EXAMINING MOTIVATION TO USE CONDOMS IN GHANA USING THE THEORY OF PLANNED BEHAVIOR

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ABSTRACT

Sub-Saharan Africa bears the brunt of the global HIV/AIDS pandemic with over sixty percent (60%) of the world's 34.2 million people living with HIV/AIDS residing in this part of the world. Despite of the promotion of condom use, the problem of systematic low condom use still remains in the sub region. The purpose of this study is to examine motivations to condoms use in Ghana using the theory of planned behavior.

By analysing data from the Data 2011 Barriers to Condom Use Survey which was administered nationwide in Ghana. Multiple logistic regression analysis of the main effects model, was able to explain 32.3% of the variation in motivation to use condoms ($R^2 = 0.323$). It also supported the hypothesis that participants' attitudes toward condom use, subjective norms and perceived behavioral control are positively related to their motivation to use a condom during sex.

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CHAPTER 1

Introduction

The prevention and control of HIV/AIDS and sexually transmitted infections are major challenges facing health professionals worldwide (Hounton, Carabin & Henderson, 2005). According to the World Health Organization (WHO), in 2011, 34.2 million people globally were living with HIV. Out of this number, over 60% of them resided in Sub-Saharan Africa (World Health Organization, (WHO), 2012). Such a grim situation makes HIV/AIDS a major reproductive health concern in the region (Bankole, Ahmed, Neema, Ouedraogo & Konyani, 2007) resulting in significant loss in economic productivity due to elevated mortality rates.

In Sub-Saharan Africa, STI's, especially HIV transmission occurs mainly through heterosexual contact (WHO, 2012). The uneven share of the global HIV burden borne by this region is further compounded by other endemic diseases such as malaria and tuberculosis and related morbidity and mortality (Hounton, Carabin, & Henderson, 2005). The promotion of condom usage has been identified as an integral part in the prevention of STI and HIV/AIDS (Heeren, Jemmott III, Mandeya & Tyler, 2009).Their regular and proper usage has been recognized to reduce the risk of HIV transmission. Evidence suggests that the male latex condoms have an 85% or greater protective effect against the sexual transmission of HIV and other sexually transmitted infections (WHO, 2012) hence the more reason to promote its use.

Irrespective of all the attention condom use has received in Sub-Saharan Africa through awareness campaigns, the prevalence of systematic condom use remains low (Bankole et al., 2007) and young people in Sub-Saharan Africa still engage in risky sexual behaviors (Bankole et al., 2007). Any barriers to condom usage during heterosexual relationships can impede their frequent and consistent use (Sunmola, 2001). The purpose of this study is to examine motivation to use condoms among Ghanaians using the theory of planned behavior in Ghana, West Africa.

Theory of reasoned action and theory of planned behavior

The theory of planned behavior (TPB) and the theory of reasoned action (TRA) are very similar in many ways but have slight variations distinguishing them apart as well. Both theories are concerned with rational, volitional, and systematic behavior (Fishbein & Ajzen, 1975; Chang, 1998). The theory of reasoned action posits that an individual's behavior is determined by the individual's behavioral intention, where behavioral intention is a function of 'attitude toward the behavior' (i.e. the general feeling of favorableness or unfavorableness for that behavior) and 'subjective norm (SN)' (i.e. the perceived opinion of other people in relation to the behavior in question) (Fishbein and Ajzen, 1975; Chang, 1998).

In contrast to the theory of reasoned action, the theory of planned behavior adds perceived behavioral control (PBC) as a determinant of behavioral intention. The theory of planned behavior is therefore an extension of the theory of reasoned action made necessary by the original model's limitations in dealing with behaviors over which people have incomplete volitional control (Ajzen, 1991). Perceived behavioral control PBC can

be conceptualized as the individual's subjective belief about how difficult it will be for that individual to generate the behavior in question (Posthuma & Dworkin, 2000).

Both theories assume that human beings make systematic use of the information available to them when making decisions. Both theories have been applied and validated in a large number of studies (Sheppard et al., 1988; Ajzen, 1991; Chang, 1998) especially for the purposes of investigating and predicting sexual behaviors of people (Albarracin, Johnson, Fishbein & Muellerleile, 2001; Gaston & Kok 1996). The theory of planned behavior has been found to have a better predictive power of behavior than the theory of reasoned action because of the addition of Perceived behavioral control construct (Armitage & Conner, 2001).

