge their ability to master a situation (Wulfert & Wan, 1993).

Brien et al. (1994) found that condom use self-efficacy accounted for differences between three groups of condom users (nonusers, sporadic users, and ritualistic users). In addition, through factor analysis of the underlying dimensions of the condom use self-efficacy scale developed by Brafford & Beck (1991), Brien et al (1994) found that condom-use efficacy is multidimensional. Four factors were identified: mechanics, partner's disapproval, assertive, and intoxicants. While mechanics (a person's confidence

in their skill), and intoxicants (a person's confidence in their ability and skill while intoxicated) do not directly apply to the behavior of obtaining an HIV-antibody test, the other two dimensions seem quite pertinent. Partner's disapproval and the ability to deal with rejection regarding the discussion about and request for a partner to have an HIV-antibody test, as well as the perceived anxiety of requiring a potential sex partner to have an HIV-antibody test, and the possibility of having to refuse to have sexual intercourse if not, seem to fit perceived barriers to the self-protective behavior of HIV-antibody testing.

In other HIV-related research considering the construct of self-efficacy, Brafford & Beck (1991) found that condom use self-efficacy is a predictor of condom use among college students. Basen-Enquist & Parcel (1992) found self-efficacy to be a predictor of safer sex behaviors among ninth graders, and Henrich (1993) found self-efficacy is a predictor of contraception among college women.

HIV-antibody Testing

Although condom use is the most commonly researched self-protective behavior, the focus of this study is on HIV-antibody testing, specifically, the decision to obtain a test. It is only recently that researchers have begun to look at the issue of HIV-antibody testing as a preventive behavior. Though some researchers may not have consciously set out to test components of the health belief model, we can find support for the application of HBM to HIV-antibody testing in their results.

Anastasi, Sawyer, and Pinciaro (1999) conducted a descriptive study to develop a profile of students requesting an HIV-antibody test at a student health center. While the study provided information regarding the demographics of those students requesting HIV-antibody testing, more pertinent to the present study is the list of perceived benefits

of HIV-antibody testing reported by the participants. The three most commonly reported reasons for HIV-antibody testing reported by the participants were: "I just want to know if I'm infected" at 69.6%, "I had recent unprotected sex with someone whose HIV status I'm unsure about" at 51.0%, and "I have just begun or plan to begin a sexual relationship" at 37.9% (Anastasi et al., 1999). Anastasi and colleagues (1999) also noted that some of the barriers to obtaining an HIV-antibody test are the negative impact of discussing HIV testing with a partner and the stress of waiting for the test results. Also of interest was the participant's reported level of susceptibility based on sexual behavior over the previous 6 months. Even though only 41.5% of the participants reported condom use, 88% of the participants rated their likelihood of contracting HIV as "low" (Anastasi et al., 1999).

One of the problems associated with using a convenience sample of college students is the generalizability of the research. Wilson et al. (1999) dealt with this issue by testing family planning patients with ages ranging from 15 to 45 at three different clinic sites in an urban setting. Participants were initially assessed regarding their attitude toward HIV-antibody testing by a series of questionnaires. During the course of the study, participants were given the opportunity to obtain the HIV-antibody test or decline. At the time a participant declined to be tested, she was interviewed regarding the specific reasons. Although 75% of all participants reported positive attitudes or felt favorably about taking an HIV-antibody test, when given an opportunity to have the HIV-antibody test, only 7% of the women actually tested. The most common reasons were time constraints (56%), plan to test another time (13%), and being too anxious about the

results (9%). Less than 2% had recently been tested or did not perceive themselves as susceptible to HIV.

Two predictors regarding HIV-antibody testing were identified were identified by Wilson et al. (1999). If a participant felt that she would learn that it was "too late" for treatment, she was less likely to obtain the HIV-antibody test, which can be classified as a barrier to getting an HIV test. Conversely, if a participant felt that the results of the HIV-antibody test would help her plan a pregnancy, which the HBM model would classify as a benefit of obtaining an HIV-antibody test, she was more likely to have the HIV test.

In their study, Wilson and colleagues (1999) noted that the actual percentage of participants who declined HIV-antibody testing due to anxiety may in fact be a larger proportion than the 9% indicated by the data. This suggestion is based on two facts. First, the study was conducted while the participants were at a previously scheduled clinic visit. At the time appointments were made, patients at these clinic sites were routinely instructed to allot approximately 2 hours for their appointment. Participation in the study did not increase or decrease the amount of time for the participant's clinic appointment. Second, at a follow-up of clinic records, none of the participants who said they would return at a later date to be tested had actually done so (Wilson et al., 1999). It may be that telling the researcher that they did not have time to be tested or would be tested another day was for some reason a more acceptable response for the participants than admitting anxiety regarding the HIV test.

A common theme in the research at this point indicates that a barrier to obtaining an HIV-antibody test has to do with anxiety regarding the results. However, Conley,

Taylor, Kemeny, Cole, & Visscher (1999), did not find this in their Multicenter AIDS Cohort Study (MACS) research conducted in the mid to late 1980's with homosexual men in San Francisco. In fact, they found that anxiety about AIDS is not reduced by avoiding knowing HIV status. Moreover, avoidance appears to create a psychological state equivalent to assuming oneself to be HIV-positive.

In order to take part in the MACS study, participants had to have an HIV-antibody test, but they did not have to learn the results. As part of the MACS study, participants had a physical check-up every 6 months and completed a variety of psychological assessments, at which time those participants who were not aware of their HIV status were given an opportunity to learn the results of their test. Some participants chose not to learn their HIV status for as long as 5 years after testing and only learned their status at that point due to the development of drug protocols for non-symptomatic HIV-positive individuals.

Results of the psychological scales administered indicate that individuals who were unaware of their HIV status: 1) had just as many thought intrusions about AIDS and worries that physical symptoms may be the onset of AIDS, 2) saw themselves as being as high a risk for developing AIDS, and 3) had the same levels of mood disturbances and hopelessness scores as individuals who actually were HIV-positive (Conley et al., 1999). As individuals in the MACS study who chose not to learn their HIV status functioned at levels of agitation as high as individuals who knew they were HIV-positive, anxiety appears to be a psychologically ineffective barrier for obtaining an HIV-antibody test. While the gay male population used in the MACS study may seem quite different than the adolescent heterosexual population considered in this study, they have similar

concerns. Although cues for obtaining an HIV-antibody test may be different, the anxiety and fear associated with testing and the implications of the test results are relevant issues for the heterosexual population as well (Anastasi et al., 1999; Wilson et al., 1999).

In other HIV-antibody testing research, Goodman et al. (1995) used the Scheier Life Optimism Test to assess the extent to which optimism, knowledge, attitudes, and beliefs predicted HIV-antibody testing among adolescent females with a history of risky sexual behaviors, but were unable to determine any significant predictors of HIV-antibody testing. Rothman et al. (1995) assessed the saliency of susceptibility brought on by watching a video about HIV-positive individuals who were similar to the college participants as a predictor of intention to get an HIV-antibody test. They found that the strongest predictors of intention to get an HIV-antibody test were: 1) depression after watching the video, 2) concerns about past behavior, and 3) perceptions of current risk for HIV. Finally, Miller et al, (1996) offered voluntary HIV-antibody testing to adolescents as part of a visit to a clinic in an urban setting and found two behavioral predictors of accepting the HIV-antibody test: history of multiple sex partners and no condom use within the last year.

In another vein of HIV-antibody testing research, Boshamer & Bruce (1999) developed a measurement tool specifically for assessing attitudes towards HIV-antibody testing. Developed using a convenience sample of heterosexual college students, the HIV Testing Attitudes Scale (HTAS) shows four factors: concerns about friend's responses, concerns about family's responses, beliefs about public opinion, and concerns about confidentiality. As such, the HTAS assesses attitudes towards testing as well as helps identify perceived barriers and benefits to obtaining an HIV-antibody test.

Purpose and Hypotheses

The purpose of Phase 1 of the current study was to administer the HTAS to a sample of college and non-college students to examine its generalizability in use with a non-college sample. In Phase 2, the components of the Health Belief Model were used to compare individuals who have had an HIV-antibody test (Tester) and those who have not had an HIV-antibody test (Non-tester) at two local health facilities and in a college population. In addition to obtaining descriptive information, this study investigated the validity of the HBM in terms differentiating individuals who have had an HIV-antibody test (Testers) from those who have not been tested (Non-testers).

As predicted by the HBM, it was hypothesized that that there were would be differences between Testers and Non-testers in perceived benefits and barriers to HIV testing, self-efficacy, and perceived threat but not for perceived severity. Specifically, I hypothesized that Testers would: a) have more positive attitudes toward HIV-antibody testing, b) have an greater perception of personal susceptibility to HIV, c) see more benefits and fewer barriers to obtaining an HIV test, d) have a more internal locus of control over health in general, and e) have a higher self-efficacy score regarding the self-protective behaviors of discussing condom use and HIV-antibody testing with potential sexual partners. In addition, I hypothesized Testers would report routine practice of other self-protective behaviors (e.g. little drug/alcohol use associated with sexual activity, consistent condom use, fewer sex partners). I hypothesized these differences would exist even after accounting for other sample differences such as gender, age, and location.

PHASE 1

Method

Participants

The participants for Phase 1 were recruited from two sources: the STD clinic at the New Hanover County Health Department (*n*=116) and the introductory psychology student subject pool undergraduate (*n*=113). The reported sexual behavior of the sample was largely heterosexual (male=90% and female=85%), thus the number of self-reported homosexual participants was too small to assess their data as a separate group. To avoid possible confounds, the data from participants who indicated a sexual preference other than exclusively heterosexual were deleted from the sample. Data for 17 health department participants and 10 subject pool students were deleted due to incomplete data or sexual preference. The data for the remaining 99 health department and 103 subject pool participants were used to validate the HIV Testing Attitude Scale.

