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Influence of Anxiety on HIV Testing Behavior

Ilze Nix
Western Kentucky University

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INFLUENCE OF ANXIETY ON HIV TESTING BEHAVIOR

A Thesis
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

By
Ilze Nix

August 2007
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INFLUENCE OF ANXIETY ON HIV TESTING BEHAVIOR

Ilze Nix August 2007 Pages 129

Directed By: Phillip, O. Pegg, Melissa Hakman, and William F. Pfohl

Department of Psychology Western Kentucky University

The specter of Human Immunodeficiency Virus (HIV) or Acquired Immune Deficiency Syndrome (AIDS) has become increasingly prevalent since it first entered public awareness in 1982. The Center for Disease Control (CDC) estimates that approximately 1 million people in the United States of America (USA) are living with HIV/ AIDS. More alarming is the fact that approximately 250,000 people remain unaware of their seropositivity status, therefore putting themselves and others at risk. Ignorance concerning HIV status is due largely to two factors: either failure to take an HIV test in the first place, or, a failure to retrieve results after testing. Despite the distinct possibility that anxiety plays a role in decisions concerning HIV testing an extensive literature review yielded no study that specifically examined the association between anxiety and HIV testing behavior. Thus, the purpose of the study was to determine the influence of anxiety, both general and specific, on prospective HIV testing behavior. The design of the study was correlational, examining how a group of independent variables (namely, various types of anxiety) impact two separate dependent variables (likelihood of being tested HIV and likelihood of returning for results of the HIV test results). Three hundred and forty seven participants were administered measures assessing anxiety, both at the broad or “global” level and at the narrower level of context-specific or domain-relevant anxiety. Each participant completed the State-Trait Anxiety Inventory (STAI), Self-Rated
Anxiety Scale (SAS), Subscales of the Medical Anxiety Scale (MAS), Death Anxiety Scale (DAS), and the Multidimensional AIDS Anxiety Questionnaire (MAAQ). A stepwise multiple regression data analytic strategy was used to examine the data. Analyses suggested that AIDS-Specific Anxiety accounted for a significant amount of variance in the independent variable of the Likelihood of Receiving HIV Testing and that Hospital and X-Ray Anxiety, respectively, accounted for a significant amount of variance in the independent variable of Likelihood of Returning to Receive the Results of HIV Testing; however, variance attributed to each of the dependent variables that remained after stepwise regression, was low. Once the researchers controlled for extraneous variables such as the relevant demographic variables of gender, ethnicity, previous HIV testing history, past sexual history, and relationship status, the variables that had been retained in both the equations – AIDS-Specific Anxiety and Hospital and X-Ray Anxiety, respectively – no longer accounted for a significant amount of variance and none of the variables assessed in the study were retained in the models examining the influence of anxiety on Likelihood to Receive HIV Testing and Likelihood of Returning for HIV Testing Results. Although the current study did not yield the anticipated results, the findings contribute to research concerning the influence of personality variable on disease status. The findings presented here may present researchers with a starting point for further empirical endeavors. Considering the limitations of the study and applying the suggestions derived from frankly addressing those limitations, future research may indeed reveal a significant impact of anxiety on HIV testing behavior.
Review of Literature

Acquired Immune Deficiency Syndrome (AIDS) has become, without a doubt, an international epidemic due to its worldwide prevalence. Even in light of evidence suggesting a “success in controlling the epidemic in some countries, and a decline in prevalence in others, AIDS is still the single most important health crisis the world faces” (Poku & Whiteside, 2006, p. 250). As Spearman (2006) notes, despite the exertion of considerable effort of the international medical community to develop a preventative vaccine, twenty years have passed and still no Human Immunodeficiency Virus (HIV) vaccine is available.

Global Estimates (UNAIDS & World Health Organization [WHO], 2005) provide a numerical index of the magnitude of this problem. In 2005, 40.3 million individuals were estimated to be living with HIV/AIDS. Of these individuals approximately 38 million of the infected individuals were adults (aged 15 to 49), and 2.3 million were children (aged under 15). In the United States of America (USA), the Center for Disease Control (CDC) estimated that at the end of 2003, between 1,039,000 to 1,185,000 persons in the USA were living with this disease (CDC, 2004a). The CDC (2005) highlights several advances that have been made in an attempt to curb the growing number of people affected by the disease. Advances in fighting the disease include reductions in mother-to-child transmission; drug combinations that treat and delay the onset of AIDS; increased community level involvement in prevention efforts; better understanding of high risk communities as well as the implementation of several behavioral interventions. However, these successes are overshadowed by the fact that in the USA about 1 million people are living with HIV or AIDS. The more alarming number
is the approximately 250,000 people who are unaware of their infection, therefore putting themselves and others at risk. “Those who do not know that they are infected cannot take advantage of treatment and may unknowingly transmit HIV to others” (CDC, 2005, p. 19). Among the prevention strategies suggested by the CDC is the promotion of early diagnosis of HIV, which entails nothing more than taking an HIV test to determine one’s status. However, as noted above, many seropositive individuals remain unaware of their status. This ignorance concerning status is due to two factors, either these individuals have failed to take a test, or they have taken a test but failed to retrieve their results.

A body of research has attempted to examine the reasons behind the failure to return for the results of HIV testing (Dinh, Detels, & Nguyen, 2005; Hightow et al., 2003; Strauss, Deren, Rindskopf & Falkin, 2002; Sullivan, Lansky & Drake, 2004) as well as the reasons that lead individuals either to seek out or avoid HIV testing (Lyter, Valdiserri, Kingsley, Amoroso & Rinaldo, 1987; Riess, Kim & Downing, 2001). It is purpose of the present study to evaluate the causes of testing avoidance, as well as the failure to return for HIV test results, by specifically examining the role of anxiety and various defense mechanisms in attitudes towards HIV testing and the results of HIV testing.

**HIV/AIDS**

The question arises as to why AIDS, as a public health threat and a disease, appears to be viewed as such a special case. Kiemle (1994) states that it is a result both of the heightened awareness that appears to accompany it and because it causes the loss of life and the investment of considerable money and resources. The author argues that the uniqueness of AIDS lies in several factors such as that it not only affects those who contract it on a biological level, but also on a profoundly emotional level as well;
moreover, the disease affects not only the sufferer, but also places a heavy load on the direct family of the sufferer, his or her significant others, as well as counselors, and society at large. Furthermore, the disease indiscriminately affects both young and old alike. The subject of AIDS combines many taboos such as sex and sexuality, disease, disability, death and dying; and AIDS holds a special status because it often elicits the overt stigmatizing of, and discrimination against, those with the disease. Moreover, AIDS provokes more anxiety and notice because it is incurable and prospects for a vaccine to combat it remain bleak (Kiemle, 1994). Although current research is ambiguous with regards to the exact origin and even the first reports of the disease, the following history is most often suggested. Prior to July 1982, AIDS consisted of nothing more than a few cases of a medically bizarre and an as-yet-unnamed complex of often rare diseases found in homosexuals and hunters in Western-Central Africa. The status of the disease changed irrevocably in 1982 when the term AIDS was coined and a 20-month-old child died from an AIDS-related infection contracted through a blood transfusion, at last providing a clear sign that the transmission of AIDS was not limited exclusively to homosexual contact.

During the twenty-five years that have intervened between its discovery and the present date, scientific research has determined the virus that causes AIDS is HIV (Hutchinson, 2001; Mayer, 2005; Moore, 2004; Morrow, Isenberg, Sobol, Stricker, & Kieber-Emmons, 1991; Watts, Okello, & Watts, 1990)

While a discussion of the mechanism of the disease is beyond the scope of the present study, AIDS, in brief, is a disease in which HIV significantly compromises the body’s immune system. In order to understand HIV/AIDS it is important first to understand the working of the human immune system. In a healthy individual the
immune systems helps to identify and eliminate antigens: foreign materials or substances such as bacteria, viruses, and parasites. Additionally, the immune system also targets the individual’s own cells that have become damaged in some way. The foundation of the immune system lies in specific types of cells that are at work, with white blood cells or leukocytes being the most prominent. Macrophages, a type of leukocyte are the body’s first line of defense, surrounding the identified antigens and destroying them.

Macrophages also serve another important purpose, signaling lymphocytes, which consist of two main groups, B and T cells. B cells function within the humoral branch of the immune system, releasing molecules that find and neutralize antigens. Immunoglobulin is produced and functions as an antibody and when it interacts with the antigen neutralizes it. When the task is completed, it creates memory B cells that remember the antigen; thus, the next time the antigen is introduced into the body, the immune system will respond much faster. T cells operate in the cellular branch of the immune system and instead of creating antibodies like B cells; a subgroup of T cells called killer T cells directly destroys the antigens. Another subgroup of T cells, called helper T cells, signals B cells to produce antibodies as well as signaling other T cells to destroy antigens. Yet another subgroup of T cells is called suppressor T cells; these function to suppress the production of antibodies by B cells when they are no longer needed. A very unique interaction between the humoral and cellular branch of the immune system is facilitated by all of these T cells. HIV ravages the immune system by directly and indirectly targeting and attacking the T cells (specifically CD4+ T cells), dendritic cells, as well as macrophages. The CDC’s classification system stipulates that when a person’s CD4+ T cell count falls below 200 per microliter (μl) blood, that person’s cellular immunity is damaged to the
extent of it leading to AIDS. Generally, healthy people have between 500 and 1500 CD4+ T cells per μl (Barlow & Durand, 2001; CDC, 1993; Hutchinson, 2001; Kalat, 2000; Margolick et al., 1998; Nowak & McMichael, 1995).

The immunological weakening consequent to the HIV infection then leads to an increased risk of contracting a variety of fatal diseases such as Kaposi’s sarcoma (KS), *Pneumocystis jiroveci* pneumonia (Formerly known as *Pneumocystis carinii* pneumonia or PCP), Tuberculosis, Toxoplasmosis, AIDS dementia complex, as well as a variety of dangerous fungal, viral, parasitic and bacterial infections. Most of these illnesses are termed as opportunistic, because they take advantage of the opportunity of a weakened immune system to attack. In individuals with a normal and healthy immune system, these conditions and infections are usually kept under control by the very elements of the immune system that are weakened and damaged by HIV. Technically a person does not die from AIDS but rather a disease or infection contracted because of the vulnerability resulting from the disease (Barlow & Durand, 2001; Davison, Kring & Neale, 2004; Kaplan & Sadock, 1998; Leigh, Shetty, & Fidel, 2004). The World Health Organization (WHO), in 1990, grouped these infections and conditions together in such a manner as to create a system that can be utilized to identify the stage in which an individual infected with HIV-1 is likely to be. These stages range from Stage I (in which the HIV disease is asymptomatic and not yet classified as AIDS) through to Stage V (in which the patient is likely to have toxoplasmosis of the brain, candidiasis of the esophagus, trachea, bronchi or lungs as well as Kaposi’s sarcoma) (WHO, 1990).

After the individual is infected with HIV, it is expected that a person will develop AIDS between 7.3 to 10 years later. The course of the disease varies with several minor
health problems starting to develop. Emergence of symptoms occurs anywhere between several months and several years after HIV was contracted. The condition, AIDS-related complex (ARC), consists of these minor problems such as fever, weight loss, and night sweats. AIDS is not diagnosed until one of the aforementioned serious opportunistic diseases appears. The expected median survival time after developing AIDS is 9.2 months, although survival time is significantly increased in those cases where the individual undergoes antiretroviral therapy, to as much as 5 years (Morgan et al., 2002; Schneider et al., 2005).

It is also important to note that various types of HIV have been identified. In humans, two types of HIV are known. HIV-1 is considered the most prevalent with HIV-2 linked with most cases in West Africa and India (Hutchinson, 2001). Each HIV cell has a genetic structure, which differs for the two types. Furthermore, during the replication of the HIV cell, certain mistakes can be made, leading to mutations of the original cell. In some instances, these mutated cells are inactive copies; however others may be HIV mutants that have an enhanced survival and/or replication ability. These cells become worrisome, as their transmission to other individuals and further mutations could ultimately lead to a new viral strain such as HIV-3 (Stine as cited in Hutchinson, 2001). Furthermore, based on the genetic structures of the HIV cells, researchers have been able to identify subtypes. Within the HIV-1 strain, three subtypes are identified: M, N, and O. Each of these subtypes can even further be divided into categories. Group M is considered the most prevalent and is further divided into 9 categories or clades, noted as A through I (Hutchinson, 2001; Thomson, Perez-Alvarez & Najera, 2002). Of these, clades A, B, and C represent the large majority, approximately 86%, of circulating HIV-1
variants with B being the most prevalent in Europe, Brazil, Canada, Australia, Haiti, and the USA, as well as in South African men who have sex with men (Coplan et al., 2005). This information is of most importance when considering the type of HIV testing an individual needs to undergo. For example, due to very low prevalence rate of the HIV-2 strain within the USA (as indicated by epidemiologic data), the CDC (2002) does not recommend routine HIV-2 testing, however, in the instance that an individual’s HIV test returns with a positive screening for HIV, the site will test for both HIV-1 and HIV-2 strains in the case that epidemiologic risk factors for HIV-2 are present. Furthermore, testing for HIV-2 will be conducted if clinical evidence exists for HIV, in the absence of a positive test for antibodies to HIV-1, or if the HIV-1 Western blot test exhibits an unusual pattern (O’Brien, George, Epstein, Holmberg, & Schochetman, 1992).

Additionally, since 1992, the Food and Drug Administration (FDA) have required that all donated blood be screened for HIV-2 (O’Brien et al., 1992).

Most often, HIV is transmitted from one individual to another though sexual intercourse, but it is readily transmitted via contact with infected blood (e.g., through blood transfusion). Unprotected anal and vaginal sex and intravenous drug use are considered the most risky behaviors associated with HIV transmission. The CDC (2004a) breaks down the estimated number of cases diagnosed according to transmission category (Table 1).
Table 1

*Estimated numbers of cases of HIV/AIDS, by year of diagnosis, population and transmission category.*

<table>
<thead>
<tr>
<th>Year of diagnosis</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male adult or adolescent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male-to-male sexual contact</td>
<td>16,625</td>
<td>16,852</td>
<td>16,804</td>
<td>18,203</td>
</tr>
<tr>
<td>Injection drug use</td>
<td>5,171</td>
<td>4,379</td>
<td>4,177</td>
<td>3,828</td>
</tr>
<tr>
<td>Male-to-male sexual contact and injection drug use</td>
<td>1,525</td>
<td>1,431</td>
<td>1,398</td>
<td>1,372</td>
</tr>
<tr>
<td>Heterosexual contact</td>
<td>5,095</td>
<td>4,843</td>
<td>4,720</td>
<td>4,581</td>
</tr>
<tr>
<td>Other</td>
<td>214</td>
<td>183</td>
<td>179</td>
<td>161</td>
</tr>
<tr>
<td><strong>Female adult or adolescent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injection drug use</td>
<td>2,877</td>
<td>2,408</td>
<td>2,252</td>
<td>2,134</td>
</tr>
<tr>
<td>Heterosexual contact</td>
<td>9,192</td>
<td>8,709</td>
<td>8,248</td>
<td>8,102</td>
</tr>
<tr>
<td>Other</td>
<td>211</td>
<td>187</td>
<td>205</td>
<td>174</td>
</tr>
<tr>
<td><strong>Child (&lt;13 years at diagnosis)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perinatal</td>
<td>306</td>
<td>245</td>
<td>186</td>
<td>145</td>
</tr>
<tr>
<td>Other</td>
<td>54</td>
<td>44</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41,270</strong></td>
<td><strong>39,280</strong></td>
<td><strong>38,188</strong></td>
<td><strong>38,730</strong></td>
</tr>
</tbody>
</table>

Based on statistics concerning the transmission of AIDS in the USA, the frequency of the various means of transmission in 2004 is the following: 43% of cases were contracted by male-to-male sexual contact; 25% contracted by injection drug use;
25% contracted by heterosexual contact; and, the remainder through male-to-male sexual contact and injection drug use, hemophilia, blood transfusion, perinatal, and risk factors not reported or not identified (CDC, 2004a).