Attitudes

Attitude toward a behavior refers to the degree to which one has a favorable or unfavorable evaluation of the behavior in question (Ajzen, 1991). It is assumed to involve the individual's beliefs about the consequences of the behavior (behavioral beliefs) and the corresponding positive or negative judgments about the behavior (Francis, Eccles, Johnston, Walker, Grimshaw, Foy & Bonetti, 2004). If a person has favorable attitudes toward condom use and foresees no adverse consequences to condom use, then they are likely to use condoms during sexual activity.

Subjective Norms

Subjective norms refer to the apparent social pressure to perform or not to perform the target behavior (Ajzen, 1991). Subjective norms are assumed to have two components namely; how someone or others important to the person would like them to behave

(normative beliefs) and the positive or negative judgments about each belief (outcome evaluations) (Francis et al, 2004).

Perceived Behavioral Control

Perceived behavioral control is the extent to which a person feels able to enact the behavior. There are two aspects of perceived behavioral control: 1) extent of control over behavior and 2) extent of confidence about being able to perform the behavior. (Francis et al, 2004).

Intentions and Behavior

The theory of reasoned action, as well as the theory of planned behavior both identity intention to perform a given behavior as the central focus of both theories (Ajzen, 1991). Intentions to perform the given behavior refer to how hard people are willing to try or how much effort they are planning to exert, in order to perform the behavior (Ajzen, 1991).

Together, all three constructs namely; attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention (Ajzen, 2002). As a rule of thumb, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question (Ajzen, 2002). Intention is thus assumed to be the immediate antecedent of behavior (Ajzen, 2002).

Intention and Motivation

Intention and motivation are related concepts. According to the Self-determination theory, self-determined motivation is a more sophisticated form of

intention and thus, a better predictor of behavior (Pelletier, Dion, Slovinec-D'Angelo, & Reid, 2004). Thus, where direct measure for intention is absent; direct measure for motivation can serve as a proxy measure for intention. In this study, motivation will serve as a proxy measure for intention to use condoms.

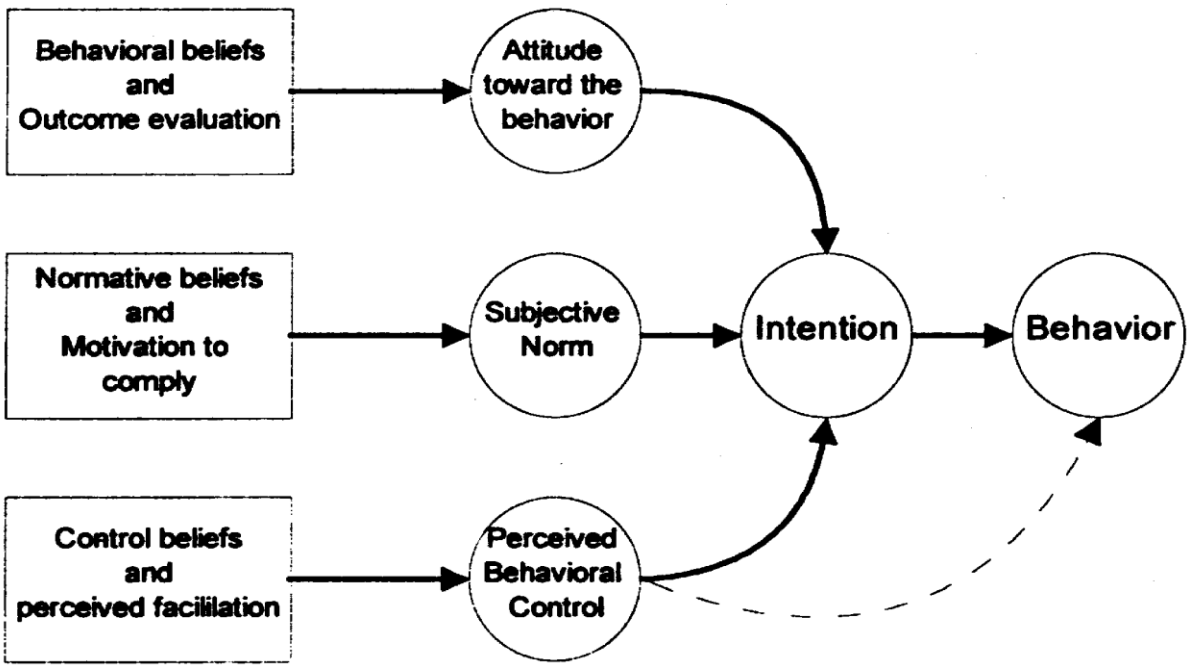

Figure 1. Theory of Planned Behavior Adopted from Mathieson (1991) and Ajzen (1991)