As previously stated, the sample used for the development of the HTAS measure was a convenience sample of introductory psychology students originally surveyed in 1995 (Boshamer & Bruce, 1999). Table 2 shows a comparison of the characteristics of the Boshamer & Bruce (1999) sample and the current (2000) sample populations. It is important to note differences that exist between the original sample and either of the current research samples of introductory psychology students or health department clients. There are similarities between the student samples in mean age, racial/ethnic composition. However, in the current sample, there was a greater percentage of male respondents, students scores on the HIV Testing Attitude Scale suggested the students held a less favorable attitude toward HIV-antibody testing, fewer students reported

Table 2.

Comparison of 1999 and 2000 Samples Represented as Frequency (Percent)

Variables	1999	Students[4]	HD[4]
Sample *n*	150	103	99
HIV Testing Attitude Scale[1]	71.9(11.2)	68.5(8.9)	74.2(12.0)
Current Age[2]	20.0(3.1)	20.0(4.3)	26.7(7.5)
Age Range	17-37	16-57	18-48
Male	48(31%)	48(47%)[5]	60(61%)[6]
Female	108(69)	55(53)	39(39)
Caucasian	135(87)	90(87)	59(60)[6]
Know someone with HIV or AIDS	50(32)	17(17)[5]	34(34)[6]
Sexually Active	137(91)	82(82)[5]	98(99)[6]
Unplanned pregnancy	-	11(11)	41(43)[6]
Treated for an STD	-	9(9)	42(42)[6]
Had HIV-antibody test	-	26(26)	90(91)[6]
Know someone who is gay, lesbian, bisexual	-	88(85)	70(71)[6]

1 - HTAS: Means(SD), 1-100 scale; higher scores equal more favorable attitude toward HIV testing

2 - Age presented as Mean (Standard Deviation)

3 - Values taken from Boshamer & Bruce (1999)

4 - Student and Health Department clients are from the 2000 sample

5 - 1999 and 2000 student samples differ significantly for all X^2 *(p < 0.05)*

6 - Student and HD samples differ significantly for all X^2 *(p < 0.05)*

knowing someone with HIV or AIDS, and fewer students indicated they were sexually active. In addition, there were differences between the original student sample when compared to the health department sample across each variable assessed, which affects the comparison to the overall data as well.

Procedure

To validate the HTAS (Boshamer & Bruce, 1999) for use with a clinic population, the original preliminary scale of 82 questions (Appendix A) was administered to participants from the STD clinic at the New Hanover County Health Department and the undergraduate psychology student subject pool over a 3-month period. All introductory psychology students were recruited via departmental protocols and received class credit for participation. Clients from the health department were approached individually regarding participation and were also compensated for participation. Each clinic participant who completed the 82–item questionnaire was entered in a raffle for $50 to be held at the end of the research project.

Before starting to collect data at the Health Department, a formal request was made to the Director of Communicable Diseases at the New Hanover County Health Department requesting permission. After approval was received (Appendix B), a meeting was held with the reception and clinic staff to develop a process that would allow researchers to have access to clients but would not violate patient confidentiality nor impede the clinic flow. As a result of this meeting, the following procedure was implemented: After clinic patients checked-in with the clinic receptionist, those who were eligible to participate in the study were called to a private room individually by the researcher. At this time, the research was presented as a study about the general public's

opinions about HIV and STD testing, and the client was offered the option of participating. Clients who agreed to participate were given a clipboard with the questionnaires attached and shown to a seating area separate from the main waiting room; those who declined returned to the waiting area. In order to avoid any undue influence that the interview with the clinic counselor or educator may have on the clinic participant's responses to the scale questions, the clinic patients completed the HTAS and self-efficacy scales prior to being seen by the clinic educator. In order that participant's appointment time could be maintained, once these two questionnaires had been completed, the patient was able to take the clipboard with him or her during the clinic visit and continue to work on the remaining survey information. The participant returned the questionnaires to the researcher or clinic counselor when they were completed.

In addition to the HIV-antibody testing attitude scale, each participant completed a series of demographic questions regarding age, gender, education, and race, as well as questions assessing other variables which may be related to HIV-antibody testing. The wording for these variables was adjusted to be appropriate for the specific sample. For example, students were asked their year in school while health department clients were asked their level of education (Appendix C). Additionally, some of the questions used in Phase 2 of this study were piloted at this time for readability. These questions included information about HIV risk, attitudes toward people with HIV/AIDS, HIV-antibody testing history, likelihood of being tested in the future, perception of personal susceptibility and self-efficacy regarding self-protective behaviors (Appendix D).

Results

Originally, the plan was to develop a tool with which to assess internal and external cues to HIV-antibody testing as a pilot during Phase 1. Unfortunately, many participants simply left this section of the questionnaire blank. Of the participants who did complete these questions, there was very little variability in responses given as advantages or disadvantages to obtaining an HIV test. Consequently, due to the lack of responses and diminished variability of responses gathered, this tool was not developed.

Items on the original 82-item questionnaire (Boshamer & Bruce, 1999) were determined by a panel of experts in the area of AIDS education and HIV prevention to be either a facilitator or barrier attitude to HIV-antibody testing. A facilitator item was defined as being "pro-HIV antibody testing" and a barrier as being "con-HIV antibody testing". For example, agreement with a statement that family or friends would support the decision to have an HIV-antibody test would be considered a facilitator to having an HIV-antibody test, while disagreement with the same statement would represent a barrier to having a test.

Each attitude item on the scales was scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Following the scoring patterns of Boshamer and Bruce (1999), responses on the HTAS were scored so higher scores corresponded with a favorable attitude towards HIV-antibody testing. For responses to facilitators of HIV-antibody testing, strong agreement was scored a 5 and strong disagreement was scored a 1. Responses to barriers to HIV-antibody testing were reverse scored such that strong agreement with these items was scored as a 1 and strong disagreement was scored as a 5. Finally, all scores were converted to a 0 (con) to 100 (pro) scale and interpreted

using the equation: $25(\sum x\text{-}N)/N$, where $\sum x$ equals the sum of the scores and N equals the number of items on the HTAS.

The data obtained from the clinic and subject pool samples were then analyzed separately using corrected item-total correlation. In this analysis, each individual item is correlated with the total scores (minus the score for that particular item). This yields information about which items are most strongly related to overall favorable or unfavorable attitudes regarding HIV-antibody testing. Only items with significant positive correlations are reserved for the final scale, and any item that does not correlate significantly is eliminated. Using an adjusted per comparison error rate of $p < 0.0006$ (Bonferroni correction), any item not significant at this alpha level was discarded.

Thirty-nine items out of the original 82 items were significant for the STD clinic sample with corrected item-total correlations ranging from 0.38 to 0.62; 38 of the original 82 items were significant for the subject pool participants with corrected item-total correlations ranging from 0.38 to 0.54. Significant items for all samples were then compared to the 32-item final version of the HTAS (Boshamer & Bruce, 1999). There were six items that were significant for both clinic and student samples that were not included on the HTAS (Boshamer & Bruce, 1999) scale, and nine items on the HTAS (Boshamer & Bruce, 1999) 32-item scale that did not reach significance for one or both of the current (2000) samples. However, four of these nine items approached significance with corrected item-total correlations ranging from 0.34 to 0.37. The six significant and nine non-significant items included both barriers and facilitators to HIV-antibody testing.

Because the health department participants may not have completed the HTAS questionnaire before meeting with the clinic counselor and going through the HIV and

STD educational session, there could be a source of added error in the health department data. Additionally, there could be further error in the overall sample due to differences between the health department and subject pool data on variables such as age, gender, or location when completing the questionnaire. Consequently, the original 32-item HTAS scale was preserved in its existing order and the six items that were significant for both samples were added to the end of the questionnaire (Table 3).

The similarity in responses between the original and the 2000 student samples seems to point to the continued validity of the HTAS as a measure of attitudes regarding HIV-antibody testing for a student population. Additionally, while the demographics for the health department participants differ significantly from the student samples, similarity in significant items between the two samples supports a generalized use of the HTAS.

PHASE 2

Method

Participants

In Phase 2 of the current study, participants were recruited from the introductory psychology student subject pool, the Student Health Center (SHC), Wilmington Health Access for Teens (WHAT), and the New Hanover County Health Department (HD). As in Phase 1, data were deleted for participants who indicated a sexual preference other than exclusively heterosexual, reported no previous sexual activity, or did not complete the surveys in their entirety.

Students. Originally, the students from the two campus locations were to be analyzed as separate samples. However, there were too few male testers at either location to conduct appropriate statistical analyses. Consequently, the participants from the

Table 3.

Means, Standard Deviations, and Corrected Item-Total Correlations for Each HTAS Item

	HTAS 1999			HTAS 2000		
Scale Items	Mean	*SD*	*r*	Mean	*SD*	*r*
1. HIV testing is not really confidential.	3.40	1.09	0.14	3.89	0.87	0.48
2. HIV test information is kept very confidential by the medical staff who does the testing.	3.5	0.98	0.29	4.02	0.87	0.51
3. My family would support me if I decided to be tested for HIV.	4.28	0.98	0.32	3.99	0.90	0.37
4. I would not want anyone to know if I got an HIV test.	2.50	1.12	0.41	3.02	1.20	0.40
5. My friends would not look down on me if I were tested for HIV.	3.87	1.06	0.56	3.69	1.14	0.37
6. Anyone who is tested for HIV is Disgusting.	4.84	0.48	0.21	4.63	0.67	0.39
7. I would be afraid to get an HIV test because people who test positive cannot get health insurance.	3.65	1.07	0.33	3.74	1.12	0.42

Note: HTAS items are on a 5-point Likert-type scale where 1=Strongly Disagree, 5=Strongly Agree

Table 3. cont.