Using confidential name-based HIV infection reporting, the CDC (2004a) breaks down the estimated number of cases diagnosed, deaths associated to AIDS, and individuals living with AIDS in the USA's 35 areas. Table 2 lists these estimated numbers accordingly for the years 2000 until 2004.

Table 2

<table>
<thead>
<tr>
<th>Year</th>
<th>AIDS diagnoses</th>
<th>AIDS deaths</th>
<th>Individuals living with AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>39,513</td>
<td>17,139</td>
<td>320,177</td>
</tr>
<tr>
<td>2001</td>
<td>39,060</td>
<td>17,611</td>
<td>341,773</td>
</tr>
<tr>
<td>2002</td>
<td>40,670</td>
<td>17,544</td>
<td>364,496</td>
</tr>
<tr>
<td>2003</td>
<td>41,831</td>
<td>17,849</td>
<td>388,477</td>
</tr>
<tr>
<td>2004</td>
<td>42,514</td>
<td>15,798</td>
<td>415,193</td>
</tr>
</tbody>
</table>

Based on tracking by the CDC, there was an 8% decrease in the estimated number of AIDS deaths from 2000 to 2004; during the same time frame; however, the number of cases of individuals diagnosed with AIDS increased 8% (CDC, 2004a). Approximately 40,000 persons become infected every year when one considers all 50 states (Glynn and Rhodes, 2005). The increased number of individuals living with AIDS in the USA is attributed to the fact that better treatments are available and there has been an increase in
the use of intensive antiretroviral therapies (Palella et al., 1998; Schneider et al., 2005). When one considers the anonymous, almost unobtrusive origins of AIDS in the early 1980s, it appears that the cases of the disease occurring in seemingly isolated segments of society have transformed into one of the major threats to global health.

HIV Testing

HIV tests are used to detect antibodies and antigens, as well as ribonucleic acid (RNA) in various specimens (serum, blood plasma, oral fluid, dried blood spot or urine). In the USA the initial test used to detect the presence of antibodies, the cells created in a response to the infection, is the Enzyme-Linked ImmunoSorbent Assay (ELISA) method. In the event that this initial test detects antibodies, a second test, based on the Western Blot method, is utilized. The antibody test is then reported as either being positive or negative. The performance of these tests is described by considering the test’s sensitivity (the percentage of results that are positive when HIV is present) as well as its specificity (the percentage of the results that are negative when HIV is not present). In the USA, this two-test approach is used, claiming to have a 99.5% accuracy rate, which translates into 500 false positive results (result indicating HIV is present, when it is not) for every 100,000 people not infected with HIV who are tested. False negative results (result failing to indicate HIV when it is present) are most common during the window period, or the time between when the infection occurs and the test can first detect a change in the body. Antibody tests have an average window period of 22 days. (US Food and Drug Administration [FDA], 2006)

Antigen testing decreases the window period to about 16 days. This method is routinely used to screen blood donations; however it is not utilized otherwise for
diagnostic purposes as it has a very low sensitivity and is only reliable during a specific time: before antibodies are produced by the body. Since 2001, Nucleic Acid based testing has become the preferred testing method for blood donations, as it shortens the window period to 12 days. Although this method is relatively expensive, a version of it is used for the clinical management of HIV infected patients.

Currently, several different tests for HIV have been approved by the Food and Drug Administration (FDA) of the USA's government. The tests differ on the type of specimen that is needed to perform the test, such as plasma, a dried blood spot, serum, oral fluid, whole blood (venipunctured and fingerstick), or urine. Additionally, these tests vary based on the complexity of the test, the strains of HIV it can detect, and the time it takes for the results to become available. Table 3 lists the various types of HIV tests that have gained FDA approval (CDC, 2001; FDA, 2006).

Table 3

*FDA approved HIV tests*

<table>
<thead>
<tr>
<th>Specimen collected</th>
<th>Test complexity</th>
<th>Time before results available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard HIV test</td>
<td>Serum or plasma</td>
<td>High</td>
</tr>
<tr>
<td>Rapid Tests</td>
<td>Serum, plasma, whole blood</td>
<td>Moderate</td>
</tr>
<tr>
<td>Home sample collection</td>
<td>Dried blood spot</td>
<td>High</td>
</tr>
<tr>
<td>Oral fluid test</td>
<td>Oral Mucosal Transudate</td>
<td>High</td>
</tr>
<tr>
<td>Urine based</td>
<td>Urine</td>
<td>High</td>
</tr>
</tbody>
</table>
Researchers are continuously attempting to expand on the ELISA as well as Western Blot testing methods and, by doing so, add to the list of FDA approved HIV tests. A recent addition to the repertoire of HIV tests is the rapid tests. Four rapid tests are currently approved by the FDA: Oraquick Rapid HIV-1, Uni-Gold Recombigen HIV test, Multispot HIV-1/HIV-2 Rapid Test and Reveal Rapid HIV-1 antibody test, with two being approved for point-of-care sites without a traditional laboratory (FDA, 2006; Greenwald, Burnstein, Pincus, & Branson, 2005). Most noticeable is the approval of rapid tests with oral fluid. These tests require a specimen of the individual’s oral fluid, taken by gently swabbing all around both the upper and bottom gums. One example is the OraQuick Rapid HIV test for oral fluid, which was approved in 2004, research indicating a 99.3% sensitivity and 99.8% specificity. However, rapid testing can also be performed on other specimens such as whole blood, plasma or serum (CDC, 2004b).

Although these tests are generally less invasive and results are available in less than 20 minutes, in the cases where the client has a reactive test result (indicating an HIV positive status), a second confirming test, taking approximately 7 to 10 days, will still need to be done (Liang et al., 2005). Liang et al. (2005) found that among 461 clients tested at a mobile STD/HIV clinic, 64.5% preferred OraQuick to traditional serologic testing. Notably, however, the clients were not surveyed as to the reason they made their choice of a particular HIV test. Poses (as cited in Kane, 1999) points out that a division has emerged in the field as concerns the use of rapid testing because, while some clients will within minutes be correctly informed of their HIV status, others may experience unnecessary anxiety due to false positive results. On the other hand, rapid testing increases the number of people who are aware of their true HIV status by giving them
feedback before they return home and is of particular benefit in situations of potential occupational exposure to HIV (Kane, 1999). Greenwald et al. (2006) argues that when rapid testing is compared to standard two-session HIV-testing, rapid HIV testing both decreases costs and increases the number of people receiving their results.

Home testing is another recent trend in HIV testing. The FDA approved the first home test kit in 1996, and these can be purchased in some drug stores, over the Internet, or by mail. These tests require that the individual draw his or her own blood sample by means of a finger prick at home, mail the sample to a laboratory, and call for the results approximately 7 to 10 days later (Worthington, 2001). A study by Colfax et al. (2002) indicated that despite the manufacturer’s anticipation that a large amount of individuals would utilize this testing method, the overall sales of home-based kits was relatively low, representing approximately 1% of the HIV test performance in the USA that year. Individuals who were aware of the tests availability cited concerns about accuracy, lack of in-person counseling, and cost as reasons for not using this method (Colfax et al., 2002). When considering the use of rapid testing it is noteworthy to cite the influence of utilizing this method of testing in order to curb the frequency of individuals who fail to return for their HIV test results. Keenan and Keenan (2001) suggested that by using rapid testing it ensured that same-day results were given to all but one of the individuals tested, resulting in a 0.1% failure to return rate. A study by Sullivan et al. (2004) also indicated that the availability of rapid testing significantly reduced the failure to return.

HIV Testing Behavior

Taking into consideration the shockingly large number of AIDS cases worldwide, a potentially more alarming fact is the sheer amount of individuals who either have never
had their HIV status tested or who have been tested and failed to return for their results. Janssen et al. (2001) estimated that approximately one third of the USA’s residents who are currently infected by HIV are unaware of their seropositive status, stating therefore that an approach to reducing HIV incidence in the USA would be to increase the number of HIV-infected persons who are aware of their serostatus, thereby creating an opportunity for their adoption of behaviors limiting the probability of HIV transmission to others (Janssen et al., 2001). In a study that included 512 individuals who received HIV testing, Hightow et al. (2003) found that nearly 55% of people in the sample failed to return to determine their HIV status and 58% of the non-returning individuals were HIV positive. Furthermore, the study indicated that it took a median of 12 days for disease intervention specialists to locate the infected individuals. Similar results were reported by Dinh et al. (2005) in a study of 500 pregnant women in Vietnam, which indicated that only 53.2% accepted HIV testing when offered and, of those, only 55.3% returned for their results.

A national quantification of these behaviors can be seen when considering data from the approximately 2.5 million HIV tests that are administered each year in the USA, indicating that a staggering amount of individuals failed to return for their results. Furthermore, of those individuals who failed to return for their HIV test results, 25% had tested positive and 33% tested negative (Anderson, Chandra, & Mosher, 2005). Considering the area from which participants for this study will be recruited, a discussion of the incidence of germane HIV-testing relevant behaviors is warranted. Aggregate figures indicate that 41% of the individuals tested, failed to return for their results (Kentucky Department for Public Health, HIV/AIDS Branch, 2006).
Regarding the greater community around Western Kentucky University (WKU) information on HIV testing behavior was obtained from Carrie Halcomb, the Health Educator of the Community Health Promotion Team 1 from Barren River District Health Department in Bowling Green, KY. According to Ms. Halcomb, in Warren County, one in 3 individuals who tested positive for HIV failed to return for their results, and statewide 16% of the individuals who tested positive failed to return to learn their result. The return rates for 2005 for the city of Bowling Green Kentucky indicate that nearly two-thirds – fully 64% – of the individuals tested for HIV at the Warren County Health Department failed to return to the facility to learn their test results (Halcomb, personal communication, December 11, 2006).

In an interview with the Coordinator of Health Education at the WKU Health Services, Kathryn Steward (personal communication, June 20, 2006) explained the various HIV testing possibilities for WKU students offered by WKU Health Services. WKU students are able to participate in anonymous HIV testing on one of three days throughout the school year, during ‘Health Day,’ ‘Sexual Awareness Week’ and/or ‘World AIDS Day.’ While no official data on these events are collected, it is estimated that approximately 40 to 50 students got tested for HIV at each event. Furthermore, Ms. Steward estimates that only approximately 20% of those who take an HIV test return to receive the results. She attributes this low return rate to two factors: the high number of students who participate merely to receive extra credit and the possibility that participating students misunderstand the testing situation. Anonymous testing is done in such a manner that no identifying information is received from the participant. The student is issued a number that coincides with his or her oral test sample. If the student
wishes to know his or her results, he or she has to inquire from the appropriate person following the HIV test and present the assigned number in order to receive testing results. However, some students may fail to realize that it is their responsibility to follow-up on the results and assume that if they do not hear from anyone, their HIV test results are negative. Students are also able to get tested for HIV status, at their convenience, at the student health services during usual operating hours. The test is confidential in nature, but students have to request specifically to take the test from the physician. The student then needs to be seen for post HIV-test counseling in order to receive the results.

From the above mentioned statistics, it appears that regardless of the geographical region, the failure to return for HIV test results occurs far more often than those endeavoring to prevent the spread HIV would desire. A better understanding of attitudes related to HIV testing and the results of such testing might be useful in increasing the number of individuals who return for the results of serological status testing or the number of individuals who take an HIV test in the first place.

One possible explanation for the exceptionally high rates of individuals who fail to return for the results of their HIV testing (or conversely the relatively low rates of individuals who get tested in the first place) may be found in the study of avoidance behavior. It is likely that the individuals who fail to take an HIV test or fail to return for the results are either intentionally or unintentionally avoiding being faced with information concerning their personal HIV status. When one initially considers avoidance learning, it appears that nothing – that is no explicit contingency – acts as reinforcement for a behavior, i.e. a person will continue to do a behavior without tangible reinforcement of the behavior. However, one way to resolve the lack of explicit reinforcement in
avoidance learning is via a consideration of Mowrer’s two-factor theory (Barlow, 2004; Klein, 2002; Mowrer, 1947; Mowrer, 1950; Terry, 2006). Mowrer argues that, in avoidance learning, a person is not merely behaving because of “nothing”; rather the reinforcer is an unobservable thing, i.e. the escape from an acquired fear or negative reinforcement. Since avoidance behavior is integral to the discussion of anxiety (particularly phobic manifestations of anxiety) there follows an in-depth discussion of anxiety and the potential role it may play in HIV testing-related behaviors.

**Anxiety**

The experience of anxiety is considered to be fairly universal; everyone at some point in time has been anxious. As a consequence, definitions of anxiety abound. The pattern of arousal inherent in anxiety, however, can be defined in terms of psychological, physiological as well as behavioral terms. Cannon (1927) coined the flight-or-fight response: a physiological reaction to a threat, mediated by the sympathetic division of the Autonomic Nervous System, that mobilizes a person to either fight or flee from an emerging threat. This state is usually accompanied by physical reactions such as increased heart rate, blood pressure and breathing, muscle tension and sweating; this same pattern of arousal is seen in the individual expression of anxiety. Both human and animal research indicates that the physical symptoms associated with the state of anxiety are linked to activity in the central periaqueductal gray and medial hypothalamus, with descending control from the amygdala. Physiological changes of arousal are implicated in the overt behavioral manifestations of anxiety; sympathetic activation, for example, is involved in such observable behaviors as attack posturing, escape maneuvers, active avoidance, and even freezing in the presence of anxiety provoking stimuli, whether
internally or externally cued (Barlow, 2004; Barlow & Durand, 2001; Bourne, 2000; Cannon, 1927; Davison, Kring & Neale, 2004; Kalat, 2000; Kaplan & Sadock, 1998).

Psychologically the experience of anxiety is more difficult to pin down with exactitude. When trying to define anxiety most texts also define fear. Although it might seem easy to distinguish between fear and anxiety, the distinction between fear and anxiety based on the focus of threat or anxiety provoking stimulus can become blurred. Several similarities exist between anxiety and fear such as the fact that both include an elevated arousal and negative affect usually accompanied by bodily sensations and both are a future oriented apprehensiveness about a danger or discomfort. Despite the similarities, anxiety and fear can be differentiated (Rachman, 2004). The distinction between fear and anxiety arose quite by accident when one of Freud's early translators mistranslated the word *Angst*, the German word for fear, as anxiety. Strictly speaking, the term fear refers to an individual's emotional reaction towards a specific, identifiable object. Anxiety, on the other hand, is a more unsettling emotional reaction to the anticipation of a vague, potential threat. Freud failed to put much emphasis on distinguishing fear from anxiety. For Freud, anxiety was related more to an internal, unknown object, whereas fear could be due to a repressed, unconscious conflict, displaced onto an external object. The latter is best depicted in Freud's discussion of the case of Little Hans, who "refused to go out on into the street because he was afraid of horses" (Freud, 1959, p. 27). Freud had a theory that the little boy's fear of horses was a displaced fear of his father; that is, even though there was an identifiable threat that caused Little Hans' fears (i.e. the horse), it was not the object per se but rather an internal Oedipal conflict that gave rise to the child's anxiety. In 1926, with the publication of
“Inhibitions, Symptoms, and Anxiety,” Freud created a new theory of anxiety. He no longer regarded anxiety as resulting from an increased libido or a repressed thought or wish, but rather as a reaction to dangerous situations. He went further to identify two anxiety-provoking situations, the first involving an overwhelming instinctual stimulation, as is found during the experience of birth. The second and more common type of anxiety resulted from the anticipation of danger or a traumatic event (Freud, 1959; Barlow, 2004).