Sexual and Reproductive Health in Ghana

Heterosexual sex remains the dominant mode of HIV transmission among young people in Sub-Saharan Africa. The same situation is evident in Ghana as well, where majority of the infection is as a result of unprotected heterosexual intercourse (Joint United Nations Program on HIV/AIDS (UNAIDS) 2012a).

The literature on HIV/AIDS and sexual behavior in Sub-Saharan Africa confirm that most young people in Africa are sexually active and tend to initiate sex at a fairly early age, the median age ranges from 16.2–18.6 years for females, 15.8–18.6 years for males (Zaba, Pisani, Slaymaker & Boerma, 2004). These young people tend to have multiple sexual partners and they rarely take protective measures (Zaba et al, 2004).

Ghana's AIDS prevalence data for 2011 indicated that the age groups 30-34 years report the highest HIV infection rates of 2.9% and was lowest (1.5%) in the 20-24 age group (UNAIDS, 2012a). Men who are clients of sex workers and those with multiple sex partners act as bridge populations spreading HIV infection to their female partners (UNAIDS, 2012a).

The correct and consistent use of condoms can greatly reduce the risk of sexually transmitted Infection and HIV/AIDS (Warner, Newman, Austin, Kamb, Douglas, Malotte & Peterman, 2004). As such, HIV/STI behavioral interventions targeting condom use in sub-Saharan Africa have been identified as an international public health priority (UNAIDS, 2004).

Although information on HIV infection and prevention in Ghana has increased considerably in terms of quality and quantity over the years (Bosompra, 2001; Luginaah, 2008; Mill, 2001; Yeboah, 2007), available literature indicates that behavior change is yet to correspond with the amount of information and education provided (Bankole et al., 2007).

Previous Research

With Sub- Saharan Africa being the epicenter of the HIV pandemic, a lot of research examining sexual risk behaviors have been carried out, particularly in southern Africa where HIV prevalence rates are very high compared to West Africa and Ghana (Schaalma et al., 2009; Giles, Liddell & Bydawell, 2005; Heeren, Jemmott III, Mandeya & Tyler, 2007; Jemmott III et al., 2007; Molla, Åstr & Brehane, 2007). With all the attention being directed towards southern Africa, this study will focus its attention to West African, specifically Ghana were limited research has been done (Bosompra, 2001).

Sexual Behavior among Ghanaian University Students

Bosompra, (2001) examined the ability of the Theory of Reasoned Action (TRA) to predict intention to use condom among a sample of university students in southern Ghana. The aim of the study was to see how applicable Theory of Reasoned Action (TRA) (with western origins) would apply in an African setting. Out of a total of two hundred and one student participants, 62% of them were males. Most participants were between the ages of 19-29 with a mean age of 24.36yrs. Most participants reported being sexually active (89.1%).

The results indicated that, the study model was supported and the variables in the model (i.e., attitudes toward condom use and subjective norms) explained 33% of the variance in intention to use condoms among participants. Significant determinants of intentions identified were subjective norms and the perceived disadvantages of condom use. Of the two, subjective norms were identified to be more important. In terms of complying with the wishes of significant others (sexual partners, close friends, parents

and medical doctors). Participants who intended to use condoms consistently and those who didn't were equally motivated to comply with the wishes of their significant others. Those who intended to use condoms (intenders) consistently held a stronger belief that their significant others approved of condom use than those that didn't intend to use condoms (non-intenders). To conclude, Subjective norms in a Ghanaian population were shown to have a significant effect on whether or not people chose to use condoms.

Condom use in African adolescents: The role of individual and group factors

Giles, Liddell & Bydawell (2005) evaluated the ability of the Theory of Planned Behavior (TPB) to predict and explain condom use. The study also investigated the contributions of individual and normative constructs. In all a total of 152 young adults (48% male, 52% female) were surveyed at two points in time. The various constructs of TPB were measured at the initial survey. After a short follow-up, a second set of items was administered one week later to allow for the measurement of the actual behavior.