Scale Items	HTAS 1999			HTAS 2000		
	Mean	*SD*	*r*	Mean	*SD*	*r*
8. People do not assume that everyone who is tested for HIV is infected with HIV.	3.39	1.13	0.14	4.47	0.68	0.50
9. My parents would be upset if they knew I was planning to get tested for HIV.	3.61	1.29	0.43	3.53	1.26	0.40
10. Admitting that you should be tested for HIV means that you have engaged in immoral behavior.	3.94	1.09	0.41	3.9	1.06	0.37
11. My friends would support my decision to get an HIV test.	4.16	0.85	0.59	4.32	0.73	0.48
12. I am afraid that if I were to be tested for HIV, my name would go into public records.	3.54	0.99	0.46	3.75	1.04	0.47
13. HIV tests give accurate results.	3.46	0.84	0.20	0.78	0.73	0.32
14. Anyone who is tested for HIV is dirty.	4.74	0.45	0.32	3.22	1.22	0.41

Note: HTAS items are on a 5-point Likert-type scale where 1=Strongly Disagree, 5=Strongly Agree

Table 3. cont.

Scale Items	HTAS 1999			HTAS 2000		
	Mean	*SD*	*r*	Mean	*SD*	*r*
15. It would be embarrassing to get tested for HIV.	3.56	1.19	0.62	3.76	1.08	0.54
16. I would not consider getting an HIV test because I would be asked about things I have done that could get me into trouble	4.29	0.74	0.44	4.16	0.84	0.48
17. I can talk to my friends about making medical decisions.	4.20	0.76	0.36	3.92	0.93	0.50
18. I would be comfortable talking to an HIV counselor about personal behaviors that place me at risk for HIV infection	3.63	1.00	0.36	3.76	0.99	0.32
19. People would assume I have HIV if I decided to get tested.	3.64	1.06	0.61	3.84	1.00	0.51

Note: HTAS items are on a 5-point Likert-type scale where 1=Strongly Disagree, 5=Strongly Agree

Table 3. cont.

Scale Items	HTAS 1999			HTAS 2000		
	Mean	*SD*	*r*	Mean	*SD*	*r*
20. I could talk to my friends about making the decision to get an HIV test.	4.00	0.89	0.53	3.97	0.94	0.51
21. My friends would look down on me if I were tested for HIV.	4.12	0.98	0.67	3.92	1.18	0.40
22. My friends would not treat me any differently if I were tested for HIV.	3.88	1.02	0.68	3.68	1.26	0.43
23. I am afraid someone would find out I was tested for HIV.	3.42	1.15	0.64	3.83	1.05	0.41
24. Anyone who is tested for HIV is smart.	4.20	0.88	0.17	4.18	0.91	0.39
25. I would be embarrassed if my friends found out I had decided to have an HIV test.	3.87	1.01	0.73	3.37	1.29	0.14
26. I would not get tested for HIV because I would be asked information that was too personal.	4.21	0.66	0.49	4.04	0.72	0.52

Note: HTAS items are on a 5-point Likert-type scale where 1=Strongly Disagree, 5=Strongly Agree

Table 3. cont.

Scale Items	HTAS 1999			HTAS 2000		
	Mean	*SD*	*r*	Mean	*SD*	*r*
27. I trust the HIV test counselors and nurses to keep my information confidential.	3.79	0.90	0.33	4.30	0.95	0.28
28. I do not have time to get an HIV test.	4.07	0.86	0.31	4.05	0.82	0.34
29. It would not bother me if someone I know sees me going to get an HIV test.	3.02	1.21	0.34	4.12	0.95	0.26
30. My friends would treat me badly if I were to be tested for HIV.	4.20	0.86	0.46	4.32	0.90	0.34
31. I could easily discuss HIV testing with my family.	3.25	1.15	0.41	3.23	1.23	0.42
32. My job would be in danger if my boss found out I was tested for HIV.	3.60	0.94	0.23	4.00	1.07	0.44

Note: HTAS items are on a 5-point Likert-type scale where 1=Strongly Disagree, 5=Strongly Agree

Table 3. cont.

Scale Items	HTAS 1999			HTAS 2000		
	Mean	*SD*	*r*	Mean	*SD*	*r*
33. My friends would think I am promiscuous if I decided to get an HIV test.	-	-	-	4.38	0.78	0.40
34. People who get HIV tests must be "loose".	-	-	-	3.95	0.78	0.51
35. I am afraid my family would think I am gay if I were to get an HIV test.	-	-	-	3.73	0.96	0.51
36. I know where to go to get an HIV test.	-	-	-	4.00	0.94	0.52
37. Only IV drug users need to be tested for HIV.	-	-	-	3.74	1.16	0.41
38. HIV testing takes too long.	-	-	-	3.26	0.97	0.39

Note: HTAS items are on a 5-point Likert-type scale where 1=Strongly Disagree, 5=Strongly Agree

Student Health Center and the introductory psychology student subject pool were combined to form one student sample.

One hundred and ninety-three male (n=50) and female (n=143) students from two different campus locations at the University of North Carolina – Wilmington participated in Phase 2. There were eight male Testers and 41 female Testers in the student sample. In addition, the students ranged in age from 17 to 35 years, with an average age of 19.26 years (SD = 2.07). The students in this sample were primarily Caucasian (97%) and freshmen or sophomores (54% and 23%, respectively).

New Hanover County Health Department (HD). Ninety-one clients from the HD consented to participate in the current study (males=41 and females=50). Of the 41 males, 33 were considered Testers, and 40 out of the 50 female participants were Testers. The HD clients ranged in age from 18 to 57 with an average age of 26.03 (SD = 7.72). Fifty-nine percent (n=53) of the HD participants were Caucasian and 31% (n=28) were African American. Ninety-five percent reported at least a high school diploma or GED, with more than 60% of the HD clients indicating some amount of college education.

Wilmington Health Access for Teens (WHAT). Problems similar to those found in the student samples arose in the statistical analysis of the WHAT sample. Because the number of participants from WHAT was quite small (n=33), the number of Testers obtained from this site was small as well. While 12 participants from WHAT were identified as having had an HIV-antibody test, there were no male Testers in this group. Therefore, the WHAT data were analyzed separately from the HD and student samples, both of which had male and female Testers, and only data from the female participants were analyzed for the WHAT sample.

Thirty-three male (*n*=6) and female (*n*=27) participants from WHAT completed the research packets. The age range for WHAT participants was 18 to 23 with a mean age of 19.55 years (*SD* = 1.60). The WHAT sample was largely Caucasian (79%) with 85% reporting at least a high school diploma or GED, and approximately 60% indicating some level of college education.

Procedure

Data collection was conducted at the health facilities in the same manner as Phase 1. Clients at each facility who were eligible to participate in the study were approached individually. Individuals who chose to participate were given a clipboard and shown to an area separate from the common waiting area to complete the questionnaires prior to being seen by the clinic counselor or educator. Clipboards with completed research surveys were returned to the researcher or facility staff.

Students from the introductory psychology subject pool received class credit for their participation. As in Phase 1, participants from the health facilities were also compensated for participation in the research project. The name of each participant who completed the research packet at the SHC, HD, or WHAT was entered in a raffle for $50, which was held at the end of the study.

Materials. In addition to the revised version of the HTAS, participants completed location appropriate demographic questions, self-protective information, and scales addressing specific components of the health belief model. As the purpose of Phase 2 was to assess self-protective behaviors and attitudes regarding HIV-antibody testing, the revised HTAS and self-protective efficacy questionnaires were always the first and

second surveys in the packet, followed by the demographic information. Remaining measures were administered in random order.

Demographic Information. All participants completed information regarding their age, gender, race, and education on a demographic questionnaire (Appendix C). Participants also provided information regarding other predictor variables such as age of first coitus, whether they were currently sexually active, how often they engaged in self-protective behaviors (e.g. condom use, refraining from drug or alcohol use before or during sex), and whether they had ever had an HIV-antibody test.

Self-efficacy Scale. A Self-efficacy scale (SES; Appendix E) assessing self-efficacy regarding performance of the specific self-protective behaviors of discussing condom use and HIV-antibody testing with potential sex partners and plans for future adherence to safer sex practices was developed during Phase 1. The SES uses a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with responses scored so higher scores correspond with a greater level of self-protective self-efficacy. Sample statements included "I have discussed safer sex with my past sex partner(s)" and "I have discussed HIV testing with my current sex partner(s)". Cronbach's alpha for the current samples ranged from 0.75 to 0.87.

AIDS Health Belief Scale. The AIDS Health Belief Scale (AHBS; Zagumny & Brady, 1998; Appendix F) has four subscales to assess four components of the HBM: perceived susceptibility, severity, benefits of condom use and barriers to condom use. Each subscale of the AHBS is a 4-item measurement using a 6-point Likert-type scale with higher scores indicating a higher degree of agreement or belief. Perceived severity subscale statements include "I would rather have any other terminal illness than AIDS,"

and perceived benefits to condom use subscale statements include "I think it is worth the effort to have condoms readily available". Zagumny & Brady report high internal consistency for the AHBS with Cronbach's alpha ranging from 0.82 to 0.93. The Cronbach's alphas for the current study ranged from 0.91 to 0.93. Each subscale of the AHBS was used in data analysis.

Health Locus of Control. The Health Locus of Control (HLOC; Wallston et al., 1976; Appendix G), an 11-item scale, will be used to assess general perceptions of self-efficacy related to health-related behaviors and perceptions of personal control over health, which speaks directly to the HBM component of cues. The HLOC uses a 6-point Likert-type scale scored in the external direction with higher scores indicating an external point of view. Sample statements include: "If I take care of myself, I can avoid illness" and "I am directly responsible for my health." Wallston et al report the HLOC shows adequate internal consistency with Cronbach's alpha = 0.54. The current samples' Cronbach's alphas ranged from 0.32 to 0.56.