Modern conceptualizations differ greatly from Freud’s attempts to explain anxiety and fear. Behavioral theories focus on various types of learning, and the role these play in acquiring fears. According to most behaviorally based theories, fear is considered to be a conditioned response to a specific environmental stimulus (Kaplan & Sadock, 1998). Watson and Rayner (1920) demonstrated a classical conditioning approach in their experiment with Little Albert, in which a toddler was conditioned to fear white rats by pairing a neutral stimulus (the white rat) with an unpleasant experience (a loud and aversive noise). Furthermore, experiments in vicarious learning, or learning by modeling, strongly suggest that phobic anxiety can be acquired by watching the reactions of others to a given stimulus. Cognitive theorists, on the other hand, view anxiety and fear as being related to an individual’s thought processes. Accordingly, it is a person’s interpretations of a stimulus that can create the anxiety (Davison, Kring, & Neale, 2004). Beck and Clark (1997), for instance, argued that automatic thoughts about the threat, which arrived from distorted informational processing, trigger the components of the anxiety response, consequently creating the state of anxiety.
Despite the terminological confusion and the varied emphases of the different theoretical conceptualizations of the origins of fear and anxiety, one fact remains: anxiety is a virtually universal experience. It is generally agreed upon that, without some level of anxiety, people would probably accomplish very little. The presence of a degree of anxiety is considered to be a positive motivational factor in that it provides impetus for physical and intellectual performances (Barlow, 2004; Davison, Kring & Neale, 2004; Klein, 2002; Yerkes & Dodson, 1908). However, when anxiety is experienced in its extreme form, in either its absence or at too great a level, the experience becomes abnormal, causing the emergence of an anxiety disorder.

Two-factor Theory of Anxiety. The rise of behavioral therapy during the 1950 and 60's and the successes of specific behavioral techniques in the treatment of those with phobias awakened an interest in the ways in which learning processes, such as conditioning, were involved in the acquisition of anxiety. The earliest paradigm of learning processes in the development of anxiety was best exemplified by Watson and Rayner's conditioning of the fear of a white rat in Little Albert; needless to say, this illumination of a learned fear focused exclusively on classical conditioning (Barlow, 2004; Klein, 2002; Watson & Rayner, 1920).

Mowrer in 1947, proposed the "two-factor theory," a modification of anxiety acquisition that extended beyond simple classical conditioning. The two-factor theory uses classical conditioning to argue that avoidance is really just an escape from an acquired fear of a specific warning stimulus. Mowrer suggested that a warning stimulus might be regarded as a conditioned stimulus because of its relation to an unpleasant event that an organism later wants to avoid, but which is at first administered together. The
warning stimulus then produces fear, which may be seen as a classically conditioned response (or affective state) or can be seen in light of physical behaviors associated with the activation of the autonomic nervous system. Reinforcement occurs when the instrumental response reduces the fear by terminating the warning stimulus. So actually, avoidance behavior is an escape response moved forward in time. The subject may be regarded as escaping from the fear created by the warning stimulus rather than from the unpleasant event that it has learned to fear (Klein, 2002; Terry, 2006).

When considering the role of the two-factor theory in developing and maintaining phobias, Mowrer suggested that the anxiety characteristic of phobia is acquired in two stages. Firstly, the fear becomes conditioned to the environment that precedes the aversive situation. Secondly, the person then learns an “instrumental or operant behavior that will successfully terminate the feared stimulus” (Klein, 2002, p. 167). Although Mowrer acknowledged the role of classical conditioning and its primacy in the acquisition of phobic anxiety, he hypothesized that avoidance learning was critical in the maintenance of anxiety (Klein, 2002; Mowrer, 1947). He suggested that a phobia will “fail to extinguish if one successfully learns to avoid the feared stimulus” (Barlow, 2004, p. 236). The phobia causes an escape and/or avoidance of the feared thing or situation and this negatively reinforces the person’s behavior when faced with the same event or situation in future. This inability to extinguish the tie between the feared stimulus and the avoidance response results is what Mowrer called the “neurotic paradox.” Mowrer describes this as “the paradox of behavior which is at one and the same time self-perpetuating and self-defeating” (Mowrer, 1950, p. 486). For Mowrer people should optimally and rationally consider and weigh out the consequences
associated with their behavior. In the event that the outcome of such a consideration is favorable, the behavior should be continued; however, if the outcome is unfavorable, the behavior should be stopped. Moreover, he argues that most people are aware that, in the situations they avoid, there is nothing of which to be fearful in reality and that an accurate appraisal of their options between a favorable and unfavorable behavior should lead to an abandoning of avoidance behaviors. Despite the possibility for this cognitively mediated weighing process, however, most phobic individuals fail to stop their self-defeating behavior (Barlow, 2004; Mowrer, 1947; Mowrer 1950). Employing defense mechanisms to alleviate the anxiety further facilitates the behavior of avoiding or escaping.

Defense Mechanisms. Relevant to a discussion of anxiety, it is important to understand what happens when an individual experiences overwhelming amounts of anxiety generally from a non-identifiable or internally cued source. Stemming from Freud’s perspective on anxiety, defense mechanisms are viewed as means of anxiety reduction deployed, at an unconscious or automatic level, in any of the following conditions: when the id impulses are in conflict either with one another or with the superego, or when an external threat is posed to the ego (Freud, 1937). Anna Freud greatly extended upon Freud’s definition of defense mechanisms in the *Ego and Mechanisms of Defense*, published in 1936. Defense mechanisms were conceptualized either as intrapsychic mechanisms that distort the id impulses into an acceptable form or that block id impulses from conscious awareness. The work of both Sigmund and Anna Freud posited a variety of different defense mechanism, many of which have entered into everyday language, such as denial. Some defense mechanisms are considered to be more
adaptive or healthy than others. Freud considered sublimation to be the most productive defense mechanism as opposed to the others he identified (Cramer, 2006; Freud, 1937).

Currently, the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision* (DSM-IV-TR) offers a more behaviorally explicit and less theoretically bound definition of defense mechanisms as “automatic psychological processes that protect the individual against anxiety and from awareness of internal or external dangers or stressors” (American Psychiatric Association [APA], 2000). Examples of defense mechanisms include regression (where an individual reverts back to an earlier stage of development) or intellectualization (where an individual concentrates on the intellectual components of a situation in order to distance him/herself from the emotions associated with the situation). It is generally accepted that defense mechanisms are healthy and helpful coping mechanisms, although there are instances where these mechanisms can serve a maladaptive purpose. Such is the case when the employment of the defense mechanism leads to a chronic avoidance of or delay in taking necessary action. For example, denying the possibility of being exposed to HIV will lead a person to avoid taking a HIV test.

*Anxiety and related disorders.* According to a study by Kessler et al. (1994), anxiety and its related disorders are among the most common mental health concerns. In fact, because of the variety of the ways in which anxiety can impact an individual, there has been a continued trend toward a greater diagnostic specificity in the arena of anxiety disorders. Within the *Diagnostic and Statistical Manual*, considerable changes have taken place throughout the years, resulting in the growing length and specificity of each new edition (Rogler, 1997). The number of anxiety related disorders, for example, has
increased in every edition of the Diagnostic and Statistical Manual and each subsequent edition has emphasized a greater behavioral specificity of the disorders grouped within that category. Such is the case with specific phobia, defined by the *DSM-IV TR* (APA, 2000) as the excessive, unreasonable, and persistent anxiety triggered by an object or situations.

Anxiety disorders are diagnosed by criteria set forth in the *DSM-IV-TR*. Seven principle diagnoses have been identified: Panic Disorder, Agoraphobia, Specific Phobia, Generalized Anxiety Disorder (GAD), Obsessive-Compulsive Disorder, Posttraumatic Stress Disorder, and Acute Stress Disorder. All these disorders are predicated upon clearly present feelings of anxiety (APA, 2000). The feelings of anxiety differ, however, across the spectrum of anxiety disorders. Phobic anxiety differs from the experience of anxiety in disorders such as Generalized Anxiety Disorder, Agoraphobia, and Panic Disorder. For example, in the instance of a specific phobia, anxiety is manifested only in the presence of the phobic object or situation; on the other hand, in GAD, anxiety is almost always present in the form of worry and is in fact not focused on any specific context or object. Until the fourth publication of the Diagnostic and Statistical Manual, in 1994, there was no meaningful classification within the area of specific phobias (Barlow & Durand, 2001; Rogler, 1997). Currently, the areas of specific phobias are categorized by the *DSM-IV-TR* as animal, natural environment, blood-injection, and situational type. Each of these types consists of various stimuli that become the focus of the anxiety. For example, in Blood-and-Injection phobia, the individual’s experience of anxiety is cued by seeing an injury or blood or by receiving an injection (APA, 2000). Following is a brief
discussion on some of the specific stimuli that could trigger feelings of anxiety in individuals as they may pertain to the topic of HIV testing.

Anxiety and HIV Testing

When applying the information with regards to anxiety to the specific case of HIV testing, I argue that the possible fears associated with the situation can include, but are not limited to, medical and death anxiety.

The fear of death is guided by several theories. Becker (1973) argues that all living things share the drive to continue existing, and that the human brain is the most successful survival mechanism. In addition, he also states that the fear of death is natural and it is present in everyone. As soon as the individual is able to think, he or she will realize the drive to continue existing as well as the fact that he or she will die. To Becker this contradiction is at the root of our human anxiety (Liechty, 2000). Firestone (1993) states that despite the fact of our mortality, individuals generally deny or displace their fear of death in order to continue functioning everyday without being overwhelmed by the anxiety caused by the knowledge or foreknowledge of their own demise. The various defenses used to manage the anxiety of death are apparent in a study by Ford, Ewing, Ford, Ferguson and Sherman (2004). Those college students who were primed for anxiety associated with death by first completing death anxiety measure as opposed to completing the death anxiety measure at the end of the session, were found to exhibit a denial-based defensive activity which correlated with a significant increase in self reports of a willingness to engage in high-risk sexual behavior. Safren, Gershuny, and Hendriksen (2003) found that, when controlling for variables of depression and the satisfaction with social support, death anxiety was still associated with overall Post-
Traumatic Stress Disorder (PTSD) symptoms among patients with HIV. They argue that receiving the diagnosis of HIV is a chronic stressor similar to the trauma experienced by individuals who develop PTSD.

Medical anxiety is similar to the widely researched dental anxiety and refers to a context-specific anxiety related to aversive affect and anxiety related avoidance in various medical and healthcare situations. Prior research investigating the impact of dental anxiety on behaviors such as routine checkups and more invasive dental interventions has consistently shown a strong association between dental fear and delay in or avoidance of treatment (Abrahamsson, Berggren, Hallberg & Carlsson 2002; Corah, O’Shea, & Skeels, 1982; Kleinknecht & Bernstein, 1978). Limited research into the connection of medical fear and healthcare behaviors suggests that patients who express high levels of medical anxiety are more likely to delay receiving treatment for an acute and life-threatening medical concern (e.g., angina) than are individuals with lower levels of medical anxiety (Fowler, 1996). When considering the HIV testing process, various potentially anxiety provoking stimuli can be identified such as that the individual to be tested may be exposed to various medical procedures (e.g. blood being drawn), the general healthcare situation (e.g. discussing results with a physician) as well as medical concepts (e.g. germs and disease).

It is likely that anxiety related to HIV/ AIDS shares many commonalities with specific phobias, in that at least some of the anxiety elicited by HIV/ AIDS is bound to a specific stimuli or contexts, such as death and medical anxiety. For example, being fearful of medical procedures, such as blood drawing required by a number of HIV tests, or being fearful of contracting the actual disease both may serve as factors preventing
individuals from getting their serological status checked in the first place or causing them to fail to return. However, beyond specific phobias, HIV testing also likely elicits broader based anxieties such as the anxiety surrounding death: a positive HIV test, assuming its accuracy, is ultimately a death sentence and likely to evoke deep fears in the individual being tested. Employing Mowrer's two-factor model, people's avoidance of being tested and their failure to return for HIV test results can be seen as behaviors of escape and avoidance, not just of the situation surrounding HIV testing, but also of the feared stimulus, AIDS, as well. The behavior of individuals (particularly those engaged in high-risk activities) who avoid testing becomes self-defeating, as an early diagnosis and treatment of HIV could extend their lives and the moral anxieties about inadvertently spreading the disease could be eliminated by an accurate knowledge of HIV status.

Despite compelling reasons to be tested, many individuals avoid being tested.

Despite the distinct possibility that anxiety plays a role in decisions concerning HIV testing – for example, as a causal factor influencing failure to return for the results of HIV testing – an extensive literature review yielded no study that specifically examined the association between anxiety and HIV testing behavior. Moreover, even finding studies that make mention of the possible role of anxiety in individual attitudes toward facets of HIV testing are far and few between, with most of the focus to date falling on samples drawn from outside the USA or consisting of individuals who have already tested HIV positive. One such study by Buckingham (1987) addresses the unique concerns of women and AIDS. The article suggests that those women who test positive for HIV have a heightened anxiety, hence retreating into defense mechanisms, such as denial, and becoming preoccupied with maintaining health.
Anxiety experienced specifically within the HIV testing situation is briefly mentioned in a study by Sullivan et al. (2004) in which self-reported failure to return amongst high-risk persons revealed that, if during pretest counseling. There is an increased focus on the individual’s fear of learning their HIV status, this ultimately leads to a significant reduction in the frequency of failure to return. Lyter et al. (1987) examined the reasons gay and bisexual men decided whether or not to receive their HIV test results. The researcher invited 2047 men who previously enrolled in the Pitt Men’s Study by mail asking them whether they would want to learn their HIV test results. Additionally, they were asked to complete a questionnaire to assess, amongst other variables, their reason for wanting to know or not know the results. Those who indicated they wanted to know their status were seen by a clinician. Of the participants, 54% learned their results, 7% indicated they wanted to receive their results but failed to meet the clinician for a disclosure meeting, 9% formally declined to receive their results and the remaining 30% of the participants failed to respond to the invitation. Of those gay or bisexual men who declined to be informed of their status, 31% cited concern about the harmful psychological impact a positive result might have on them. Forty-eight percent of the respondents indicated that “a positive test result would be too worrisome, and 28% believed that if their results were positive they would be “afraid to have sex” (Lyter et al., 1987, p. 471). Worthington and Myers (2003) explores the social and situational factors underlying anxiety during diagnostic testing. Information from interviews with 41 test recipients was analyzed and four main themes related to anxiety were identified. Throughout the interviews, participants identified themes of perception of risk and responsibility, the social experience of HIV and stigma, the patient-provider power
dynamic, and techniques used by test recipients to enhance a sense of control in the
interaction between self and the provider. The authors go on to discuss practical
implications for providers, such as explicitly addressing a patient's anxiety over perceived
risk; reinforcing testing behavior, promoting further health changing behavior, and the
importance of test provider's demeanor and behavior during testing.