Eighty-one per cent of respondents reported to have had sex previously. Sixty percent of those reporting previous sexual history used a condom at least once during previous sexual encounters, 45% of these the last time they had sex. Less than half of the sample (38%) reported carrying a condom.

All the measured variables correlated significantly with each other, the strongest relationship with intention was with self-efficacy, followed by subjective norm, attitude and perceived control respectively.

The results provided strong support for the predictive power of the TPB, as 67% of the variance in intention was explained. The extent to which sexual behavior in a

rural location is governed by family or social influences was also brought to light. Subjective norm and self-efficacy proved to be very important elements of the TPB model.

Correlates of intention to use condoms among Sub-Saharan African youth

Schaalma et al., (2009) examined the applicability of the theory of planned behavior for the study of condom use intentions among large samples of young people in South Africa and Tanzania. Baseline data from a randomized controlled trial of school-based HIV/AIDS prevention programs were used. Students from Secondary schools in the regions of Cape Town, Polowane and Dar-es-Salaam were sampled.

Participants included 15,782 secondary school students. The main measures were scales for intentions, knowledge, risk perceptions, attitudes, and perceived social norms and perceived self-efficacy regarding condom use.

The results indicated that seven variables accounted for 77% of the variance in intentions to use condoms namely; attitudes ($\beta = 0.17$), injunctive norms ($\beta = 0.27$), self-efficacy ($\beta = 0.41$), gender (lower condom use intentions among females), being a student at the Dar es Salaam site (lower scores than students in Cape Town and Polokwane), socioeconomic status (higher intentions with higher status), and access to condoms (higher intentions with higher access).

The latter results indicate social cognition models such as the theory of planned behavior are applicable in understanding the correlates of condom use intentions in an African setting.

Statement of the Problem

HIV transmission in Ghana is largely heterosexually transmitted (UNAIDS, 2012) which suggests that encouraging and popularizing condom use could significantly thwart the spread of the epidemic. However in Ghana the prevalence of condom use by adults aged 15-49 years during higher risk sex was only 26% for males and 18% for females in the period of 2005-2009 (UNAIDS 2012).

Studies also show that, although awareness of AIDS and risk reduction measures like condom use is high, this knowledge has not transformed into positive attitudes and behaviors like consistent condom use (Karim, Magnani, Morgan & Bond, 2003; Bankole et al., 2007). The relative low rate of condom use highlights the need for more effective programs focused on sexual and reproductive health (Rondini & Krugu, 2009).

While most psychosocial models used in health education research, have been developed and tested in western industrialized societies, their cross-cultural legitimacy and appropriateness to the African context has not been investigated as much (Schaalma et al., 2009). Very few studies in the region, specifically Ghana have systematically and exclusively examined risky sexual behavior and condom use among the population in a manner that is theoretically consistent with the unique socio-cultural norms that govern sexuality in the Ghanaian society.

This study therefore aims to fill a critical gap in the research on AIDS prevention in Ghana and by extension Africa by applying the Theory of Planned Behavior (TPB). The application of TPB will help practitioners better understand barriers to condom use

as it relates to attitudes, subjective norms, perceived behavioral control and by extension motivation to use condoms consistently

Purpose of Study

The purpose of this study is to examine motivation to use condoms among Ghanaians using the theory of planned behavior.

Research Questions

The following research questions would be used to gain better understanding of motivation to use condoms amongst Ghanaians using Theory of Planned Behavior.

Theoretical Research Question

Research Question 1. When controlling for gender, age, education and region what effect does perceived behavioral control, subjective norms and attitudes toward condom use have on participants' motivation to use condoms during sex in Ghana, West Africa?

Individual Research Questions

Research Question 2. When controlling for gender, age, education and region, what effect does perceived behavioral control have on motivation to use condoms during sex amongst Ghanaians.

Research Question 3. When controlling for gender, age, education and region, what effect does subjective norms have on motivation to use condoms during sex amongst Ghanaians.

Research Question 4. When controlling for gender, age, education and region, what effect do attitudes toward condom use have on motivation to use condoms during sex amongst Ghanaians.

Research Hypotheses

Theoretical Research Hypothesis

Hypothesis 1. When controlling for gender, age, education, and region, participants' attitudes toward condom use, subjective norms and perceived behavioral control are positively related to their motivation to use a condom during sex.