Marlow-Crowne Social Desirability. The 33-item Marlow-Crowne Social Desirability (SD; Marlow-Crowne, 1972; Appendix H) scale assesses the common issue of validity of self-report data. The SD is a true/false scale with 18 items in the true direction and 15 items in the false direction with high scores indicating more socially desirable answers. Sample items include: I like to gossip at times" and "When I don't know something, I don't mind admitting it." The MCSD shows good internal consistency with Cronbach's alpha = 0.88; current samples ranged from 0.73 to 0.81.

Statistical Analysis

Because gender and sample location of participants were possible confounding variables, a 2 x 2 x 2 MANOVA was used to determine the independent and interactive effects of tester status, gender, or sample location (students vs. health department). The following dependent variables were entered in the MANOVA: HTAS, SES, AHBS, HLOC, SD, HIV-testing status, likelihood of obtaining and HIV test within next 12 months, knowledge of self-protective behaviors, perception of personal susceptibility to HIV, condom use within the last 3 months, drug/alcohol use associated with sexual activity, comfort level regarding living with an individual with HIV, age of first coitus, and current age. Chi-square analysis was used to determine if tester status, gender, and sample location were related to ethnicity or history of high risk behaviors that were reported using a nominal scale. Stepwise multiple regression analysis was used to determine which of the dependent variables best predicted participant's reported likelihood to obtain an HIV test.

Results

Students and New Hanover County Health Department

Table 4 shows a comparison for Testers and Non-testers in the student and HD samples by gender for the dependent variables. As can been seen in the table, differences are apparent for many of the predictor variables between the student and HD samples, between males and females within each sample, as well as between males and females across locations (i.e. HTAS scores, HIV-antibody testing status, and condom use).

MANOVA Analysis. The MANOVA results (Table 5) indicate a significant 3-way interaction (tester status by location by gender) as well as significant main effects of

Table 4.

Means(SD) for Dependent Variables in the MANOVA by Sample, Gender, Test Status

	Male Students[1]		Female Students[1]	
Variable	Tester	Non-Tester	Tester	Non-Tester
HIV Testing Attitudes Scale	75.2(13.6)	68.1(8.9)	78.4(10.7)	71.7(11.5)
Self-efficacy Scale	77.6(11.1)	68.5(11.3)	79.9(11.8)	70.8(10.4)
Health Locus of Control Scale	55.1(9.9)	58.9(11.6)	59.9(11.6)	54.2(9.5)
AIDS Health Belief Scale	65.8(9.5)	63.7(6.9)	67.3(8.7)	65.3(7.9)
Social Desirability Scale	12.8(4.4)	13.7(4.7)	15.6(5.5)	15.0(4.9)
Current Age	20.6(2.0)	19.7(1.6)	19.7(3.1)	18.9(1.7)
Age at first coitus	16.8(1.2)	16.9(1.2)	16.1(1.4)	16.6(1.4)
Number of sex partners within the last 3 months	1.6(1.8)	1.6(1.7)	1.1(0.73)	1.2(0.96)
Knowledge of safer sex techniques[3]	8.9(1.1)	7.7(1.7)	8.7(1.5)	8.3(1.7)

1 - Student data combined from campus locations (subject pool and health center)

2 – Clients from New Hanover County Health Department

3 - Variable is on a scale of 1-10, with 10 indicating greater knowledge

4 - Variable is on a scale of 1-10, with 10 indicating more consistent condom use

5 - Variable is on a scale of 1-10, with 10 indicating greater susceptibility

6 - Variable is on a scale of 1-10, with 10 indicating greater likelihood

7 - Variable is on a scale of 1-10, with 10 indicating greater substance use

8 - Variable is on a scale of 1-10, with 10 indicating greater comfort level

Table 4. cont.

Variable	Male Students[1]		Female Students[1]	
	Tester	Non-Tester	Tester	Non-Tester
Condom use within the last 3 months[4]	5.4(3.7)	6.4(3.1)	6.2(3.7)	6.2(3.7)
Perception of personal susceptibility[5]	2.5(2.9)	2.8(1.7)	2.7(1.5)	2.4(1.5)
Likely to have HIV test within the next year[6]	4.1(4.0)	2.4(2.7)	5.0(3.7)	1.5(2.5)
Drug/alcohol use with associated with sex[7]	7.5(2.9)	3.7(2.9)	2.9(2.3)	2.7(2.1)
Know a person living with HIV or AIDS	6.3(3.3)	5.7(2.6)	6.5(2.7)	5.7(2.4)

1 -Student data combined from campus locations (subject pool and health center)

2 - Clients from New Hanover County Health Department

3 - Variable is on a scale of 1-10, with 10 indicating greater knowledge

4 - Variable is on a scale of 1-10, with 10 indicating more consistent condom use

5 - Variable is on a scale of 1-10, with 10 indicating greater susceptibility

6 - Variable is on a scale of 1-10, with 10 indicating greater likelihood

7 - Variable is on a scale of 1-10, with 10 indicating greater substance use

8 - Variable is on a scale of 1-10, with 10 indicating greater comfort level

Table 4. cont.

Variable	Male HD[2]		Female HD[2]	
	Tester	Non-Tester	Tester	Non-Tester
HIV Testing Attitudes Scale	71.5(12.7)	68.5(11.7)	76.5(13.3)	76.3(12.0)
Self-efficacy Scale	73.1(14.3)	67.8(7.3)	82.9(12.8)	73.5(20.1)
Health Locus of Control Scale	54.9(7.2)	56.3(10.6)	55.9(10.5)	54.8(6.8)
AIDS Health Belief Scale	68.5(8.9)	67.6(12.4)	68.9(11.2)	71.0(10.2)
Social Desirability Scale	18.2(6.1)	15.4(7.1)	17.6(5.6))	18.5(4.1)
Current Age	25.9(6.6)	22.1(3.6)	26.9(9.2)	26.0(7.2)
Age at first coitus	15.2(2.8)	15.5(0.92)	16.3(2.1)	15.3(1.6)
Number of sex partners within the last 3 months	2.1(2.63)	1.1(0.64)	1.6(1.4)	1.3(0.94)
Knowledge of safer sex techniques[3]	7.8(2.1)	7.1(2.7)	8.7(1.8)	7.2(3.0)

1 - Student data combined from campus locations (subject pool and health center)

2 - Clients from New Hanover County Health Department

3 - Variable is on a scale of 1-10, with 10 indicating greater knowledge

4 - Variable is on a scale of 1-10, with 10 indicating more consistent condom use

5 - Variable is on a scale of 1-10, with 10 indicating greater susceptibility

6 - Variable is on a scale of 1-10, with 10 indicating greater likelihood

7 - Variable is on a scale of 1-10, with 10 indicating greater substance use

8 - Variable is on a scale of 1-10, with 10 indicating greater comfort level

Table 4. cont.

Variable	Male HD[2]		Female HD[2]	
	Tester	Non-Tester	Tester	Non-Tester
Condom use within the last 3 months[4]	5.0(3.1)	6.7(2.6)	4.9(2.8)	4.5(2.7)
Perception of personal susceptibility[5]	3.8(1.9)	4.0(2.2)	3.8(2.3)	5.4(2.9)
Likely to have HIV test within the next year[6]	6.2(3.8)	4.8(3.0)	6.4(3.6)	4.6(3.0)
Drug/alcohol use with associated with sex[7]	3.5(2.7)	5.1(2.3)	3.8(3.0)	3.5(2.5)
Know a person living with HIV or AIDS	4.5(2.3)	5.0(3.0)	5.1(2.9)	4.0(2.6)

1 - Student data combined from campus locations (subject pool and health center)

2 - Clients from New Hanover County Health Department

3 - Variable is on a scale of 1-10, with 10 indicating greater knowledge

4 - Variable is on a scale of 1-10, with 10 indicating more consistent condom use

5 - Variable is on a scale of 1-10, with 10 indicating greater susceptibility

6 - Variable is on a scale of 1-10, with 10 indicating greater likelihood

7 - Variable is on a scale of 1-10, with 10 indicating greater substance use

8 - Variable is on a scale of 1-10, with 10 indicating greater comfort level

Table 5.

2 x 2 x 2[1] MANOVA for Student and Health Department Participants

Effect	Λ	*F*	*df*	*p*
HIV Testing Status	0.85	2.64	(16, 246)	0.0007
Location	0.72	6.13	(16, 246)	0.0001
Gender	0.89	1.92	(16, 246)	0.019
HIV Testing Status x Location	0.91	1.53	(16, 246)	0.088
HIV Testing Status x Gender	0.94	1.07	(16, 246)	0.385
Location x Gender	0.93	1.14	(16, 246)	0.321
HIV Testing Status x Location x Gender	0.90	1.71	(16, 246)	0.045

1 - HIV Testing Status (tester/non-tester) x Location (campus/health department) x Gender (male/female)

HIV test status, location, and gender. Post-hoc univariate analysis indicated the 3-way interaction was significant for only two dependent variables: the use of drugs or alcohol associated with sexual activity and social desirability [F (1, 261) = 8.40, $p < 0.004$ and F (1, 261) = 4.19, $p < 0.04$, respectively]. To further analyze the triple interaction for these variables, the data were sorted by location and 2-way post-hoc general linear model (GLM) analysis of the data was conducted.

On further analysis, the social desirability scale yielded no significant effects for the health department sample. In the student sample, there was only a main effect for gender [F (3, 189) = 4.42, $p < 0.04$] with females giving more socially desirable answers than males (females = 15.2 and males = 13.4).