More studies can be found that discuss anxiety and fear of HIV/AIDS in a more
general sense and not only limited to the testing situation. Attitudes and feelings related
to HIV/AIDS were studied by Kaijaleena and Aavarinne (1999) in a study in which 245
university students in Finland were assessed on their attitudes and feelings towards
HIV/AIDS. Respondents in this study expressed more negative and intensive feelings
towards AIDS than HIV, with fear about HIV being linked to the fear of contracting
AIDS. Additionally, students identified feelings of fear towards HIV/AIDS such as
fearing AIDS because it leads to death and fearing contracting HIV as it was “unfair and
as a factor limiting people’s sexual behavior” (Kaijaleena & Aavarinne, 1999, p. 466).
Waldner, Sikka, and Baig (1999) list several studies with regards to the fear of AIDS,
stating that in the past it has been established that the fear of AIDS is linked to the fear of
casual contact with another person who has AIDS rather than a fear of personally
contracting AIDS. Goodwin & Roscie (as cited in Waldner et al., 1999) found in a
sample of 109 university students in the Southwestern USA that the fear of AIDS is
higher amongst men than women. Furthermore, the study established that AIDS
knowledge varies across different ethnical groups, with African Americans having the
lowest scores. AIDS knowledge is important inasmuch as past research suggests a link
between AIDS knowledge and fear of AIDS. For example, Chliaoutakis and Trakas
(1996) collected data from 1552 respondents in Attica, Greece and found that the higher the level of AIDS knowledge, the lower the level of discrimination and stigmatization. Furthermore, the researchers attempted to understand the relationship between AIDS and fear by looking at underlying factors, and although they argue that risk perception may play a part, this did not appear to make sense in all the cases. Due to the paucity of prior research, I believe that an examination of the role of anxiety and defense mechanisms and the ways in which anxiety is involved in avoidance behaviors can provide a deepened understanding of the reasons underlying avoidance of HIV testing and the failure to return for HIV test results.

Current Study

Recent numbers estimate that in the U.S.A. about 1 million people are living with HIV or AIDS. Of these individuals, approximately 250,000 are unaware of their infection (CDC, 2005). In an attempt to understand why there is such a vast amount of infected people unaware of their HIV status, one can possibly explain this by looking at current HIV testing behavior as it is reported in the USA’s population. During the year 2002, approximately half of all men and women between 15-44 years of age reported that they had been tested at least once for HIV, which leaves the other half of the population as never being tested (Anderson, Chandra, & Mosher, 2005). Furthermore, studies suggest that typically about half of the individuals who do take a HIV test fail to return for the results of their test (Dinh et al., 2005; Hightow et al., 2003; Strauss et al. 2002; Sullivan et al., 2004). These statistics about HIV testing behavior indicate that an alarming number of individuals are likely to remain ignorant of their HIV status, either due to not having their HIV status tested at all or a failure to return to receive the results of HIV testing.
This research examined the role anxiety plays in individual decision-making concerning HIV testing behavior. Due to the high probability that being tested for a life-threatening disease provokes anxiety, it was hypothesized that anxiety influences the likelihood both of submitting to an HIV test in the first place and of returning for the results of HIV testing after one has decided to be tested.

The concept of anxiety is both broad and multifaceted; therefore, the research examined the relationship of both broad-based anxiety and more domain-specific (or narrow-band) types of anxiety and attitudes about HIV testing behavior. At its broadest iteration, I assessed trait-based anxiety and the physical, cognitive, and affective symptoms generally associated with anxiety disorders. The domain-specific types of anxiety investigated were facets of medical-context anxiety (specifically those related to germs, the hospital environment, medications, and Blood/Injection/Injury), Death anxiety, and AIDS-Specific anxiety. The role of each of these types – or contexts – of anxiety, individually or in combination, was examined vis-à-vis its impact on HIV testing behavior.

**Hypotheses.** Prior research and speculations based on theory permit basic hypotheses as to how the above mentioned independent variables would impact the two dependent variables: the likelihood to being tested for HIV or the likelihood to return for HIV tests results. Hypotheses for each of the dependent variables are presented below.

**Hypotheses concerning the Likelihood of Being Tested for HIV Status:**

1. Higher levels of General anxiety, as measured by both the state and trait-versions of the STAI, will be associated with lower levels of the likelihood to acquire HIV status.
2. Higher levels of endorsement of anxiety related symptoms, as measured by the SAS, will be associated with lower levels of the likelihood to acquire HIV status.

3. Higher levels of AIDS-Specific anxiety, as measured by the MAAQ, will be associated with lower levels of likelihood to acquire HIV status.

4. Higher levels of Blood/Injection/Injury anxiety, as measured by the B/I/I subscale of the MAS, will be associated with lower levels of the likelihood to acquire HIV status.

5. Higher levels of Germs anxiety, as measured by the Germs Subscale of the MAS, will be associated with lower levels of the likelihood to acquire HIV status.

6. Higher levels of anxiety about taking medications or pharmacist error, as measured by the Medications and Pharmacist subscale of the MAS, will be associated with lower levels of likelihood to acquire HIV status.

7. Higher levels of anxiety about being in the hospital or having to undergo treatment in a medical center, as measured by the Hospital and X-Ray Anxiety subscale of the MAS, will be associated with lower levels of likelihood to acquire HIV status.

8. Higher levels of Death anxiety, as measured by the DAS, will be associated with lower levels of likelihood to acquire HIV status.

Hypotheses concerning the Likelihood of Returning for HIV Test Results.

1. Higher levels of General anxiety, as measured by both the state and trait-versions of the STAI, will be associated with a higher likelihood of failure to return for HIV test results.
2. Higher levels of endorsement of anxiety related symptoms, as measured by the SAS, will be associated with a higher likelihood of failure to return for HIV test results.

3. Higher levels of AIDS-Specific anxiety, as measured by the MAAQ, will be associated with a higher likelihood of failure to return for HIV test results.

4. Higher levels of Blood/Injection/Injury anxiety, as measured by the B/I/I subscale of the MAS, will be associated with a higher likelihood of failure to return for HIV test results.

5. Higher levels of Germs anxiety, as measured by the Germs Subscale of the MAS, will be associated with a higher likelihood of failure to return for HIV test results.

6. Higher levels of anxiety about taking medications or pharmacist error, as measured by the Medications and Pharmacist subscale of the MAS, will be associated with a higher likelihood of failure to return for HIV test results.

7. Higher levels of anxiety about being in the hospital or having to undergo treatment in a medical center, as measured by the Hospital and X-Ray anxiety subscale of the MAS, will be associated with a higher likelihood of failure to return for HIV test results.

8. Higher levels of Death anxiety, as measured by the DAS, will be associated with a higher likelihood of failure to return for HIV test results.

Study Design. The design of the study was passive observational/correlational. The study examined how a group of independent variables (namely, various types of anxiety) impact two separate dependent variables: likelihood of acquiring HIV status (via being tested) and likelihood of returning for results of the HIV status testing. Furthermore, this
study controlled for certain extraneous variables that have been identified as potentially impacting HIV testing behavior.

The dependent variables for this study were identified as the Likelihood of Being Tested for HIV and the Likelihood of Returning for HIV Test Results. The independent variables for this study were identified as General anxiety, AIDS-Specific anxiety, Blood/Injection/Injury anxiety, Germs anxiety, Hospital and X-Ray anxiety, Medications anxiety, and Death anxiety. The extraneous variables identified for this study were gender, ethnicity, relationship status, previous HIV testing behavior, past sexual history, HIV related knowledge, current HIV risk and personal experience of HIV/ AIDS.
Method

Participants

Participants were 347 students in introductory or advanced-level psychology classes attending Western Kentucky University. Of the original sample of participants, five participants were removed from the sample due to excessive missing data. These participants failed to answer the questions adequately, leaving their questionnaire with more than 25% missing data. The final sample retained 342 participants. Participants were recruited in psychology classes and received either the research credit required for the class or extra credit for their participation in the study. There were 129 (37.7%) male participants and 208 female (60.8%) participants. Regarding ethnicity, there were 293 (85.7%) Caucasian participants, 24 (7%) African-American participants, 12 (3.5%) Asian participants, 8 (2.3%) Bi-Racial or Multiracial participants, 2 (.6%) Hispanic or Latino participants, 2 (.6%) Native American or Alaska Native participants and 1 (.3%) Native Hawaiian/Pacific Islander participant. Regarding the participant’s educational level, there were 186 (54.45) participants who classified themselves as first-year college students, 69 (20.2%) who endorsed themselves as second-year college students, 48 (14%) as third-year college students, and 38 (11.1%) who endorsed themselves as fourth-year college students. With regards to the participant’s relationship status, 134 (39.2%) participants reported being single, 161 (47.1%) participants reported being in a relationship, 12 (3.5%) were living with their partners, 18 (5.3%) were engaged, and 16 (4.7%) reported being married. When queried about prior sexual activity, 251 (73.4%) reported that they have been sexually active, and 87 (25.4%) reported that they had never been sexually active. Regarding a history of HIV testing, 60 (17.5%) participants
reported that they had previously taken a HIV test, and 282 (82.5%) reported no prior HIV testing. Five participants (1.5%) did not indicate their gender, 1 (.3%) participant failed to indicate his/her current school year, 1 (.3%) participant did not indicate relationship status, and 4 (1.2%) participants failed to respond to the item concerning past sexual history.

Measures

Vignettes. For the purpose of this study, the researchers created a vignette about HIV testing. The vignette asked participants to imagine that they are able to receive a HIV test today that will be free of charge, anonymous, and tailored to their expectations (i.e. they can pick the specimen, test type, result time frame, etc.). The participants were asked to rate the likelihood that they would take the HIV test if the prescribed parameters obtained as well as rating the likelihood that they will return to receive the HIV test results (See Appendix A). Participants were asked to rate the likelihood of engaging in these HIV testing-related behaviors on a ten-point Likert-type scale on which a rating of “1” would indicate that they are “not likely at all,” a rating of “5” would indicate that they are “somewhat likely,” and a rating of “10” would indicate that they are “extremely likely” to act in the described manner. Responses on these two scales were used as the dependent variables during the stepwise multiple regressions.

Demographics. Participants were asked to provide information regarding demographics (such as age, ethnicity, etc.), relationship history, and HIV/AIDS related information. Research suggests that certain factors are associated with an increased likelihood of failing to return for HIV test results. For example, Hightow et al. (2003) found that failure to return was more common among African Americans and individuals
with a prior history of failure to return. Considering the potential role of demographic variables, participants were asked to answer questions concerning their gender, age, ethnicity, and current school year, as well as the highest educational level achieved by their mother and father (See Appendix B). Furthermore, each participant was asked to answer questions pertaining to personal relationship history, including information concerning marital status, sexual orientation, and whether he or she has a history of being sexually active (See Appendix C). Additionally, participants answered questions relating to HIV/AIDS and HIV testing (See Appendix D). Specifically, each participant was asked whether she or he personally knows or has known someone with HIV/AIDS. Prior research has suggested that such HIV-related factors as knowing someone with HIV/AIDS influences the HIV-related attitudes as well as the likelihood of having HIV status tested (Macintyre, Brown & Sosler, 2001; Camlin & Chimbwete, 2003). Additionally, since past experience with HIV testing as well as the objective characteristics of the testing context have been associated with the failure to return for HIV testing (Keenan & Keenan, 2001; Sullivan et al., 2004) each participant was also asked questions concerning his or her past HIV testing behavior, such as whether he or she had ever taken an HIV test and whether or not he or she knew his or her own HIV status. The participant’s responses to these questions were used for descriptive statistics as well as to control for extraneous variables.

State-Trait Anxiety Inventory. The State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) consists of two 20-item self-report measures that assess state and trait levels of anxiety. Standardized administration involves administering the state version prior to the trait version. Respondents indicate
how much each statement reflects how they feel right now, at this moment (state version),
or how they generally feel (trait version) on four-point Likert-type scales. Participants are
expected to rate these statements by indicating either a 1 if the statement is ‘not at all’
like them, a 2 if it is ‘somewhat’ like them, a 3 if it is like them ‘moderately so,’ and a 4
if the statement is ‘very much so’ like them. Sample items from the state version include
“I feel frightened” and “I feel pleasant.” Sample items from the trait version include “I
wish I could be as happy as others seem to be,” “I am a steady person,” and “I have
disturbing thoughts.” Both scales can be administered in 10 minutes. Anxiety-absent
items on each scale are reverse-scored, and the 20 items of each scale are then summed
for total scores. Scores can range from 20 to 80, with a higher score indicating higher
levels of anxiety. The STAI shows good to excellent internal consistency for both scales
(alphas between .86 and .95) in adult, college, high school student, and military recruit
samples. Convergent validity for the trait-version of the STAI has been demonstrated in
significant correlations with other trait measures of anxiety for both Form Y and Form X
(the prior STAI form) in normal populations (e.g., Creamer, Foran, & Bell, 1995;
Spielberger et al., 1983). The total scores on each scale of this measure were used as
independent variables in the study, indicating the participant’s general level of anxiety.

**Self-Rating Anxiety Scale.** The Self-Rating Anxiety Scale (SAS; Zung, 1971;
Appendix E) is a rating instrument developed for the measurement of the most commonly
agreed upon symptoms of anxiety. The instrument primarily measures somatic symptoms
associated with anxiety (Olatunji, Deacon, Abramowitz, & Tolin, 2006). The SAS is the
self-report component of a two-part instrument: the first part of the instrument, the
Anxiety Status Inventory (ASI) is designed as an instrument to facilitate interview rating
of the examinee, whereas the SAS is a self-report instrument. The SAS consists of 20 items using a four-point Likert-type scale on which each participant is expected to rate how much each of the items have applied to him/herself within the last week. The participant responds with a “1” if the item has applied to him/herself “none or a little of the time,” “2” if it applied “some of the time,” a “3” if it applied a “good part of the time,” and a “4” if the item has applied to him/herself “most or all of the time.” Sample items from the SAS include “I feel more anxious and nervous than usual” and “I can breathe in and out easily.” A total score is obtained by reverse scoring the items stated in an anxiety absent manner and then summing the 20 items of the SAS (Zung, 1971). Scores can range from 20 to 80, with a higher score indicating higher levels of anxiety. The psychometric properties of the SAS appear to be solid. Zung (1971) reported an odd-even split-half reliability of .71 and an internal consistency of .85. Additionally Jegede (1977) reported that the measure has demonstrated adequate internal consistency and test-retest reliability. In correlational analysis between the SAS and other measures of anxiety, evidence of convergent validity was found, although evidence for discriminant validity is limited (Olatunji et al., 2006). The total score from this measure was used as an independent variable in the study, indicating the participant’s general level of anxiety.

*Medical Anxiety Scale.* The Medical Anxiety Scale (MAS; Pegg & Gardner, 2006) is a measurement currently in development. That aims at being a comprehensive measure of the full spectrum of medical anxieties. The MAS includes facets already assessed by measures such as the Medical Fear Survey and Medical Avoidance Survey (Kleinknecht, Thorndike, & Walls, 1996), and the General Medical Anxiety Index (Van Balen & Verdurmen, 1999). Furthermore, the MAS includes items assessing for both
anxiety related to delay in seeking medical care and medical attention, as well as anxiety related avoidance of medical care and treatment. For the present study, the following specific subscales were culled from the MAS to assess anxiety in contexts potentially related to HIV testing or the treatment of AIDS: Blood/Injection/Injury Anxiety (See Appendix F); Germs Anxiety (See Appendix G); Hospital and X-Ray Anxiety (See Appendix H); and, Medications and Pharmacist-Related Anxiety (See Appendix I). Internal consistencies of the subscales employed in the present study, assessed during the development of the measure, vary between .85 (for the Germs Anxiety and Hospital and X-Ray anxiety subscales) and .92 (for the Blood/Injection/Injury subscale). The participant is presented with various statements relating to attitudes toward healthcare personnel and medical situations. The participant is expected to use the six-point Likert type scale to indicate the extent to which he or she agrees or disagrees with each statement. The six points of the scale are as follows: “1” is “Strongly Disagree”; “2” is “Somewhat Disagree”; “3” indicates “Slight Disagreement” with the statement; “4” is “Slightly Agree”; “5” is “Somewhat Agree”; or, “6” is “Strongly Agree”. A total score is obtained by first reverse scoring those items that are stated in an anxiety absent manner, and then summing all the items of each subscale. The total scores from these subscales were used as independent variables in the study, indicating the participant’s levels of Blood/Injection/Injury, Germs, Hospital and X-Ray, and Medications and Pharmacist Anxiety.