The post-hoc GLM analysis for drug/alcohol use associated with sexual activity also yielded no significant differences for the health department sample. However, in the student sample, a significant interaction between HIV testing status and gender [F (3, 189) = 12.34, $p < 0.0006$] was found. Post-hoc analysis of this interaction determined there were no significant differences between female Testers and Non-testers in the student sample regarding drug/alcohol use with sexual activity ($p > 0.05$). However male Testers reported a greater number of instances of sexual activity associated with drug/alcohol than Non-testers ($p > 0.05$).

The post-hoc univariate analysis confirmed only significant main effects for the other dependent variables (Table 6). Testers scored significantly higher than Non-testers on HTAS (Tester M=75.57, Non-tester M=70.60), SES (Tester M=79.13, Non-tester M =70.11), and rating of knowledge regarding self-protective behaviors (Tester M=8.48, Non-tester M=7.98). Testers were significantly older than Non-testers (Tester M=23.84

Table 6.

Significant Main Effects from Univariate Analyses

Variable	*F*	*df*	*p*
HIV Testing Status			
HTAS	7.07	(7, 261)	0.008
SES	17.25	(7, 261)	0.0001
Current age	5.03	(7, 261)	0.03
Knowledge of self protective behaviors	12.08	(7, 261)	0.0006
Gender			
HTAS	4.93	(7, 261)	0.03
SES	5.03	(7, 261)	0.03
Location			
Susceptibility subscale of AHBS	6.91	(7, 261)	0.009
Comfort living with person with HIV/AIDS	10.21	(7, 261)	0.002
Current age	37.74	(7, 261)	0.0001
Age of first coitus	12.96	(7, 261)	0.0004
Knowledge of self protective behaviors	6.64	(7, 261)	0.01
Perception of personal susceptibility	23.06	(7, 261)	0.0001

and Non-tester *M*=19.56). Gender effects were only significant for two variables with females scoring higher than males for both: HTAS (males *M*=69.88, females *M*=74.07) and SES (males *M*=70.99 and females *M*=75.39). The main effects of location were significant for the susceptibility subscale of the AHBS (HD *M*=59.63, students *M*=49.56), knowledge regarding self-protective behaviors degree (HD *M*=8.27, students *M*=8.05), of comfort living with an individual who has HIV (HD *M*=4.69, students *M*=5.90), current age (HD *M*=25.91, students *M*=19.32), age of first coitus (HD *M*=15.67, students *M*=16.56), and perceptions of personal susceptibility (HD *M*=3.88, students *M*=2.55), with the health department clients consistently scoring higher than the student sample except for comfort living with an individual infected with HIV.

Stepwise Multiple Regression. Stepwise multiple regression was conducted on the student and HD samples separately using the self-reported likelihood of obtaining an HIV-antibody test within the next 12 months as the criterion variable. For the student sample, 8% of the variance could be accounted for by HTAS scores [F (1, 83) = 7.18, $p <$ 0.009]. No other variables were related to the likelihood of getting an HIV test. In the HD sample, HTAS scores, SES scores, perception of personal susceptibility to HIV, and drug/alcohol use associated with sexual activity were significant predictors and accounted for 28% of the variance [F (4, 179) = 17.51, $p < 0.0001$; see Table 7].

Chi-square. Chi-square analysis of the descriptive variables yielded two significant differences between testers and non-testers when sorted by location: number of times treated for a sexually transmitted disease (HD: χ^2 (1) = 7.78, $p < 0.005$; students: χ^2 (1) = 12.06, $p < 0.001$) and number of unplanned pregnancies (HD: not significant;

Table 7.

Significant Predictor Variables for Likelihood of Obtaining an HIV Test

Variable	*B*	*F*	*p*
HIV Testing Attitude Scale	0.0573	7.78	0.006
Self-efficacy Scale	0.0786	15.47	0.0001
Drug/alcohol use associated with sex	0.2233	7.55	0.007
Perception of personal susceptibility	0.5517	18.37	0.0001

Table 8.

Means(SD) for WHAT[1] Sample for Predictor Variables

Variable	Tester	Non-testers
Current Age	21.0(1.7)	19.0(1.3)
Age at first coitus	16.0(2.4)	17.0(2.2)
Number of sex partners within last 3 months	1.3(1.2)	1.3(0.5)
Knowledge of safer sex methods[2]	9.1(1.2)	7.3(2.6)
Condom use within the last 3 months[3]	6.3(2.9)	6.5(3.3)
Perception of personal susceptibility[4]	3.4(1.7)	4.3(3.2)
How likely to get HIV test within year[5]	6.2(3.6)	3.2(2.1)
Drug/alcohol use associated with sex[6]	3.3(2.3)	3.3(1.8)
Comfort living with person with HIV or AIDS[7]	4.5(2.4)	3.7(2.1)

1 - Wilmington Health Access for Teens

2 - Variable is on a scale of 1-10, with 10 indicating greater knowledge

3 - Variable is on a scale of 1-10, with 10 indicating more consistent condom use

4 - Variable is on a scale of 1-10, with 10 indicating greater susceptibility

5 - Variable is on a scale of 1-10, with 10 indicating greater likelihood

6 - Variable is on a scale of 1-10, with 10 indicating greater substance use

7 - Variable is on a scale of 1-10, with 10 indicating greater comfort level

students: χ^2 (1) = 6.23, $p < 0.04$). For both dependent variables, Testers scored higher than Non-testers.

Wilmington Health Access for Teens

Table 8 shows a comparison of sample characteristics for Testers and Non-testers in the WHAT sample. As can been seen from the table, differences are apparent for many of the predictor variables (i.e. knowledge of self-protective methods, age at first coitus, and). To determine if the differences between Testers and Non-testers evident in the table were significant, a MANOVA was run.

Main Effects. The overall MANOVA run on the data for the WHAT sample was not significant [F (1, 24) = 0.69, $p < 0.76$], indicating that Testers and Non-testers in this sample of females did not differ.

Stepwise Multiple Regression. Stepwise multiple regression was also conducted on the WHAT sample data using the likelihood of obtaining an HIV-antibody test as the criterion variable. Only one variable (alcohol use associated with sexual activity) was a significant predictor ($p < 0.02$), accounting for 19% of the variance [F (1, 24) = 5.78, $p < 0.02$].

Chi-square. Chi-square analysis of the data from the WHAT sample found no significant differences between Testers and Non-testers for the nominal predictor variables (e. g. race, number unintended pregnancies, treatments for STD's, individuals who know someone infected with HIV).

Discussion

The Health Belief Model has been utilized to examine a variety of preventive health behaviors ranging from smoking cessation to dental flossing to exercise. Further,

the core components of the model (i.e. perceived personal susceptibility to the disease, perceived severity of the disease, benefits of engaging in a preventive behaviors, and costs associated with those behaviors), as well as expanded components (i.e. cues to engage in the prescribed behavior and self-efficacy to perform that behavior) have been used to examine specific behaviors associated with the prevention of sexually transmitted diseases, including HIV. While the majority of this research has focused on condom use as a preventive behavior for HIV prevention (Basen-Enquist, 1994; Mahoney et al., 1995; Winfield & Whaley, 2002; Wulfert & Wan, 1993), limited information is available regarding the specific health protective behavior of obtaining an HIV-antibody test within the components of the model (Maguen, Armistead, & Kalichman, 2000; Flowers, Duncan, & Knussen, 2003).

Phase 1 of the current study assessed the generalized use of the HIV testing attitude scale (HTAS; Boshamer & Bruce, 1999). The appropriateness of this scale to investigate HIV testing attitudes in other populations in addition to college populations is evidenced by strong correlations for similar items from the original 82 questions developed by experts in the field for Boshamer & Bruce (1999). One noted difference was that current HD participants did not have the same logistical concerns as the Boshamer & Bruce (1999) or current student sample. This may be explained by the fact that HD participants were in a facility where counselors educated and encouraged HIV-antibody testing during most client contacts. Although the University of North Carolina – Wilmington student health center started providing HIV-antibody testing during the fall semester of 2000, at the time of this study, this was still a new service of which very few students were aware.

As previously stated, much research regarding HIV prevention has investigated the self-protective behavior of condom use, in Phase 2 of the current study, the components of the HBM were used to assess the specific self-protective behavior of obtaining an HIV-antibody test. As with previous research, the hypotheses set forth in this study found mixed support for the HBM across the three samples.

As hypothesized, there were no significant differences between Testers and Non-testers regarding perceptions of HIV infection and AIDS as severe health concerns and similar levels of knowledge regarding the disease were reported across all research locations. This finding may be because information regarding HIV infection and AIDS is readily available in the media. Thus, Testers and Non-testers appear to have similar awareness and health beliefs regarding HIV. However, it is important to remember that previous research indicates that knowledge alone is not an adequate motivator to change behavior regarding health practices (Baldwin & Whitley, 1990; DiClemente, 1994; Jemmott, Jemmott & Fong, 1992).

There were mixed results regarding the hypotheses that there would be a quantifiable difference between Testers and Non-testers in perceptions of benefits and barriers to obtaining an HIV-antibody test. There were significant differences in HTAS scores in the student and HD samples with Testers consistently scoring higher, which supported the hypothesis that Testers have a more positive attitude toward and see more benefit from obtaining an HIV-antibody test than Non-testers. However, this hypothesis was not supported in the WHAT sample, as there were no significant differences in HTAS scores between the Testers and Non-testers for this group.

Significant differences between Testers and Non-testers were also hypothesized for perceptions of personal susceptibility and self-efficacy for performing other self-protective behaviors. While there were no significant differences between Testers and Non-testers regarding perceptions of personal susceptibility to HIV infection, there were differences for self-efficacy, with Testers scoring significantly higher than Non-testers in their confidence to perform other self-protective behaviors (e.g. talking with potential sex partners regarding condom use and HIV-antibody testing).

The lack of significant differences between Testers and Non-testers regarding personal susceptibility may be viewed two ways. First, it may be that Testers are the "worried well" who do not truly see themselves as at risk for HIV, but are motivated to be tested for some other reason, whether it be at a partner's request or for personal sense of relief. In fact, Flowers et al. (2003) found that "peace of mind" was a common reason given for choosing to have an HIV-antibody test for those individuals who expected that their test results would be negative. Conversely, for those individuals in the same study who expected to have a positive test result, not knowing their HIV status was reportedly preferable to knowing that they were HIV positive. Thus, it may be that Non-testers see themselves as just as susceptible to HIV as those who choose to obtain an HIV-antibody test, but do not obtain the test out of anxiety about the results or fear of their ability to cope with the test results. This is further supported in the findings associated with Conley et al. (1999) MACS study and the theory posited by Wilson et al. (1999) regarding the lack of women returning for HIV-antibody tests who had stated they would return.

Testers were hypothesized to see themselves as having more control over whether or not they contract HIV infection than Non-testers as evidenced by a lower score on the

Health Locus of Control Scale and reporting routine practice of other self-protective behaviors. However, there were no significant differences between Testers and Non-testers on the HLOC. The HLOC mean scores for each location ranged from 53.3 to 59.9 for Testers, while Non-testers mean scores ranged from 50.8 to 58.5. Recall that the HLOC is a 100-point scale with higher scores indicating a view more external control view regarding health issues. Thus, in the current study Testers and Non-testers appeared to hold similar views regarding their level of control over contracting the HIV infection. Such similar mid-range scores with limited variability could be due to a number of reasons: the scale is either not appropriate with the current samples, may be outdated, or was not given due attention by the participants.

Recent studies suggest that the construct of health locus of control has very limited predictive value in populations of women who have been victims of abuse (Simoni & Ng, 2002) or perceive themselves as having less power than their dating partners (Rosenthal, et al., 2002). Statistics suggest that approximately 1 in every 3 women world wide has been physically beaten, the victim of non-consentual sex, or abused in some other manner during her lifetime (Heise, Ellsberg, & Gottemoeller, 1999). Furthermore, in the United States, 1 in 5 high school girls report having been the victim of sexual and/or physical abuse by a romantic partner (Silverman, Raj, Mucci, & Hathaway, 2001). Thus, perceptions of personal power and control in a relationship may be greatly impact preventive behaviors directly related to sexual activity. The participants in the current study were primarily female (69%), which may influence perceptions of locus of control and efficacy.

Significant differences were found between Testers and Non-testers for age at the time of assessment, HTAS, SES, knowledge of self-protective behaviors, and alcohol use associated with sexual behaviors. Testers were older, had more favorable attitudes toward testing, reported greater self-efficacy, reported higher levels of knowledge regarding self-protective behaviors, and were more likely to have used alcohol when engaging in sexual activity. Intuitively, one would expect an individual who has had an HIV-antibody test to have a more favorable attitude toward the test than an individual who did not engage in that same behavior. Alcohol is considered a disinhibitor for most individuals, as such, alcohol use has been correlated with an increase in risky sexual behavior. Thus, if an individual perceived their behavior as putting him or herself at risk for HIV, the decision to obtain an HIV-antibody test may be based upon risky sexual behavior associated with alcohol use.

In addition, significant gender differences were also found for HTAS and SES, with female participants having more favorable attitudes toward HIV testing as well as greater degrees of reported self-efficacy. Furthermore, significant differences were found between location samples with participants from the New Hanover County Health Department STD clinic being older at the time of assessment and younger at the age of first coitus, indicating greater personal susceptibility, expressing more comfort level living with a person infected with HIV or AIDS. Student participants indicated a greater amount of knowledge regarding prevention.

Neither the MANOVA and Chi-square analyses for the WHAT sample were significant. In fact, the only significant finding in the WHAT sample was found via the stepwise regression. Alcohol and drug use associated with sexual activity was a

significant predictor of whether or not a participant reported an intention to have an HIV-antibody test within the next year with Testers reporting a higher degree of intent. The lack of significant findings in this sample may be due to the small overall sample size *(n*=27), small number of Testers (*n*=12), lack of variability within the sample, or some unknown variable.

Limitations of the Current Research

One major limitation of the current study was the overall lack of participants at certain locations, and more specifically the general lack of male Testers. There were very few male Testers outside of the health department (HD) location, resulting in all data from students from the University of North Carolina – Wilmington (UNCW) campus being combined for analysis, and only using data from females at the Wilmington Health Access for Teens (WHAT). This low number of male participants in the current study limits the generalizability of the findings.

Other limitations of the current study include the selection process of participants and self-report nature of the data. To minimize the self-selection process by participants as they signed-up, suggestions found in Weinhardt et al. (1991) were followed, and the current study was posted as being about "Attitudes and Behavior" with no mention of sexuality or HIV on the sign-up sheet. In a further attempt to minimize these problems, anonymity of responses to survey questions was stressed so that participants felt comfortable answering honestly. Finally, care was taken to avoid misinterpretation of specific items. Questions regarding behavior (e.g. sexual activity, condom use) were very specific with timeline indicators or definitions where appropriate (i.e. *On this*

questionnaire, sex is defined as any act of oral, vaginal, or anal intercourse. or *Have you had sex in the last 3* months?).

In addition, the participants from the UNCW campus were recruited from two distinct groups: the introductory psychology subject pool and the student health center (SHC). It seems the saliency of health concerns for these two groups would be quite different. At the very least, the environment in which they completed their questionnaire was functionally different. Students at the SHC were in a medical facility with educational material available and in plain view, including information about STD and HIV-antibody testing and were approached individually by a researcher regarding participation. Subject pool participants signed up for the study on a sign-up sheet to receive class credit and completed the questionnaires in a classroom with no health information visible.

The overall number of participants from the WHAT facility was small, due in part to the age requirements of the study; participants had to be 18 years or older. In addition, there were only a very small number of male participants with no male Testers identified. Having an exclusively female sample from the WHAT location meant this sample could not be analyzed with the student and HD samples, both of which had male Testers.

The Cronbach's alphas obtained in the current study for the Health Locus of Control (HLOC) scale were surprisingly low, ranging from .32 to .56. These low figures may be the result of participant error. Participants may not have understood the questions or may have lost interest or been fatigued when completing the HLOC due to the number of other questionnaires. However, other than the HIV testing and self-efficacy scales, the order of the remaining questionnaires was randomized to reduce such order effects. The

HLOC was developed by Wallston et al. in 1976. Consequently, validation of the items in the HLOC with factor analysis is warranted.

Implications for Future Research

The overall lack of male Testers in the current study might suggest that males are less likely to obtain an HIV-antibody test, or that males are less likely to participate in survey research with a raffle drawing, or simply that males are less likely to attend the facilities where the data was gathered. The driving force behind the minimal representation of male Testers cannot be discerned from the current study. Consequently, this study should be replicated with care taken to increase the number of male participants. This may be accomplished by collecting data for a longer period of time, from different facilities, and/or with a different incentive to complete the research packet.

Although item-total correlations for the original set of 82 questions for the HTAS were quite similar between the Boshamer & Bruce (1999) 1995 sample and the current samples, there were differences in significant items. This may indicate a general change in attitudes regarding HIV-antibody testing or may be due to differences in concerns and attitudes between a college student population and a health department population. Therefore, further assessment of the HTAS is warranted, and items on the HTAS should be validated with factor analysis for a college population and generalized use.

Finally, at the time the current study was conducted, an HIV-antibody test was almost exclusively done via drawing blood. However, with recent technological advances, saliva may also be reliably tested for HIV antibodies. As some individuals have fears associated with needles and having their blood drawn, they may avoid having an HIV-antibody test because of the collection process. Recent research indicates that,

when given an option, individuals in a substance abuse treatment facility (Pugatch et al., 2001) and adolescents being held in detention and juvenile justice facilities (Bauserman, Ward, Eldred, & Swetz, 2001) would prefer to have an oral as opposed to blood HIV-antibody test. Thus, more comprehensive research regarding HIV-antibody testing should consider using this new form of testing procedure.

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APPENDIX

Appendix A. Preliminary 82-item HTAS questionnaire

HTAS

Please use the following scale to respond to the statements:

SA: Strongly Agree
A: Agree
N: Neither agree nor disagree
D: Disagree
SD: Strongly Disagree

_____ 1. My friends would look down on me if I were tested for HIV.

_____ 2. I do not need to be tested for HIV because I do not think I have the infection.

_____ 3. HIV tests are too expensive.

_____ 4. I would be tested for HIV if I knew where to go for a test.

_____ 5. HIV tests should always be free.

_____ 6. I am afraid someone would find out I was tested for HIV.

_____ 7. My friends would treat me badly if I were to be tested for HIV.

_____ 8. My job would be in danger if my boss found out I was tested for HIV.

_____ 9. My friends would support my decision to get an HIV test.

_____ 10. My friends would think I am promiscuous if I decided to get an HIV test.

_____ 11. I would not want anyone to know if I got an HIV test.

_____ 12. There is no need to get an HIV test because what you don't know won't hurt you.

_____ 13. I would be afraid to get an HIV test because people who test positive cannot get health insurance.

_____ 14. Anyone who is tested for HIV must be concerned about his or her health.

_____ 15. It would be scary to get an HIV test.

_____ 16. Only gay people need to be tested for HIV.

_____ 17. I would be scared to know the results of an HIV test.

_____ 18. I would not want to know if I were HIV positive.

SA: Strongly Agree
A: Agree
N: Neither agree nor disagree
D: Disagree
SD: Strongly Disagree