Death Anxiety Scale. The Death Anxiety Scale (DAS; Templer, 1970; Appendix J) is one of the few measures of death anxiety. The DAS consists of 15 true-or-false statements (e.g. “I am very much afraid to die,” “The thought of death seldom enters my
mind,” and “It doesn’t make me nervous when people talk about death”). A recently extended version includes the original 15 items as well as an additional 36 new items (Templer et al., 2006). Although the internal consistency for the extended scale is superior to the original version of the measure, Templer et al. (2006) states that researchers should consider both the participant’s time and the purposes for which the measure is being used when deciding which version of the scale to adopt. The scale is scored by summing the anxious positive responses. Scores can range from 15 to 30, with a higher score indicating higher levels of death anxiety. Among the advantages of using the DAS as a measure of death anxiety are its brevity and ease of scoring, as well as its prior use in hundreds of studies (Templer et al., 2006). The instrument has also been formatted into a Likert format and has been used as such in other studies (Safren, Gershuny & Hendriksen, 2003; McMordie, 1979). Additionally, the scale has been translated into various different languages including Afrikaans, Arabic, Chinese, Dutch, French, German, Hindi, Italian, Japanese, Korean, Portuguese, Russian, Spanish, and Swedish (Templer et al., 2006). Stevens, Cooper and Thomas (1980) established age norms for the true-false format of the DAS. Psychometric properties for the DAS were found to be good with a test-retest reliability of .83 and a Kuder-Richardson internal consistency coefficient of .76 (Templer, 1970). In addition, Handal (1975) validated the DAS as an acceptable measure of the defense mechanism of repression. The total score from this measure was used as an independent variable in the study, indicating the participant’s level of Death anxiety.

*Multidimensional AIDS Anxiety Questionnaire.* An exhaustive review of the literature yielded only one measurement for the assessment of AIDS-specific anxiety.
Snell and Finney (1996) developed the Multidimensional AIDS Anxiety Questionnaire (MAAQ; 1996; Appendix K) consisting of 50 Likert-type scale questions assessing several areas of anxiety related to AIDS. These areas are: physiological arousal (as reflected by the item: “When I think about AIDS, I feel tense”), fear of AIDS (as reflected by the item: “I’m afraid of getting AIDS”), sexual inhibition (as reflected by the item: “AIDS makes me feel jittery about having sex with someone.”), cognitive worry (as reflected by the item: “thinking about AIDS makes me feel anxious.”), discussion inhibition (as reflected by the item: “I sometimes find it hard to discuss issues dealing with AIDS.”) and anxiety about AIDS (as reflected by the item: “I’m concerned that I might be carrying the AIDS virus.”). Each participant is expected to rate his or her response to these statements on a five-point Likert-type scale. Participants indicate a 1 if the response is ‘Not at all characteristic of me;’ a 2 for ‘Slightly characteristic of me;’ a 3 for ‘Somewhat characteristic of me;’ a 4 for ‘Moderately characteristic of me;’ and a 5 if the statement is ‘Very characteristic of me.’ The MAAQ is scored by reverse scoring the items that are anxiety absent after which the participant’s responses are summed to yield a total score. The MAAQ shows high internal consistency (alphas of these various areas ranging between .85 and .94) (Snell & Finney, 1996). Scores can range from 50 to 250, with a higher score indicating higher levels of AIDS-specific anxiety. The total score from this measure was used as an independent variable in the study, indicating the participant’s level of AIDS-specific anxiety.

*HIV Risk Assessment.* In order to obtain a level of each participant’s current HIV risk exposure, questions adopted from the CDC’s published guidelines for HIV counseling, testing, and referral (CDC, 2001, Appendix L) were used. Participants can
complete this screening instrument either during a face-to-face interview, through a computer assisted interview, or by self report; however insufficient data exist to support the efficacy of any one of these approaches over any of the others (CDC, 2001). The assessment includes 6 true-false statements that assesses the individual’s potential exposure to HIV due to behavioral risk (e.g. “Since your last HIV test [if ever], have you injected drugs and shared equipment [e.g., needles, syringe, cotton water] with others?”) as well as assessing some clinical signs (e.g. Since your last HIV test [if ever], have you had a fever or illness of unknown cause?”). If a participant responds true to 1 or more of these 6 statements, he/she should be considered at an increased risk for HIV exposure.

For the purpose of this study, each participant’s responses will be summed to yield a total score indicating the participant’s overall HIV risk. Scores can range from 0 to 6, with a higher score indicating higher levels of HIV risk. The total score from this measure was used in the study to control for the impact of current HIV risk on the dependent variables.

_HIV Knowledge Questionnaire_. As noted above, several studies have indicated that knowledge about HIV/AIDS appears to be a determinant of behavior change (Carey & Schroder, 2002; Chliaoutakis & Trakas, 1996; Waldner et al., 1999). Participant’s level of HIV/AIDS knowledge was assessed by completing the HIV Knowledge Questionnaire, 18 item version (HIV-KQ-18; Carey & Schroder, 2002; Appendix M). The HIV-KQ-18, is a shortened version of the original HIV Knowledge Questionnaire (HIV-K-Q), which consisted of 45 items (Carey, Morrison-Beedy, & Johnson, 1997). The HIV-KQ-18 consists of items aimed at measuring an individual’s self-reported HIV-related knowledge. The participant is required to respond to fact-based questions about HIV by indicating whether the presented statement is ‘True’ or ‘False.’ The measure is
scored by summing the number of correct responses. Scores can range from 0 to 18, with a higher score indicating better knowledge of HIV/AIDS. The HIV-KQ-18 demonstrated good internal consistency (alphas ranging between .79 and .89) as well as good test-retest reliability (ranging between .76 and .94) and correlational analysis indicated strong associations with other measures such as the HIV-K-Q (Carey & Schroder, 2002). The total score from this measure was used in the study to control for the impact of HIV knowledge on the dependent variables.

Procedure

Approval for this study was obtained from the Western Kentucky University’s Human Subjects Review Board (Appendix N). Upon approval, a research assistant solicited participants in their various classes. Participants first signed an Informed Consent form (Appendix O). All participants were then assessed on a general level of anxiety by utilizing the STAI and the SAS. Participants were then required to complete a section querying personal demographics, HIV-related demographics, and relationship history. Additionally, participants completed the HIV-KQ-18 and an assessment of their current HIV risk. Participants then completed the measures that assessed specific or “narrowband” areas of anxiety: the MAAQ; the subscales of the MAS; and, the DAS.

To address concerns about position effect in the administration of the assessments, two versions of the questionnaire packets used in the research were developed. The measures of specific anxiety were randomly assigned to one of two test versions. Each participant was then randomly assigned to either of the two test versions. This allowed the researchers to counterbalance partially the data collected.
Participants were required to complete the questionnaires online on a restricted-to-user university study board. The participants were required to have a password to login to the University study board. The password was specific to a given participant and provided by the study board administrator. Moreover, after logging into the study board site, the participant must then opt to take the study and will not be able to access the study without specifically signing up for it through the study board. No access to the instruments being used in the study was permitted prior to the participant’s consenting to participate in the study, nor were the instruments available to the participants after completion of the questionnaire.

After the participants completed the bulk of the questionnaires comprising the research packet, a modified form of the state-version of the STAI was administered to determine if taking the survey itself caused any transient changes in level of anxiety. The instructions for the modified state-based anxiety inventory was framed so as to gauge the sensations of anxiety or anxiety related affect experienced by the participants during the administration of the research packet. At the conclusion of the research, a debriefing form (Appendix P) was presented that provided the participants with a list of resources available to them should they want to determine their HIV status. Contact information for mental health services was also provided for the unlikely contingency that any participant experienced distress as a consequence of his or her participation in the research. A list of websites that present information about HIV/AIDS, such as the Center for Disease Control’s AIDS Awareness website, was also provided; notably, the CDC’s website also provides a list of free and anonymous HIV testing sites. The entire procedure took 60-90 minutes.
Results

Counterbalancing. The possibility of position effect was statistically managed via counterbalancing. T-tests were conducted to determine if any significant difference was obtained between the two different test versions. Independent samples t-tests were run between the participant’s responses on the STAI, SAS, MAAQ, MAS subscales, and the DAS. The results of all of the performed t-test were non-significant suggesting no support for a hypothetical position effect.

Missing Data. Missing data was replaced by performing an item-level mean imputation of the missing variables. This procedure was used only to address missing data on the measures of anxiety, i.e. on the STAI, SAS, MAAQ, MAS subscales, and the DAS. On the State version of the STAI, 18 (5.3%) participants failed to answer at least 1 but no more than 3 items, resulting in missing data that was replaced through imputation. On the Trait version of the STAI, 28 (8.2%) of the participants failed to answer at least 1 but no more than 3 items. On the SAS, 12 (3.5%) of the participants neglected to answer the measure completely with the resultant use of mean imputation. On the MAAQ, item-level mean imputation was needed for 47 (13.7%) of the participants, who missed at least 1 but no more than 4 of the items. The frequency of this procedure on the different subscales of medical anxiety were as follows: 10 participants (2.9%) on the Blood/Injection/Injury subscale of the MAS; 11 participants (3.2%) on the Hospital and X-Ray subscale of the MAS; 4 participants (1.2%) on the Germs subscale of the MAS; and 7 participants (2%) on the Medications and Pharmacist subscale of the MAS missed items and required mean imputation. On the DAS, item-level mean imputation was
needed for 8 (2.3%) of the participants who missed at least 1 but no more than 2 of the items.

After imputing the means of the items, item scores for each measure were then summed, according to the requirements of each measure, to yield the relevant subscale and total scores used in further data analysis.

*Internal Consistency of Measures.* In order to assess the reliability of the measures used in the study, the internal consistency of each of the measures used as independent variables during the multiple regression analyses was obtained. The reliability of the measures for General (or broad-based) anxiety were as follows: State anxiety (Cronbach’s Alpha = .93), Trait anxiety (Cronbach’s Alpha = .93), SAS (Cronbach’s Alpha = .83). Reliability scores for the measures of specific anxiety were as follows: MAAQ (Cronbach’s Alpha = .96) and DAS (Cronbach’s Alpha = .79). The reliability scores for the different measures of subtypes of medical anxiety were as follows: the Blood/Injection/Injury subscale of the Medical Anxieties Scale (MAS) (Cronbach’s Alpha = .83), the Hospital and X-Ray subscale of the MAS (Cronbach’s Alpha = .86), the Germs subscale of the MAS (Cronbach’s Alpha = .89), and the Medications and Pharmacist subscale of the MAS (Cronbach’s Alpha = .85).

*Descriptive Statistics.* The mean and standard deviation of the participants’ total scores on each of the measures of anxiety are provided in Table 4, as well as the range on each of these instruments. Additionally, the participants are grouped according to their responses on the demographic questions. The mean and standard deviation on each of the measures of anxiety are provided according to the participant’s gender (Male or Female) in Table 5, ethnicity (Caucasian or Non-Caucasian) in Table 6, prior HIV testing history
in Table 7, past sexual history in Table 8, and relationship status (Single or “In a relationship”) in Table 9.

Table 4

Descriptive Statistics of Participants’ raw scores across the measures of anxiety.

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Instrument Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety</td>
<td>38.15</td>
<td>11.15</td>
<td>20 - 80</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>39.44</td>
<td>11.25</td>
<td>20 - 80</td>
</tr>
<tr>
<td>Self-rating Anxiety Scale</td>
<td>33.73</td>
<td>7.81</td>
<td>20 - 80</td>
</tr>
<tr>
<td>Multidimensional AIDS Anxiety Questionnaire</td>
<td>93.34</td>
<td>31.65</td>
<td>50 - 250</td>
</tr>
<tr>
<td>Medical Anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood/Injection/Injury</td>
<td>20.88</td>
<td>9.66</td>
<td>7 - 42</td>
</tr>
<tr>
<td>Germs</td>
<td>25.42</td>
<td>10.26</td>
<td>10 - 60</td>
</tr>
<tr>
<td>Hospital and X-Ray</td>
<td>35.37</td>
<td>12.31</td>
<td>11 - 66</td>
</tr>
<tr>
<td>Medications and Pharmacist</td>
<td>19.98</td>
<td>9.27</td>
<td>10 - 60</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>22.64</td>
<td>3.53</td>
<td>15 - 30</td>
</tr>
</tbody>
</table>
Table 5

*Descriptive Statistics of Male and Female raw scores across the measures of anxiety.*

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Male Mean</th>
<th>Male Standard Deviation</th>
<th>Female Mean</th>
<th>Female Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety</td>
<td>37.57</td>
<td>11.28</td>
<td>38.41</td>
<td>11.02</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>38.47</td>
<td>11.57</td>
<td>39.93</td>
<td>10.99</td>
</tr>
<tr>
<td>Self-rating Anxiety Scale</td>
<td>32.17</td>
<td>7.77</td>
<td>34.64</td>
<td>7.65</td>
</tr>
<tr>
<td>Multidimensional AIDS Anxiety Questionnaire</td>
<td>89.86</td>
<td>30.49</td>
<td>95.70</td>
<td>32.81</td>
</tr>
<tr>
<td>Medical Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood/Injection/Injury</td>
<td>18.69</td>
<td>8.92</td>
<td>22.26</td>
<td>9.81</td>
</tr>
<tr>
<td>Germs</td>
<td>22.14</td>
<td>9.45</td>
<td>27.38</td>
<td>10.21</td>
</tr>
<tr>
<td>Hospital and X-Ray</td>
<td>33.05</td>
<td>11.03</td>
<td>36.63</td>
<td>12.85</td>
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<tr>
<td>Medications and Pharmacist</td>
<td>19.09</td>
<td>8.40</td>
<td>20.47</td>
<td>9.69</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>23.72</td>
<td>3.30</td>
<td>21.97</td>
<td>3.52</td>
</tr>
</tbody>
</table>
Table 6

*Descriptive Statistics of Caucasian and Non-Caucasian raw scores across the measures of anxiety.*

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Caucasian</th>
<th></th>
<th>Non-Caucasian</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>State Anxiety</td>
<td>37.96</td>
<td>11.09</td>
<td>38.67</td>
<td>11.02</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>39.13</td>
<td>11.04</td>
<td>41.04</td>
<td>12.21</td>
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<tr>
<td>Self-rating Anxiety Scale</td>
<td>33.65</td>
<td>7.88</td>
<td>33.99</td>
<td>6.89</td>
</tr>
<tr>
<td>Multidimensional AIDS Anxiety Questionnaire</td>
<td>91.33</td>
<td>30.78</td>
<td>106.92</td>
<td>35.53</td>
</tr>
<tr>
<td>Medical Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germs</td>
<td>25.24</td>
<td>10.19</td>
<td>26.36</td>
<td>10.40</td>
</tr>
<tr>
<td>Hospital and X-Ray</td>
<td>35.10</td>
<td>12.05</td>
<td>36.05</td>
<td>13.36</td>
</tr>
<tr>
<td>Medications and Pharmacist</td>
<td>19.62</td>
<td>9.17</td>
<td>21.82</td>
<td>9.43</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>22.65</td>
<td>3.53</td>
<td>22.37</td>
<td>3.69</td>
</tr>
</tbody>
</table>
Table 7

Descriptive Statistics of Participant’s (with history of prior or no prior HIV testing) raw scores across the measures of anxiety.

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Prior HIV Test</th>
<th></th>
<th>No Prior HIV Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>State Anxiety</td>
<td>37.56</td>
<td>11.70</td>
<td>38.17</td>
<td>10.94</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>39.21</td>
<td>12.00</td>
<td>39.21</td>
<td>11.06</td>
</tr>
<tr>
<td>Self-rating Anxiety Scale</td>
<td>35.85</td>
<td>8.81</td>
<td>33.24</td>
<td>7.43</td>
</tr>
<tr>
<td>Multidimensional AIDS Anxiety Questionnaire</td>
<td>92.94</td>
<td>31.05</td>
<td>93.70</td>
<td>32.15</td>
</tr>
<tr>
<td>Medical Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germs</td>
<td>26.31</td>
<td>10.92</td>
<td>25.20</td>
<td>10.06</td>
</tr>
<tr>
<td>Hospital and X-Ray</td>
<td>34.24</td>
<td>13.37</td>
<td>35.45</td>
<td>11.99</td>
</tr>
<tr>
<td>Medications and Pharmacist</td>
<td>20.11</td>
<td>9.54</td>
<td>19.90</td>
<td>9.17</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>22.83</td>
<td>3.56</td>
<td>22.56</td>
<td>3.56</td>
</tr>
</tbody>
</table>
Table 8

Descriptive Statistics of Participant's (with history of sexually active or no sexually active history) raw scores across the measures of anxiety.

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Sexually Active Past</th>
<th>No Sexually Active Past</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>State Anxiety</td>
<td>38.42</td>
<td>11.04</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>39.96</td>
<td>11.14</td>
</tr>
<tr>
<td>Self-rating Anxiety Scale</td>
<td>34.30</td>
<td>8.06</td>
</tr>
<tr>
<td>Multidimensional AIDS Anxiety Questionnaire</td>
<td>94.60</td>
<td>32.84</td>
</tr>
<tr>
<td>Medical Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germs</td>
<td>25.36</td>
<td>10.40</td>
</tr>
<tr>
<td>Hospital and X-Ray</td>
<td>35.25</td>
<td>12.23</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>22.38</td>
<td>3.51</td>
</tr>
</tbody>
</table>
Table 9

*Descriptive Statistics of Single Participant’s or Participants in a relationship’s raw scores across the measures of anxiety.*

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Single</th>
<th>In a Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>State Anxiety</td>
<td>40.14</td>
<td>10.55</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>41.34</td>
<td>11.68</td>
</tr>
<tr>
<td>Self-rating Anxiety Scale</td>
<td>34.00</td>
<td>7.73</td>
</tr>
<tr>
<td>Multidimensional AIDS Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questionnaire</td>
<td>99.18</td>
<td>32.83</td>
</tr>
<tr>
<td>Medical Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood/Injection/Injury</td>
<td>20.69</td>
<td>9.74</td>
</tr>
<tr>
<td>Germs</td>
<td>24.36</td>
<td>10.34</td>
</tr>
<tr>
<td>Hospital and X-Ray</td>
<td>35.05</td>
<td>12.15</td>
</tr>
<tr>
<td>Medications and Pharmacist</td>
<td>20.04</td>
<td>8.61</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>22.64</td>
<td>3.53</td>
</tr>
</tbody>
</table>
Furthermore, Table 10 presents the mean and standard deviation of each participant's response to the likelihood of being tested for HIV and the likelihood of returning for the results of HIV testing. Additionally, the mean and standard deviation of participant's responses to the likelihood of being tested for HIV and the likelihood of returning for the results of HIV testing are provided according to the participant's gender (Male or Female), ethnicity (Caucasian or Non-Caucasian), prior HIV testing history, past sexual history, and relationship status (Single or "In a relationship") in Table 11.

Table 10

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likelihood of Being</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tested for HIV Status</td>
<td>5.63</td>
<td>3.39</td>
<td>1 - 10</td>
</tr>
</tbody>
</table>
| Likelihood of Returning for
| the Results of HIV testing| 6.58 | 3.58               | 1 - 10|
Table 11

*Descriptive Statistics of Respondents across the likelihood of being tested for HIV and the likelihood of returning for the results of HIV testing grouped by demographics*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Likelihood of Being Tested for HIV</th>
<th>Likelihood of Returning for results of HIV test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5.19</td>
<td>3.49</td>
</tr>
<tr>
<td>Female</td>
<td>5.90</td>
<td>3.32</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>5.49</td>
<td>3.41</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>6.53</td>
<td>3.25</td>
</tr>
<tr>
<td>HIV testing history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior HIV Testing</td>
<td>7.90</td>
<td>2.94</td>
</tr>
<tr>
<td>No Prior HIV Testing</td>
<td>5.14</td>
<td>3.29</td>
</tr>
<tr>
<td>Sexual History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexually Active Past</td>
<td>6.13</td>
<td>3.26</td>
</tr>
<tr>
<td>No Sexually Active Past</td>
<td>4.26</td>
<td>3.42</td>
</tr>
<tr>
<td>Relationship Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>5.30</td>
<td>3.46</td>
</tr>
<tr>
<td>In a Relationship</td>
<td>5.74</td>
<td>3.43</td>
</tr>
</tbody>
</table>
**Likelihood of Being Tested for HIV.** Hypotheses designed to answer research questions related to the Likelihood of Being Tested for HIV were tested using a stepwise regression analyses to determine which of the independent variables included in the data analysis were the strongest predictor(s) of the likelihood of being tested for HIV.

Independent variables included State Anxiety (Total score from the State version of the STAI), Trait Anxiety (Total score from the Trait version of the STAI), General Anxiety (Total score from the SAS), AIDS-Specific Anxiety (Total score from the MAAQ), Blood/Injection/Injury Anxiety (Total score from the MAS, Blood/Injection/Injury subscale), Germs Anxiety (Total score from the MAS, Germs subscale), Hospital and X-Ray Anxiety (Total score from the MAS, hospital and X-Ray subscale), Medications and Pharmacist Anxiety (Total score from the MAS, Medications and Pharmacist subscale), and Death anxiety (Total score from the DAS). Stepwise regression revealed that a single variable, AIDS-Specific Anxiety, was the strongest predictor of the likelihood of being tested for HIV ($R = .139$, $R^2_{adj} = .016$, $F(1, 340) = 6.68$, $p < .05$). Overall, the model retained after regression analysis accounted for only 13% of variance in the likelihood of getting tested for HIV. See Table 12 for a summary of the overall model. Table 13 displays the bivariate and partial correlation coefficients for the final model.

Table 12

**Model Summary for Variable(s) Predicting Likelihood of Being Tested for HIV**

<table>
<thead>
<tr>
<th>Step</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>$\Delta R^2$</th>
<th>$F_{chg}$</th>
<th>$p$</th>
<th>$df_1$</th>
<th>$df_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS-Specific Anxiety</td>
<td>.139</td>
<td>.019</td>
<td>.016</td>
<td>.019</td>
<td>6.68</td>
<td>&lt;.05</td>
<td>1</td>
<td>340</td>
</tr>
</tbody>
</table>
Table 13

Coefficients for Final Model Predicting Likelihood of Being Tested for HIV

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>t</th>
<th>Bivariate r</th>
<th>Partial r</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS-Specific Anxiety</td>
<td>.015</td>
<td>.006</td>
<td>2.58*</td>
<td>.010</td>
<td>.004</td>
</tr>
</tbody>
</table>

Note. *p < .05.

Likelihood of Returning for HIV Test Results. Hypotheses developed to answer research questions related to the Likelihood of Returning for HIV Test Results were tested using a stepwise regression analysis to determine which of the independent variables were the strongest predictor(s) of the Likelihood of Returning for HIV Test Results. The independent variables included in the analysis were State anxiety (Total score from the State version of the STAI), Trait anxiety (Total score from the Trait version of the STAI), General anxiety (Total score from the SAS), AIDS-Specific anxiety (Total score from the MAAQ), Blood/Injection/Injury anxiety (Total score from the MAS, Blood/Injection/Injury subscale), Germs anxiety (Total score from the MAS, Germs subscale), Hospital and X-Ray anxiety (Total score from the MAS, hospital and X-Ray subscale), Medications and Pharmacist anxiety (Total score from the MAS, Medications and Pharmacist subscale), and Death anxiety (Total score from the DAS). Stepwise regression revealed that a single variable, Hospital and X-Ray anxiety, was the strongest predictor of the Likelihood of Returning for HIV test Results ($R = .121$, $R^2_{adj} = .012$, $F(1, 340) = 5.07, p = <.05$). Overall, the variable retained after regression analysis accounted for only 12% of the variance of the model. See Table 14 for a summary of the
overall model. Table 15 displays the bivariate and partial correlation coefficients for the final model.

Table 14

*Model Summary for Variable(s) Predicting Likelihood of Returning for HIV Test Results*

<table>
<thead>
<tr>
<th>Step</th>
<th>R</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>$\Delta R^2$</th>
<th>$F_{chg}$</th>
<th>p</th>
<th>$df_1$</th>
<th>$df_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital and X-Ray</td>
<td>Anxiety</td>
<td>.121</td>
<td>.015</td>
<td>.012</td>
<td>.015</td>
<td>5.07</td>
<td>&lt;.05</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 15

*Coefficients for Final Model Predicting Likelihood of Returning for HIV Test Results*

<table>
<thead>
<tr>
<th>Step</th>
<th>B</th>
<th>$\beta$</th>
<th>t</th>
<th>Bivariate $r$</th>
<th>Partial $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital and X-Ray</td>
<td>Anxiety</td>
<td>.035</td>
<td>.016</td>
<td>2.25*</td>
<td>.025</td>
</tr>
</tbody>
</table>

Note. *p < .05.

*Exploratory Analyses.* Upon completion of the proposed study, several factors influenced the decision to do exploratory analyses. When considering that the expected results where not obtained and that unequivocal support for the proposed hypotheses was not provided, I deemed it necessary to re-review the data collected in an attempt to explore possible explanations as to the results. Considering the low amount of variance attributed to the various anxiety measures, I decided to explore the impact of other factors, specifically, the influence of the individual's demographics on the models. In order to control for the effects of subject related extraneous variables on the
aforementioned models, linear regression analyses were performed to determine to what extent the extraneous variables influenced the likelihood of being tested for HIV as well as the likelihood of returning for HIV test results. The participants responses to gender (Male or Female), ethnicity (Caucasian or Non-Caucasian), previous HIV testing history ("Have taken a HIV test" or "Not taken a HIV test"), past sexual history ("Have been sexually active" or "Have never been sexually active"), and relationship status ("Single" or "In a relationship"), current HIV risk (Total score from the HIV risk assessment), and HIV knowledge (Total score from HIV-KQ-18), were regressed onto each of the two dependent variables and unstandardized residual scores were calculated. The unstandardized residual score represents the variance in the dependent variable’s score after the variance that can be explained by the extraneous variables have been removed. For this study i.e. it would mean that the unstandardized residual score for the likelihood of being tested for HIV as well as the likelihood to return for the results represent the likelihood that has been adjusted for the effect of the various demographics. The stepwise regression analyses to determine which of the independent variables were the strongest predictor(s) of the two dependent variables – that is, the likelihood of being tested for HIV and the likelihood of returning for HIV test results – were repeated using the unstandardized residual scores of each of these dependent variables. The stepwise regression analysis revealed that no model was retained for either of the dependent variables, i.e. none of the independent anxiety measures accounted for a significant amount of variance in the models.

Furthermore, considering that there is such a scarcity in the literature with regards to the influence of anxiety on HIV testing behavior as well as HIV/AIDS anxiety in general,
I decided to explore this area even thought this is not what I originally set forth to accomplish. Considering the data collected I deemed that the most fruitful exploratory analyses would be to explore, albeit briefly, the impact of the various factors on AIDS-Specific anxiety. This was accomplished by performing a stepwise regression analysis to explore the influence of the various anxieties on AIDS-Specific anxiety. The independent variables included: State anxiety (Total score from the State version of the STAI), Trait anxiety (Total score from the Trait version of the STAI), General anxiety (Total score from the SAS), Blood/Injection/Injury anxiety (Total score from the MAS, Blood/Injection/Injury subscale), Germs anxiety (Total score from the MAS, Germs subscale), Hospital and X-Ray anxiety (Total score from the MAS, hospital and X-Ray subscale), Medications and Pharmacist anxiety (Total score from the MAS, Medications and Pharmacist subscale), and Death anxiety (Total score from the DAS). The dependent variable was the participants reported AIDS-Specific anxiety (as indicated by the total score from the MAAQ). Results revealed an overall model of three predictors: Death anxiety ($R = .57, R^2_{adj} = .255, F(1, 340) = 117.85, p = .05$); Germs anxiety ($R = .56, R^2_{adj} = .315, F(1, 339) = 30.82, p = .05$) and Trait anxiety ($R = .57, R^2_{adj} = .327, F(1, 338) = 26.18, p = .05$). This model accounted for 33% of variance on AIDS-Specific anxiety. See Table 16 for a summary of the overall model. Table 17 displays the bivariate and partial correlation coefficients for the final model.
Table 16

*Model Summary for Variable(s) Predicting AIDS-Specific Anxiety*

<table>
<thead>
<tr>
<th>Step</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>$\Delta R^2$</th>
<th>$F_{chg}$</th>
<th>$p$</th>
<th>$df_1$</th>
<th>$df_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death Anxiety</td>
<td>.507</td>
<td>.257</td>
<td>.255</td>
<td>.257</td>
<td>117.85</td>
<td>&lt;.05</td>
<td>1</td>
<td>340</td>
</tr>
<tr>
<td>Germs Anxiety</td>
<td>.565</td>
<td>.319</td>
<td>.315</td>
<td>.062</td>
<td>30.82</td>
<td>&lt;.05</td>
<td>1</td>
<td>339</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>.577</td>
<td>.333</td>
<td>.327</td>
<td>.014</td>
<td>6.97</td>
<td>&lt;.05</td>
<td>1</td>
<td>338</td>
</tr>
</tbody>
</table>

Table 17

*Coefficients for Final Model Predicting AIDS-Specific Anxiety*

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
<th>$\beta$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death Anxiety</td>
<td>-3.005</td>
<td>-.335</td>
<td>-6.365</td>
</tr>
<tr>
<td>Germs Anxiety</td>
<td>.824</td>
<td>.263</td>
<td>5.194</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>.365</td>
<td>.128</td>
<td>2.641</td>
</tr>
</tbody>
</table>
Discussion

The purpose of this study was to determine the influence of anxiety – both general and specific types of anxiety – on prospective HIV testing behavior. The hypotheses under study focused on the extent to which General anxiety, AIDS-Specific anxiety, Blood/Injection/Injury anxiety, Germs anxiety, Hospital and X-Ray anxiety, Medications and Pharmacist anxiety, and Death anxiety, would influence disease-status testing-related variables: Likelihood of Being Tested for HIV and the Likelihood of Returning for the Results of HIV Testing. Hypotheses concerning the Likelihood of Being Tested for HIV stated that lower levels of likelihood to be tested for HIV would be associated with higher levels of General anxiety, AIDS-Specific anxiety, Blood/Injection/Injury anxiety, Germs anxiety, Hospital and X-Ray anxiety, Medications and Pharmacist anxiety as well as higher levels of Death anxiety. Hypotheses concerning the Likelihood of Returning for HIV Test Results stated that a higher likelihood of failure to return for HIV test results would be associated with higher levels of General anxiety, AIDS-Specific anxiety, Blood/Injection/Injury anxiety, Germs anxiety, Hospital and X-Ray anxiety, Medications and Pharmacist anxiety, and Death anxiety.

The current study did not provide unequivocal support for the hypotheses. Although, a higher degree of AIDS-Specific anxiety influenced the likelihood of receiving a HIV test and a higher level of both Hospital and X-Ray anxiety influenced the likelihood of failing to return to receive the results of a HIV test, the variance attributed to each of these was of a low order. Once the researchers controlled for such relevant demographic variables as gender, ethnicity, previous HIV testing history, past sexual history, relationship status, current HIV risk, and HIV knowledge, the variance accounted
for in the two regression equations by AIDS-Specific Anxiety and Hospital and X-Ray Anxiety, respectively, was no longer significant and none of the variables in the study were retained in a model. These results could potentially be due to some identified limitations of the present study. The findings of the research were no doubt influenced by the fact that the vast majority of the college-aged participants in the study did not report a significantly high incidence of past HIV testing behavior or current HIV risk exposure. It is arguable that participants with a greater risk exposure to HIV may exhibit different HIV testing behavior, for example being more or less likely to obtain a HIV test.