_____ 19. I am afraid my friends would think I am gay if I get tested for HIV.

_____ 20. People who get HIV tests must be "loose".

_____ 21. Because so many people in my community have HIV/AIDS, I should get an HIV test.

_____ 22. My friends would not treat me any differently if I were tested for HIV.

_____ 23. I could talk to my friends about making the decision to get an HIV test.

_____ 24. Admitting that you should be tested for HIV means that you have engaged in immoral behavior.

_____ 25. It is important to know your HIV status, so that if your are positive you will not infect others.

_____ 26. I don't know where HIV tests are given.

_____ 27. There is no reason to get tested for HIV, because all it can tell is whether you are dying or not.

_____ 28. Anyone who is tested for HIV is disgusting.

_____ 29. Anyone who is tested for HIV is smart.

_____ 30. People would assume I have HIV if I decided to get tested.

_____ 31. I do not care if I have HIV or not.

_____ 32. I do not know what behaviors place me at risk for HIV.

_____ 33. I trust the HIV test counselors and nurses to keep my information confidential.

_____ 34. I would not get tested for HIV because I would be asked information that was too personal.

_____ 35. I am afraid my family would think I am gay if I were to get an HIV test.

_____ 36. I think that people who test positive for HIV lose their jobs.

_____ 37. Anyone who is tested for HIV must be concerned about their sexual partner's health.

_____ 38. I do not have time to get an HIV test.

SA: Strongly Agree
A: Agree
N: Neither agree nor disagree
D: Disagree
SD: Strongly Disagree

_____ 39. Waiting to get the result of an HIV test would be too scary.

_____ 40. I am afraid that if I were to get tested for HIV my name would go into public records.

_____ 41. I would be more likely to get tested for HIV if my friends also decided to get tested.

_____ 42. Knowing the result of you HIV test would be better than not knowing.

_____ 43. I would not consider getting an HIV test because I would be asked about things I have done that could get me into trouble.

_____ 44. I think doctors do not like to treat people who test positive for HIV.

_____ 45. HIV test are not accurate.

_____ 46. Anyone about to enter a new relationship should be tested for HIV.

_____ 47. Knowing whether or not I have HIV would be the last thing I would want to know.

_____ 48. HIV test information is kept very confidential by the medical staff who does the testing.

_____ 49. It would be embarrassing to get tested for HIV.

_____ 50. My parents would be upset if they knew I was planning to get tested for HIV.

_____ 51. My family would support me if I decided to be tested for HIV.

_____ 52. I would not want to be asked about illegal behavior if I were to be tested for HIV.

_____ 53. I would be embarrassed to talk to an HIV counselor about personal behaviors that place me at risk for HIV infection.

_____ 54. I am concerned about the confidentiality of HIV tests.

_____ 55. Not knowing your HIV test result would be more stressful than knowing it.

_____ 56. I do not know what happens when you get an HIV test.

_____ 57. People assume that everyone who is tested for HIV is infected.

_____ 58. Anyone who is tested for HIV is dirty.

SA: Strongly Agree
A: Agree
N: Neither agree nor disagree
D: Disagree
SD: Strongly Disagree

_____ 59. I could easily discuss HIV with my family.

_____ 60. It would not bother me if someone I know sees me going to get an HIV test.

_____ 61. Anyone planning to have children should be tested for HIV.

_____ 62. It would be embarrassed if my friends found out I had decided to get an HIV test.

_____ 63. I am afraid of medical procedures that involve needles.

_____ 64. You have to reveal too much private information if you decide to get an HIV test.

_____ 65. My friends would not look down on me if I were to be tested for HIV.

_____ 66. HIV or AIDS only affects people in other parts of the country.

_____ 67. I could never talk to my friends about making the decision to get an HIV test.

_____ 68. Even if I knew my HIV test result, I would not change my behavior.

_____ 69. HIV tests give accurate results.

_____ 70. Having to wait for an HIV test result would be agonizing.

_____ 71. HIV testing is not really confidential.

_____ 72. People should get an HIV test about once a year.

_____ 73. It would be easier for someone to deny they are at risk for HIV than to admit they need to be tested.

_____ 74. I know where to go to get an HIV test.

_____ 75. Only IV drug users need to be tested for HIV.

_____ 76. I am concerned about my health.

_____ 77. HIV/AIDS is a problem in my community.

_____ 78. I can talk to my friends about medical decisions.

_____ 79. HIV testing locations are convenient.

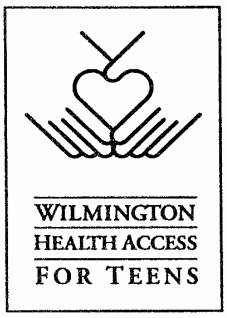
_____ 80. HIV testing takes too long.

SA: Strongly Agree
A: Agree
N: Neither agree nor disagree
D: Disagree
SD: Strongly Disagree

_____ 81. I would have trouble getting transportation to an HIV testing site.

_____ 82. Only people under 30 really need to be tested for HIV.

Appendix B. Letter of support from health facility for research participation.



August 16, 2000

Dr. Kate Bruce, Dept. of Psychology
UNC Wilmington
601 S. College Rd.
Wilmington, NC 28403

Dear Dr. Bruce,

Lori Walker has requested that her master's thesis/project involve interviewing patients at the Wilmington Health Access for Teens. She has discussed her proposal and schedule with me and I look forward to her participation with us. There should be no conflict or interference with my clinical practice.

Sincerely,

Elizabeth Deaton

Elizabeth (Beth) Deaton, RN, PNP
Nurse Practitioner

4005 Oleander Drive
Wilmington, NC 28403
910.790.9949
910.790.9455 Fax

Appendix C. Demographics survey given to student participants.

On this survey, the term "sex" means *ANY* act of vaginal, anal, or oral sex.

1. How old are you? _____

2. How would you describe yourself (please circle one):

White African -American Hispanic Asian Native-American Other

3. Are you: _____ Male _____ Female

4. Year in school: ____ Freshman ____ Sophomore ____ Junior ____ Senior

5. Please check which describes you: _____ I have had sex in the last 3 months.
_____ I have not had sex in the last 3 months.
_____ I have never had sex.

6. When you have sex, it is with: _____ Men only
_____ Women only
_____ Either men or women
_____ I have never had sex

7. How old were you the first time you had sex? _____

8. How many sex partners have you had in the last 3 months? _____

9. How many sex partners have you had in your lifetime? _____

10. Use the scale below to show how often you have used alcohol or drugs before or during sex in the last 3 months.

1 2 3 4 5 6 7 8 9 10
Never Sometimes Every time

11. Using the scale below, show how you would feel about going to class with someone who is HIV positive?

1 2 3 4 5 6 7 8 9 10
Very **Un**comfortable Very comfortable

12. On the scale below, indicate how you would feel about sharing a dorm, house or apartment with someone who is HIV positive?

1 2 3 4 5 6 7 8 9 10
Very **Un**comfortable Very comfortable

13. Use the scale provided to rate <u>your</u> knowledge of HIV and AIDS.

1 2 3 4 5 6 7 8 9 10

Nothing A lot

14. On the scale, rate <u>your</u> knowledge of ways you can protect yourself from getting HIV.

1 2 3 4 5 6 7 8 9 10

I don't know how to protect myself I know some ways to protect myself I know very many ways to protect myself

15. What do you think is the chance that you will ever catch HIV or AIDS?

0 1 2 3 4 5 6 7 8 9 10

Not at all Definitely

16. Using the scale below, how often do you or your partner use condoms?

1 2 3 4 5 6 7 8 9 10

Never Every time

17. Using this scale, show how often you share needles with someone else.

0 1 2 3 4 5 6 7 8 9 10

I never use needles I never share I sometimes share I share every time

18. Are you getting an HIV test today? _____ Yes _____ No

18a. Other than today, have you ever had an HIV test? _____ Yes ____ No

18b. What prompted you to get your HIV test?

18c. Did you get your HIV test results? _____ Yes ____ No

18d. If you did not get your test results, please say why.

19. How likely are you to get an HIV test in the next year?

0 1 2 3 4 5 6 7 8 9 10

Not at all Definitely

20. Have you ever had or caused an **unplanned** pregnancy? _____ Never
_____ 1-2 times
_____ More than twice

21. Have you ever been **treated** for:

Gonorrhea (gc, drip, clap)	_____ Yes	_____ No
Genital Warts (hpv)	_____ Yes	_____ No
Herpes	_____ Yes	_____ No
PID (pelvic inflammatory disease)	_____ Yes	_____ No
Trichomonas (trick)	_____ Yes	_____ No
Syphilis (bad blood)	_____ Yes	_____ No
Chlamydia	_____ Yes	_____ No

22. I personally know someone who:

is Gay	____Yes	____No
is a Lesbian	____Yes	____No
is Bisexual	____Yes	____No
is HIV positive or has AIDS	____Yes	____No

Appendix D. Questions piloted in Phase 1 for Phase 2.

PQSS

1. Age _____

2. Race: White African American Hispanic Other

3. Gender: _____ Male _____ Female

4. Year in School: ____Freshman _____Sophomore _____Junior _____Senior

5. I am: _____ A virgin
_____ Not currently sexually active (NO sex in last 3 months)
_____ Currently sexually active (sex within the last 3 months)

7. When I have sex, it is with

0	1	2	3	4	5	6	7	8	9	10
Never had sex	Women only									Men only

8. Please indicate the number of sexual partners you've had in the last 3 months _____

9. Please indicate the total number of sexual partners you've had in your lifetime _____

9. During the last 3 months, have you used alcohol or drugs before or during sex?

0	1	2	3	4	5	6	7	8	9	10
Never had sex	Never									Every time

10. Using the following scale, how would you feel about attending class with someone who is HIV positive?

1	2	3	4	5	6	7	8	9	10
Uncomfortable									Comfortable

11. Using the following scale, how would you feel about sharing a house, apartment, or dorm room with someone who is HIV positive?

1	2	3	4	5	6	7	8	9	10
Uncomfortable									
Comfortable									

12. Please list as many things as you can think of that would help protect you from getting HIV.

1.

2.

3.

4.

5.

13. Do you or your partner use condoms?

0	1	2	3	4	5	6	7	8	9	10
Never had sex	Never									Every time

14. When you use condoms, is it for: (Check all that apply)

_____ Contraception purposes
_____ Protection against disease
_____ Other (please list)
_____
_____ I never use condoms

15. When you do not use condoms, it is because: (Check all that apply)

_____ They're uncomfortable
_____ They decrease sexual pleasure
_____ They're embarrassing to buy
_____ I don't like them
_____ My partner doesn't like them
_____ Other (please list)
_____
_____

16. What do you think is the likelihood of <u>your</u> being infected with HIV or AIDS if you do not use condoms?

1	2	3	4	5	6	7	8	9	10
Not at all									Definitely

17. Have you ever had an HIV test? _____ Yes _____ No

17a. If you have been tested, how long has it been since you were tested
_____ Less than 1 year
_____ 1-2 years
_____ More than 2 years

17b. What caused or prompted you to get your HIV test?

17c. Did you get your HIV test results? _____Yes _____No

17d. If you did not get your test results, please indicate why:

18. What do you think are the advantages, if any, of getting an HIV test?

(list more on the back if needed)

1.

2.

3.

19. What do you think are the disadvantages, if any, of getting an HIV test?
(list more on the back if needed)

1.

2.

3.

20. Have you ever had or caused an unintended pregnancy _____ Never
_____ 1-2 times
_____ More than twice

21. Have you been treated for a sexually transmitted infection? _____ Never
_____ 1-2 times
_____ More than twice

21a. About how long ago were you treated? _____

21b. What infection(s) were you treated for? _____

22. How many times did you see your doctor in the last 12 months? _____

23. The last time you saw your doctor, was it for: (Check all that apply)
_____ Yearly/routine physical
_____ Specific medical problem
_____ I had an injury
_____ School/work physical
_____ Prescription refill
_____ I was sick

24. What amount of the time would you say that you wear a seat belt?

0	1	2	3	4	5	6	7	8	9	10
Never										Always

25. **(FEMALE)** How often do you do a breast self exam?

1	2	3	4	5	6	7	8	9	10
Not at all									Every month

26. **(MALE)** How often do you do a testicle self exam?

1	2	3	4	5	6	7	8	9	10
Not at all									Every month

27. I personally know someone who: (check all that apply)
_____ is gay
_____ is a lesbian
_____ is bisexual
_____ is HIV positive
_____ has AIDS

Please answer the next set of questions using the following scale:

SA - Strongly Agree
A - Agree
N - Neither agree nor disagree
D - Disagree
SD - Strongly Disagree

28. _____ I have discussed safer sex with my previous sex partner(s).

29. _____ I intend to discuss HIV testing with my future sex partner(s).

30. _____ My friends think it's a good idea for me to practice safer sex.

31. _____ I think it's a good idea to get an HIV test.

32. _____ I intend to discuss safer sex with my future sex partner(s).

33. _____ I have discussed HIV testing with my previous sex partner(s).

34. _____ Condoms help prevent the spread of HIV.

35. _____ My family thinks it's a good idea for me to practice safer sex.

36. _____ I have discussed safer sex with my current sex partner(s).

37. _____ I intend to get an HIV test in the future.

38. _____ I have discussed HIV testing with my current sex partner(s).

39. _____ I think it's a good idea to practice safer sex.

40. _____ I intend to practice safer sex in the future.

On the following questions, please check the appropriate answer:

41. If you have ever discussed HIV testing with a sex partner, who initiated the conversation?

_____ I brought it up
_____ My partner brought it up
_____ We both did after seeing or hearing something about it together
_____ Someone else brought it up
_____ I have never discussed HIV testing with my partner
_____ Other (please indicate)_____
_____

42. I would discuss HIV testing with my sex partner(s), but

_____ I don't know enough about it
_____ I don't know what to say or how to get started
_____ I would be too embarrassed
_____ Other (please indicate)_____
_____

43. If you have ever discussed safer sex with a sex partner, who initiated the conversation?

_____ I brought it up
_____ My partner brought it up
_____ We both did after seeing or hearing something about it together
_____ Someone else brought it up
_____ I have never discussed safer sex with my partner
_____ Other (please indicate)_____
_____

44. I would discuss safer sex with my sex partner(s), but:

_____ I don't know enough about it
_____ I don't know what to say or how to get started
_____ I would be too embarrassed
_____ Other (please indicate)_____
_____

Appendix E. Self-protective behavior information gathered in Phase 2

SES

Please use the following scale to respond to the statements:

SA: Strongly Agree
A: Agree
N: Neither agree nor disagree
D: Disagree
SD: Strongly Disagree

_____ 1. I have discussed safer sex with my past sex partner(s).

_____ 2. I have discussed safer sex with my future sex partner(s).

_____ 3. I have discussed safer sex with my current sex partner(s).

_____ 4. My friends think it is a good idea to use safer sex.

_____ 5. I think it's a good idea to get an HIV test.

_____ 6. I have discussed HIV testing with my past sex partner(s).

_____ 7. I have discussed HIV testing with my future sex partner(s).

_____ 8. I have discussed HIV testing with my current sex partner(s).

_____ 9. Condoms help prevent the spread of HIV.

_____ 10. My family thinks it is a good idea to use safer sex.

_____ 11. I plan to get an HIV test in the future.

_____ 12. I think it is a good idea to use safer sex.

_____ 13. I plan to practice safer sex in the future.

Appendix F. AIDS Health Belief Scale

AHBS

Please use the following scale to respond to the statements.

SA: Strongly Agree
A: Agree
N: Neither Agree nor Disagree
D: Disagree
SD: Strongly Disagree

_____ 1. I feel that the chances are good that I can get AIDS

_____ 2. I am afraid that I might contract AIDS.

_____ 3. I believe that I van be exposed to HIV infection if my sex partner is heterosexual.

_____ 4. I believe that I can get AIDS even if I am only having sex with one partner.

_____ 5. AIDS causes death.

_____ 6. I would rather have any other terminal illness than AIDS.

_____ 7. I would rather die from a violent death (e.g., gunshot, car accident, etc) than from AIDS.

_____ 8. AIDS is probably the worst disease a person can get.

_____ 9. I believe that the chances of contracting AIDS can be significantly reduced by using a condom.

_____ 10. I think it is worth the effort to have condom readily available.

_____ 11. I feel that the chances of contracting AIDS can be reduced by having sex with only one partner.

_____ 12. If a condom is not available, it would be worth the effort to discontinue sexual activity to obtain a condom.

_____ 13. Using a condom seems like an insult to my partner.

_____ 14. It is embarrassing (to me) to buy condoms.

_____ 15. I do not enjoy (or think I might not enjoy) sex when using a condom.

_____ 16. I would offer first-aid to an AIDS patient because I would feel guilty of not offering to help.

Appendix G. Health Locus of Control Scale

HLOC

Please enter the degree to which you agree or disagree with each statement using the following code:

SA = Strongly agree
A = Agree
MA = Minimally agree
MD = Minimally disagree
D = Disagree
SD = Strongly disagree

____ 1. If I take care of myself, I can avoid illness.

____ 2. Whenever I get sick it is because of something I've done or not done.

____ 3. Good health is largely a matter of good fortune.

____ 4. No matter what I do, if I am going to get sick I will get sick.

____ 5. Most people do not realize the extent to which their illnesses are controlled by accidental happenings.

____ 6. I can only do what my doctor tells me to do.

____ 7. There are so many strange diseases around that you can never know how or when you might pick up one.

____ 8. When I feel ill, I know it is because I have not been getting the proper exercise or eating right.

____ 9. People who never get sick are just plain lucky.

____ 10. People's ill health results from their own carelessness.

____ 11. I am directly responsible for my health.

Appendix H. Social Desirability Scale

SD

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T F 1. Before voting I thoroughly investigate the qualities of all candidates.

T F 2. I never hesitate to go out of my way to help someone in trouble.

T F 3. It is sometimes hard for me to go on with my work if I am not encouraged.

T F 4. I have never intensely disliked anyone.

T F 5. On occasions, I have had doubts about my ability to succeed in life.

T F 6. I sometimes feel resentful when I don't get my way.

T F 7. I am always careful about my manner of dress.

T F 8. My table manners at home are as good as when I eat out in a restaurant.

T F 9. If I could get into a movie without paying and be sure I was not seen, I would probably not do it.

T F 10. On a few occasions, I have given up doing something because I thought too little of my ability.

T F 11. I like to gossip at times.

T F 12. There have been times when I have felt like rebelling against people in authority, even though, I knew they were right.

T F 13. No matter whom I'm talking to, I'm always a good listener.

T F 14. I can remember "playing sick" to get out of something.

T F 15. There have been occasions when I took advantage of someone.

T F 16. I am always willing to admit it when I make a mistake.

T F 17. I always try to practice what I preach.

T F 18. I don't find it particularly difficult to get along with loudmouth, obnoxious

people.

T F 19. I sometimes try to get even rather than forgive and forget.

T F 20. When I don't know something, I don't mind at all admitting it.

T F 21. I am always courteous, even to people who are disagreeable.

T F 22. At times I have really insisted on having things my own way.

T F 23. There have been occasions when I felt like smashing things.

T F 24. I would never think of letting someone else be punished for my wrongdoings.

T F 25. I never resent being asked to return a favor.

T F 26. I have never been irked when people expressed ideas very different from my own.

T F 27. I never make a long trip without checking the safety of my car.

T F 28. There have been times when I was quite jealous of the good fortune of others.

T F 29. I have almost never felt the urge to tell someone off.

T F 30. I am sometimes irritated by people who ask favors of me.

T F 31. I have never felt that I was punished without cause.

T F 32. I sometimes think when people have a misfortune they only got what they deserved.

T F 33. I have never deliberately said something that hurt someone's feelings.