Additionally, participants who have a prior history of HIV testing may be more likely to seek out future testing considering that they have already been through the experience. Considering the population of participants for this study, it is arguable that results were not significant since these participants have no prior motivation or experience that guided their HIV testing behavior. Moreover, the dependent variables chosen may have been sub-optimal. Participants were expected to rate their HIV testing behavior based on a hypothetical vignette, and although the researchers made an effort to present a plausible scenario, the results very likely would have been significantly different if the participants were assessed in vivo while actually submitting to an HIV test.

When considering the results it is also important to note the influence of (at least within the context of the present study) extraneous variables. Past research has suggested that specific individual characteristics, such as gender, ethnicity, and knowing someone who is HIV positive, influence HIV testing behavior (Camlin & Chimbwete, 2003; Hightow et al, 2003; Keenan & Keenan, 2001; Macintyre et al., 2001). The impact of demographic and HIV-status related variables on the present study provides
substantiation for these findings. Furthermore, the impact of factors like gender, ethnicity, and prior HIV-testing history raises the possibility that HIV testing behavior may be largely due to the specific characteristics and experiences of the individual rather than a more etic or universal experience of anxiety.

It is noteworthy that the results of our exploratory analyses indicated that Death anxiety, Germs anxiety and Trait anxiety, all added significantly to the prediction of AIDS-Specific anxiety in a stepwise regression. Several studies have made mention of the fear associated with HIV/AIDS (Kaijaleena & Aavarinne, 1999; Waldner et al. 1999; Worthington & Myers, 2003). Arguably, HIV testing behavior may be influenced by AIDS-Specific anxiety, which, at least according to the results of the present study, may be influenced by other specific types of anxiety. Ultimately receiving a positive HIV test result can be interpreted by the individual who receives the results as a death sentence, since there is currently no cure for HIV/AIDS. When looking at HIV from this perspective, it becomes apparent why Death anxiety may have such a significant impact on AIDS-Specific anxiety.

Considering the dearth of past research as concerns the influence of anxiety on HIV testing behavior, the results of this study, although limited, do provide some insight into the role anxiety may play. The strength of the study therefore lies within its attempt to contribute to the field as it yielded some information about the role of anxiety on HIV testing behavior. As noted by Janssen et al. (2001) one approach to reducing HIV incidence in the USA would be to increase the number of HIV-infected persons who are aware of their serostatus. Possibly this study could springboard future research in the area of HIV testing behavior. It is arguable that a greater understanding of factors impacting
an individual's HIV testing behavior might ultimately lead to an improved testing experience, which could decrease the vast number of individuals without knowledge of their HIV status and ultimately may contribute to the decrease of HIV incidence.

**Limitations and Future Research.** As noted above, there are some possible limitations to the present study. The population for this study consisted entirely of college-aged individuals. Additionally, the participants were all students drawn from a university in a relatively rural part of the southern USA. Few of these students reported a past history of prior HIV testing, although almost three quarters of the sample reported a past history of being sexually active. The results obtained may have been different if the population used were either individuals who are more likely to be tested for HIV or individuals at an elevated risk of HIV infection. A similar study may be fruitfully repeated using a more demographically diverse population (for example a population with older participants, more ethnically diverse participants and/or participants with different education level). Furthermore, it may be beneficial to repeat the study in a population in which the participants were more likely to have been exposed to seropositive individuals; resulting in either a higher rate of prior testing for HIV status and/or a more likely, higher HIV risk.

Furthermore, the questions used to measure the dependent variables were derived from a hypothetical vignette asking the participant to rate the likelihood of taking a hypothetical HIV test. It is possible that the vignette failed to evoke a vividly imaginable experience of being tested for HIV and thus did not engender the full range of feelings of anxiety that would accompany the actual HIV testing experience. Ideally, future studies may want to aim at measuring a participant's levels of anxiety, *in vivo*, i.e. having a
participant complete the measure of anxiety immediately prior to receiving an actual HIV test. Additionally, the exclusive reliance on self-report measures may have limited the results. It is not unlikely that some of the participants may have randomly answered the questions or may have done so in a socially desirable fashion, the latter being especially problematic, considering that many of the questions dealt with sexual practices.

Another limitation to the present study is evident in the data analytic strategies employed to investigate the influence of anxiety on HIV testing behavior. Since the emphasis of the research was on the relationship between anxiety and HIV testing behavior, regression analytic strategies were utilized to explore the influence of various types of anxiety on HIV-testing related attitudes. However, when considering that extraneous variables appeared to impact the interpretation of the regression models, future research would benefit from a more exhaustive focus on the role of factors such as age, gender, past HIV testing history, past sexual history, relationship status, and HIV knowledge, on HIV testing behavior.

Conclusion. Despite the distinct possibility that anxiety plays a role in decisions concerning HIV testing – for example, as a causal factor influencing failure to return for the results of HIV testing – an extensive literature review yielded no study that specifically examined the association between anxiety and HIV testing behavior. The current study attempted to bridge this gap, and, although it did not yield the anticipated results, the findings contributed to research concerning the factors that potentially influence HIV testing behavior. Although limited, the results suggest the influence of anxiety on HIV testing behavior. However, more noteworthy, the impact of personal variables, such as the individual’s demographics, prior HIV testing and HIV exposure
was seen. This influence of the individual’s demographics not only provides substantiation for prior findings which explored the impact of such factors on HIV testing behavior, but also raises the possibility that HIV testing behavior may be largely due to the specific characteristics and experiences of the individual rather than a more etic or universal experience of anxiety. The findings presented here may provide future researchers with a starting point for further empirical endeavors. Considering the limitations to this study and applying the suggestions derived from frankly addressing these limitations, future research may indeed reveal a significant impact of anxiety on HIV testing behavior.
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Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention.


http://www.cdc.gov/hiv/rapid_testing/materials/oralfluidqandafinl_1.pdf


test collection kits? Intent to use kits, actual use, and barriers to use among persons at risk for HIV infection. *AIDS Care, 14* (5), 675-682.


Company Inc.


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Morgan, D., Mahe, C., Mayanja, B., Okongo, J.M., Lubega, R., & Whitworth, J.A.
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Appendix A

Dependent Variables Questions
The following is a completely hypothetical (i.e. not true) situation.

We would like for you to vividly imagine that you have the opportunity TODAY to take a HIV test. The test will be offered free of charge; you are assured of its anonymity, accuracy and you can choose the HIV testing process that you prefer. In other words, you will be given the opportunity to pick whether you want to give a blood, urine or oral specimen; you can pick if you want to use a rapid test (results available in less than 20 minutes) or original testing (results will be available in about 2 weeks); you can choose how you would like to receive the results (i.e. whether you will be notified by mail, have to return to the testing facility to get the results, be contacted by the facility to set-up a scheduled appointment to receive results, etc.)

1. On a scale of 1 to 10 with “1” being ‘Not likely at all’ and “10” being ‘Extremely likely’, please indicate how likely you would be to have HIV testing done today under the circumstances noted above.

   1........2........3........4........5........6........7........8........9........10
   Not likely                Somewhat likely   Extremely likely
   at all                    likely

2. On a scale of 1 to 10 with “1” being ‘Not likely at all’ and “10” being ‘Extremely likely’, please indicate how likely you would be to return to receive the results of your HIV testing.

   1........2........3........4........5........6........7........8........9........10
   Not likely                Somewhat likely   Extremely likely
   at all                    likely
Appendix B

Demographics
1. Age: ______________

2. Please circle your gender
   a. Male
   b. Female

3. Please indicate your ethnicity:
   a. African-American
   b. Asian
   c. Caucasian
   d. Hispanic /Latino
   e. Middle Eastern
   f. Native American
   g. Pacific Islander

4. What is your current school level?
   a. First year
   b. Second year
   c. Third year
   d. Fourth Year
   e. Graduate Student

5. What is the highest level of education your father completed?
   a. Some High School or less
   b. High School
   c. Some College
   d. College degree
6. What is the highest level of education your mother completed?
   a. Some High School or less
   b. High School
   c. Some College
   d. College degree
   e. Graduate degree
   f. Don’t Know
Appendix C

Questions about Relationship history
1. What type of relationship are you currently in?
   a. Single
   b. Seeing someone
   c. Steady relationship
   d. Engaged
   e. Married

2. How would you describe your sexual orientation?
   a. Heterosexual
   b. Homosexual
   c. Bisexual

3. Have you ever been sexually active?
   a. Yes
   b. No

4. If Yes to question 4,
   4.1 When did you first become sexually active? Age _________
   4.2 How many sexual partners have you had (including your first and current partner)? ______________________
Appendix D

HIV/AIDS and HIV testing related demographics
1. Do you **personally** (i.e. a close friend, relative, etc.) know someone who is currently HIV Positive or has AIDS?
   a. Yes
   b. No

2. Do you know anyone who is currently HIV Positive or has AIDS?
   a. Yes
   b. No

3. Have you ever know someone **personally** (i.e. a close friend, relative, etc.) who has passed away due to being infected with HIV/ AIDS?
   a. Yes
   b. No

4. Have you ever know of anyone who has passed away due to being infected with HIV/ AIDS?
   a. Yes
   b. No

5. Do you know your own personal HIV status?
   a. Yes
   b. No

6. Have you **ever** taken a HIV / AIDS test?
   a. Yes
   b. No
Appendix E

Self-rating Anxiety Scale
Please carefully read each item in the list. Based on how you felt in the PAST WEEK, INCLUDING TODAY, indicate how much you have experienced each of the following by placing an X in the corresponding space in the column next to each item.

<table>
<thead>
<tr>
<th></th>
<th>NONE or A LITTLE OF THE TIME</th>
<th>SOME OF THE TIME</th>
<th>GOOD PART OF THE TIME</th>
<th>MOST or ALL OF THE TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel more nervous and anxious than usual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>I feel afraid for no reason at all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I get upset easily or feel panicky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I feel like I’m falling apart and going to pieces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I feel that everything is all right and nothing bad will happen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>My arms and legs shake and tremble</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I am bothered by headaches, neck and back pains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I feel weak and get tired easily</td>
<td></td>
<td></td>
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<tr>
<td>9.</td>
<td>I feel calm and can sit still easily</td>
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<td></td>
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<tr>
<td>10.</td>
<td>I can feel my heart beating fast</td>
<td></td>
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<tr>
<td>11.</td>
<td>I am bothered by dizzy spells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I have fainting spells or feel like it</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I can breathe in and out easily</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>I get feelings of numbness and tingling in my fingers, toes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15.</td>
<td>I am bothered by stomachaches or indigestion</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>16.</td>
<td>I have to empty my bladder often</td>
<td></td>
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<tr>
<td>17.</td>
<td>My hands are usually dry and warm</td>
<td></td>
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<td></td>
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<tr>
<td>18.</td>
<td>My face gets hot and blushes</td>
<td></td>
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<tr>
<td>19.</td>
<td>I fall asleep easily and get a good night’s rest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>I have nightmares</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

Medical Anxiety Scale: Blood/Injection/Injury subscale
Presented below are a series of statements relating to your attitudes toward healthcare personnel and medical situations. Read each of the statements carefully. Beside each statement you will find a rating scale. This scale extends from "Strongly Disagree" to "Strongly Agree". The six points of the scale are as follows: "1" is \textit{Strongly Disagree}; "2" is \textit{Somewhat Disagree}; "3" indicates \textit{slight disagreement} with the statement; "4" is \textit{Slightly Agree}; "5" is \textit{Somewhat Agree}; or, "6" is \textit{Strongly Agree}. For each statement, check or fill in the circle that best indicates your attitude. \textbf{Please answer all questions thoughtfully.}

1. Needles and injections terrify me.

   \begin{tabular}{cccccc}
   \textbf{Strongly Disagree} & \textbf{Somewhat Disagree} & \textbf{Slightly Disagree} & \textbf{Slightly Agree} & \textbf{Somewhat Agree} & \textbf{Strongly Agree} \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6
   \end{tabular}

2. Having blood being drawn from my arm makes me woozy and/or nauseous.

   \begin{tabular}{cccccc}
   \textbf{Strongly Disagree} & \textbf{Somewhat Disagree} & \textbf{Slightly Disagree} & \textbf{Slightly Agree} & \textbf{Somewhat Agree} & \textbf{Strongly Agree} \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6
   \end{tabular}

3. Needles and shots don't cause me any sense of alarm.

   \begin{tabular}{cccccc}
   \textbf{Strongly Disagree} & \textbf{Somewhat Disagree} & \textbf{Slightly Disagree} & \textbf{Slightly Agree} & \textbf{Somewhat Agree} & \textbf{Strongly Agree} \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6
   \end{tabular}

4. I feel faint when I have blood drawn.

   \begin{tabular}{cccccc}
   \textbf{Strongly Disagree} & \textbf{Somewhat Disagree} & \textbf{Slightly Disagree} & \textbf{Slightly Agree} & \textbf{Somewhat Agree} & \textbf{Strongly Agree} \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6
   \end{tabular}

5. The period of waiting for the results of medical tests is very anxiety provoking.

   \begin{tabular}{cccccc}
   \textbf{Strongly Disagree} & \textbf{Somewhat Disagree} & \textbf{Slightly Disagree} & \textbf{Slightly Agree} & \textbf{Somewhat Agree} & \textbf{Strongly Agree} \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6
   \end{tabular}
6. I don’t mind having blood drawn.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

7. I fear visits to the doctor because I know there may be a needle or a blood test involved.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>
Appendix G

Medical Anxiety Scale: Germs subscale
Presented below are a series of statements relating to your attitudes toward healthcare personnel and medical situations. Read each of the statements carefully. Beside each statement you will find a rating scale. This scale extends from “Strongly Disagree” to “Strongly Agree”. The six points of the scale are as follows: “1” is Strongly Disagree; “2” is Somewhat Disagree; “3” indicates slight disagreement with the statement; “4” is Slightly Agree; “5” is Somewhat Agree; or, “6” is Strongly Agree. For each statement, check or fill in the circle that best indicates your attitude. Please answer all questions thoughtfully.

1. Doctor’s waiting rooms are filled with germs from all the sick people who pass through them.

   1.                2.                3.                4.                5.                6.                
   Strongly Disagree Somewhat Disagree Slightly Disagree Slightly Agree Somewhat Agree Strongly Agree

2. I intentionally avoid being around sick people to keep from getting ill myself.

   1.                2.                3.                4.                5.                6.                
   Strongly Disagree Somewhat Disagree Slightly Disagree Slightly Agree Somewhat Agree Strongly Agree

3. When I hear about a serious infectious disease, I worry that I’ll catch it.

   1.                2.                3.                4.                5.                6.                
   Strongly Disagree Somewhat Disagree Slightly Disagree Slightly Agree Somewhat Agree Strongly Agree

4. I’m made anxious by the fact that they may not sterilize the medical instruments at my doctor’s office after every use.

   1.                2.                3.                4.                5.                6.                
   Strongly Disagree Somewhat Disagree Slightly Disagree Slightly Agree Somewhat Agree Strongly Agree

5. I’m afraid that the instruments used in a doctor’s office aren’t disinfected after every examination.
6. I’m disgusted by all the germs that are on the medical instruments in my doctor’s examination room.

7. I get frightened for my health when I hear news stories about major current health risks like the AIDS virus.

8. Germs are transmitted between patients because doctors and nurses don’t sterilize the medical instruments they use.

9. Because they’re filled with “sick” people, I’m afraid I’ll catch something from sitting in a doctor’s examination room.

10. The thought of all the germs in a doctor’s office make me nervous.
Appendix H

Medical Anxiety Scale: Hospital & X-Ray subscale
Presented below are a series of statements relating to your attitudes toward healthcare personnel and medical situations. Read each of the statements carefully. Beside each statement you will find a rating scale. This scale extends from “Strongly Disagree” to “Strongly Agree”. The six points of the scale are as follows: “1” is Strongly Disagree; “2” is Somewhat Disagree; “3” indicates slight disagreement with the statement; “4” is Slightly Agree; “5” is Somewhat Agree; or, “6” is Strongly Agree. For each statement, check or fill in the circle that best indicates your attitude. Please answer all questions thoughtfully.

1. Everything about a hospital – the colors, the long corridors, the smells – makes me anxious.

   ① Strongly Disagree  ② Somewhat Disagree  ③ Slightly Disagree  ④ Slightly Agree  ⑤ Somewhat Agree  ⑥ Strongly Agree

2. It scares me to be in a hospital that’s filled with sick people and all those germs.

   ① Strongly Disagree  ② Somewhat Disagree  ③ Slightly Disagree  ④ Slightly Agree  ⑤ Somewhat Agree  ⑥ Strongly Agree

3. The level of cleanliness in hospitals is generally very high.

   ① Strongly Disagree  ② Somewhat Disagree  ③ Slightly Disagree  ④ Slightly Agree  ⑤ Somewhat Agree  ⑥ Strongly Agree

4. I get anxious even visiting a hospital.

   ① Strongly Disagree  ② Somewhat Disagree  ③ Slightly Disagree  ④ Slightly Agree  ⑤ Somewhat Agree  ⑥ Strongly Agree

5. Hospitals are full of germs and bacteria, many of which can make you very ill.

   ① Strongly Disagree  ② Somewhat Disagree  ③ Slightly Disagree  ④ Slightly Agree  ⑤ Somewhat Agree  ⑥ Strongly Agree
<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>If I had a major surgery done, I’d be afraid they would leave something inside me, like a surgical tool or sponge.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Hospitals make me anxious because when you’re a patient you’re really not in control of your life.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Hospitals are associated with severe illness or death.</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>9.</td>
<td>The idea of being a patient in a hospital scares me because I probably wouldn’t clearly understand a lot of what was going on with my treatment.</td>
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<td></td>
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</tr>
<tr>
<td>10.</td>
<td>Hospitals may harm as many people as they cure.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11.</td>
<td>I have (or would have) no real problem being a hospital patient.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I’m frightened that X-Rays and the other ways they use to take images (like MRIs and CAT scans) might cause permanent physical damage.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
13. Whenever I get an X-Ray (or an MRI or CAT scan), I visualize them finding something disturbing like a tumor.

Strongly Disagree | Somewhat Disagree | Slightly Disagree | Slightly Agree | Somewhat Agree | Strongly Agree

14. If I had to get an MRI or CT scan – where I was put into an enclosed space to have a picture taken – I would very likely have an anxiety attack.

Strongly Disagree | Somewhat Disagree | Slightly Disagree | Slightly Agree | Somewhat Agree | Strongly Agree
Appendix I

Medical Anxiety Scale: Medications and Pharmacist subscale
Presented below are a series of statements relating to your attitudes toward healthcare personnel and medical situations. Read each of the statements carefully. Beside each statement you will find a rating scale. This scale extends from “Strongly Disagree” to “Strongly Agree”. The six points of the scale are as follows: “1” is Strongly Disagree; “2” is Somewhat Disagree; “3” indicates slight disagreement with the statement; “4” is Slightly Agree; “5” is Somewhat Agree; or, “6” is Strongly Agree. For each statement, check or fill in the circle that best indicates your attitude. Please answer all questions thoughtfully.

1. The act of taking medication generally doesn’t cause me any anxiety.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Somewhat Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Somewhat Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

2. I’m always afraid that either the doctor or the pharmacist has made a mistake of some kind when I have to take medication.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Somewhat Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Somewhat Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

3. I dread the idea of having to take any medication.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Somewhat Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Somewhat Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

4. I’m afraid of taking vaccines because I may react badly to them.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Somewhat Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Somewhat Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

5. Taking any medication at all makes me anxious.
6. I get nervous about all that could go wrong when I take any new medication.

7. I generally experience no anxiety when I have to take medications.

8. I’m afraid that the pharmacist will misread my doctor’s handwriting on a prescription.

9. I’m nervous that my pharmacist will fill my prescription incorrectly and harm me as a result.

10. I feel safe taking the medications I’ve received from pharmacists.
Appendix J

Death Anxiety Scale
Please circle true or false

1. I am very much afraid to die.          True  False
2. The thought of death seldom enters my mind.     True  False
3. It doesn’t make me nervous when people talk about death. True  False
4. I dread to think about having to have an operation. True  False
5. I am not at all afraid to die.           True  False
6. I am not particularly afraid of getting cancer. True  False
7. The thought of death never bothers me.   True  False
8. I am often distressed by the way time flies so very rapidly. True  False
9. I fear dying a painful death.           True  False
10. The subject of life after death troubles me greatly. True  False
11. I am really scared of having a heart attack. True  False
12. I often think about how short life really is. True  False
13. I shudder when I hear people talk about a World War III. True  False
14. The sight of a dead body is horrifying to me. True  False
15. I feel that the future holds nothing for me to fear. True  False
Appendix K

Multidimensional AIDS Anxiety Questionnaire
The items listed below refer to feelings and reactions that people may experience about the disease AIDS (Acquired Immune Deficiency Syndrome). As such, there are no right or wrong answers, only the individual reactions that people have. We are interested in how typical these feelings and behaviors are of you. To provide your responses, use the following scale to indicate how characteristic the following statements are of you:

1 = Not at all characteristic of me.
2 = Slightly characteristic of me.
3 = Somewhat characteristic of me.
4 = Moderately characteristic of me.
5 = Very characteristic of me.

**NOTE:** Remember to respond to all items, even if you are not completely sure.

Also, please be honest in responding to these statements.

- Thinking about AIDS makes me feel anxious.
- I sometimes find it hard to discuss issues dealing with AIDS.
- I feel tense when I think about the threat of AIDS.
- I feel quite anxious about the epidemic of AIDS.
- I feel scared about AIDS when I think about sexual relationships.
- I'm afraid of getting AIDS.
- I have trouble talking about AIDS with an intimate partner.
- I feel frustrated when I realize the threat of AIDS.
- The disease AIDS makes me feel nervous and anxious.
- I feel scared when I think about catching AIDS from a sexual partner.
- I'm not worried about getting AIDS.
- I would feel shy discussing AIDS with an intimate partner.
- My heart beats fast with anxiety when I think about AIDS.
- I feel anxious when I talk about AIDS with people.
- Because of AIDS, I feel nervous about initiating sexual relations.
- All these discussions of AIDS leave me feeling a bit alarmed.
- I would not find it hard to discuss AIDS with an intimate partner.
AIDS makes me feel jittery about having sex with someone
I feel uncomfortable when discussing AIDS
I sometimes worry that one of my past sexual partners may have had AIDS
Thinking about catching AIDS leaves me feeling concerned
I would not hesitate to ask a former sex partner about AIDS-related concerns
The issue of AIDS is a very stressful experience for me
I feel nervous when I discuss AIDS with another person
The threat of getting AIDS makes me feel uneasy about sex
I worry about what I should do about AIDS
Anxiety about AIDS is beginning to affect my personal relationships
In general, the media attention on AIDS makes me feel restless
I have feelings of worry when I think about AIDS
Were I to have sexual relations, I would worry about getting AIDS
All this recent media attention about AIDS leaves me feeling on edge
AIDS does not influence my willingness to engage in sexual relationships
When I think about AIDS, I feel tense
I am more anxious than most people are about the disease AIDS
If I were to have sex with someone, I would worry about AIDS
I'm pretty indifferent to the idea of catching AIDS
I would hesitate to involve myself in a sexual relationship because of AIDS
When talking about AIDS with someone, I feel jumpy and high-strung
I become really frightened when I think about the threat of AIDS
The fear of AIDS makes me feel nervous about engaging in sex
The increased chances of being infected with AIDS leaves me feeling troubled
Because of AIDS, I feel too nervous to start a new sexual relationship
The spread of AIDS is causing me to feel quite a bit of stress
I worry that AIDS may directly influence my life
I had a better attitude towards sex before the AIDS epidemic

I get pretty upset when I think about the possibility of catching AIDS

The discussion of AIDS makes me feel uncomfortable

All this talk about AIDS has left me feeling strained and tense

I'm concerned that I might be carrying the AIDS virus

I feel nervous when I think that a past sexual partner could have given me AIDS
Appendix L

HIV risk assessment
Since your last HIV test (if ever), have you...

1. …injected drugs and shared equipment (e.g., needles, syringes, cotton, water) with others?  
   Yes  No

2. …had unprotected intercourse with someone that you think might be infected (e.g., a partner who injected drugs, has been diagnosed or treated for a sexually transmitted disease [STD] or hepatitis, has had multiple or anonymous sex partners, or has exchanged sex for drugs or money)?  
   Yes  No

3. …had unprotected vaginal or anal intercourse with more than one sex partner?  
   Yes  No

4. …been diagnosed or treated for an STD, hepatitis, or tuberculosis?  
   Yes  No

5. …had a fever or illness of unknown cause?  
   Yes  No

6. …been told you have an infection related to a ‘weak immune system’?  
   Yes  No
Appendix M

HIV Knowledge Questionnaire
Please circle whether the following statements are True or False.

1. Coughing and sneezing **DO NOT** spread HIV  
   | True | False |

2. A person can get HIV by sharing a glass of water with someone who has HIV  
   | True | False |

3. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex  
   | True | False |

4. A woman can get HIV if she has anal sex with a man  
   | True | False |

5. Showering, or washing one’s genitals/private parts, after sex keeps a person from getting HIV  
   | True | False |

6. All pregnant women infected with HIV will have babies born with AIDS  
   | True | False |

7. People who have been infected with HIV quickly show serious signs of being infected  
   | True | False |

8. There is a vaccine that can stop adults from getting HIV  
   | True | False |

9. People are likely to get HIV by deep kissing, putting their tongue in their partner’s mouth, if their partner has HIV  
   | True | False |

10. A woman cannot get HIV if she has sex during her period  
    | True | False |

11. There is a female condom that can help decrease a woman’s chance of getting HIV  
    | True | False |

12. A natural skin condom works better against HIV than does a latex condom  
    | True | False |

13. A person will **NOT** get HIV if she or he is taking antibiotics  
    | True | False |

14. Having sex with more than one partner can increase a person’s chance of being infected with HIV  
    | True | False |

15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV  
    | True | False |

16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV  
    | True | False |

17. A person can get HIV from oral sex  
    | True | False |
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV

True    False
Appendix N

Human Subjects Review Board Approval
Ilze Nix

c/o Dr. Phil Pegg
Department of Psychology
WKU

Dear Ilze:

Your revision to your research project, "Personal Medical Questionnaire," was reviewed by the HSRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects' welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.

In addition, the IRB found that you need to orient participants as follows: (1) signed informed consent is required; (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.

This project is therefore approved at the Expedited Review Level until May 31, 2007.

Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address. Please report any changes to this approved protocol to this office. Also, please use the stamped Informed Consent documents that are included with this letter. A Continuing Review protocol will be sent to you in the future to determine the status of the project.

Sincerely,

Sean Rubino, M.P.A.
Compliance Manager
Office of Sponsored Programs
Western Kentucky University

cc: HS file number Nix HS07-129
Appendix O

Informed Consent
You are being asked to participate in a study that will evaluate your attitudes and behavior patterns with relation to medical behavior. Please read the following material thoroughly. It describes the purpose of the study in brief, the procedure to be used, risks and benefits of your participation, and what will be done to the information that is being collected from you. This study is being conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.

The investigator will explain to you the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask her or him any questions you have to help you understand the project. A basic explanation of the project is provided below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign on the last page of this form in the presence of the person who explained the project to you. By signing this form, you are indicating that you are aware of the risks and benefits of this project.

This project is completely voluntary. You do not have to participate under any circumstance.

1. PROJECT TITLE
   Personal Medical Behavior Questionnaire

2. PRINCIPAL INVESTIGATOR
   Ilze Nix, graduate student, (ilze.nix@wku.edu)
   Dr. Phil Pegg, faculty supervisor, (phil.pegg@wku.edu)
   Western Kentucky University, Department of Psychology, (270) 745-4417

3. NATURE AND PURPOSE OF THE PROJECT
   The purpose of this study is to evaluate personal health practices and attitudes.

4. EXPLANATION OF PROCEDURES
   You will be asked to complete a questionnaire regarding demographic information (i.e. questions about yourself) as well various questionnaires designed to assess your personal health practices and behaviors. This session will take about 60 minutes.

5. DISCOMFORT AND RISKS
   We are looking for your honest answers to these surveys. There is minimal risk that the information on the questionnaires may cause any psychological distress. If this occurs, please inform your researcher.

6. BENEFITS
   As a participant in the study, you will be contributing to science and helping researchers gain more knowledge that will foster a better understanding about the various attitudes and behavior patterns people have with relation to medical behavior. If you are a student of Western Kentucky University an additional benefit to you is that extra credit for participation may be granted or the involvement in this study might fulfill the research
requirements of Introduction to Psychology, all at the discretion of your class professors. No other inducements will be offered.

7. CONFIDENTIALITY

You will be asked to choose your own unique pseudonym that you will need to indicate on your questionnaire packet or at the conclusion of the Internet survey. This pseudonym will be the only ‘identifying’ information directly provided as part of the packet. You will be required to provide the information needed (i.e. your name and WKU ID) and your chosen pseudonym on along with a signed copy of the Informed Consent page, regardless of whether you complete the study in paper-pencil format or online. The informed consent page and pseudonym information will be kept separate from the collected response and will only be used to assign extra credit. Furthermore, each participant will be assigned a unique identification number by the researchers. This identification number (unique to each of the participants) will be used to make sure that no duplicate data will be entered in the database.

Your identity and the identity of all participants will never be revealed in any published or oral presentation of the results of this project. All data from this project will be kept confidential to the extent of the law. All data that is published or presented will be done in a way that does not reveal the identity of a participant.

8. REFUSAL/WITHDRAWAL

Refusal to participate in this study will have no effect on any future services that you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Pseudonym: ________________________________

Signature of Participant ________________________________ Date ___

Witness ________________________________ Date ___
Appendix P

Debriefing Form
We would like to thank you for your participation in this research. Your contribution will add to the knowledge base concerning the HIV testing behavior. A better understanding of this could lead to an improvement in the services provided to you and other participants, and might lead to better advice and support offered to individuals when they participate in HIV testing. Furthermore, the community at large can benefit as a clearer understanding of HIV testing behavior may lead to an increase in the number of individuals who choose to become aware of their HIV status by taking a HIV test.

If you would like to determine your own HIV status, following is a list of resources available to you.

1. WKU Health Services
   - 1906 College Heights Blvd. #8400; Bowling Green, Kentucky; 42101
     - Phone: (270) 745-5641
     - Operating Hours: Monday - Thursday 8am-4:30pm / Friday 10am-4:30pm
     - Email: wkuhealthservices@wku.edu

2. Barren River District Health Department
   - 1109 State St; PO Box 1157; Bowling Green, KY; 42102
   - Phone: (270) 781-8039

3. Center for Disease Control
   - Phone: CDC-INFO 24 Hours/Day at 1-800-CDC-INFO (232-4636), 1-888-232-6348 (TTY), in English, en Español.
   - Website: http://www.hivtest.org/

If you would like more information about HIV/ AIDS, following is a list of credible websites available to you.


In the event that the information on the questionnaires may have caused you any psychological distress please inform the researcher. Additionally, services are available through Western Kentucky University that you can utilize in such an event. Please contact the Counseling and Testing Center at 409 Potter Hall, 1906; College Heights Blvd. #1102; Bowling Green KY; 42101.
Phone: (270) 745-3159
Email: counseling@wku.edu