Individual Hypotheses

Hypothesis 2. When controlling for gender, age, education, region, attitudes toward condoms use and subjective norms, participants' perceived behavioral control over their own protective sexual behavior is positively related to their motivation to use a condom during sex.

Hypothesis 3. When controlling for gender, age, education, region, attitudes toward condoms use and perceived behavioral control, participants' subjective norms toward their own condom use are positively related to their motivation to use a condom during sex.

Hypothesis 4. When controlling for gender, age, education, region, perceived behavioral control and subjective norms, participants' attitudes toward condom use is positively related to their motivation to use a condom during sex.

Definition of Terms

The following terms have defined for the purposes of this study.

1) Attitude toward condom use is defined as the individual's positive and negative feelings about performing a behavior (condom use). Attitude toward the behavior plays an important role in addressing the prediction of behavior (Ajzen, 1991).

2) Subjective Norms are factors which refer to an individual's perception of whether people important to them think the behavior should be performed or not. The perceived social approval involved with using condoms can determine whether they would be motivated or not to comply with doing the behavior (Condom use).
3) Perceived Behavioral Control refers to one's perception of the difficulty of performing a behavior. Theory of planned behavior views the controls that people have over their behavior as lying on a continuum from behaviors that are easy to perform to those that require considerable effort. Perceived behavioral control focuses on the person's perception of using condoms.
4) Intention to Use Condoms: captures an individual's motivation to use condoms. Intentions encapsulate how much effort individuals are willing to use condoms in the near future.

Basic Assumptions

The following assumptions are made by the researcher in this study:

1) Participants answered truthfully to the items on the Condom Barrier Scale.
2) The instrument used in this study is valid and reliable for measuring the concepts in the theory of planned behavior.

Limitations

The limitations of this study include:

1) The present study does not address the need for a longitudinal study on actual motivation to use condoms among Ghanaians.

2) The need for a research study design that could address examining the motivation to use condoms in more than one African country

Significance of study

In Ghana there has been a dearth of research on condom use in Ghana. Research on reproductive health in Ghana and elsewhere in sub-Saharan Africa indicate low use of contraceptives among the youth and population at large. Even among those who use condom, there is inadequate knowledge about how to use it (Bankole et al., 2007).

A comprehensive study is needed to examine key barriers and relationship between relevant constructs and identified barriers to condom use in the Ghanaian society as a whole and within the various subgroups of the population. A study such as the present could reveal complex social, cultural and religious factors influencing correct and consistent condom use behaviors among Ghanaians.

CHAPTER II

Literature Review

This chapter examines the pertinent literature as it relates to Ajzen's theory of planned behavior and the concept that separates it from the theory of reasoned action. The chapter then explores the HIV/AIDS crisis among Africans living in Sub-Saharan Africa, the status of the HIV epidemic in Sub-Saharan Africa and Ghana, Condom use and Barriers to condom use in Ghana.

Theory of Planned Behavior (TPB)

The Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) both focus on the theoretical constructs associated with motivational and informational factors to determine the likelihood of performing a specific behavior (Conner & Armitage, 1998). The theory of planned behavior can be said to be an extension of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1973) because of the inclusion of the construct of perceived behavioral control to TRA by Ajzen and colleagues (Ajzen, 1991; Ajzen and Driver, 1991; Ajzen and Madden, 1986). The inclusion of the construct of perceived behavioral control to TRA allows TPB to account for factors outside individual control that may affect intentions and behaviors.

The theory of planned behavior suggests that, human action is guided by three kinds of beliefs; behavioral beliefs, normative beliefs, and control beliefs (Ajzen, 2002). Behavioral beliefs refers to the favorable or unfavorable attitude toward the behavior; normative beliefs refer to the social pressure associated with a behavior and control beliefs give rise to perceived behavioral control (Ajzen, 2002). Together, attitudes toward

the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention (Ajzen, 2002). As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger the person's intention to perform the behavior in question. Intention is thus assumed to be the immediate antecedent of behavior (Ajzen, 2002).

The theory of planned behavior operates under a few key assumptions. To begin with, TPB assumes that high perceived behavioral control is the biggest predictor of intention, thus it can be related directly to behavioral intention. Secondly it assumes that perceived behavioral control is an accurate predictor of an actual behavioral control over a particular behavior. Finally and most importantly, it is assumes that attitudes toward the behavior, subjective norms and perceived behavioral control all lead to intention which predicts actual behavior (Ajzen, 2002).

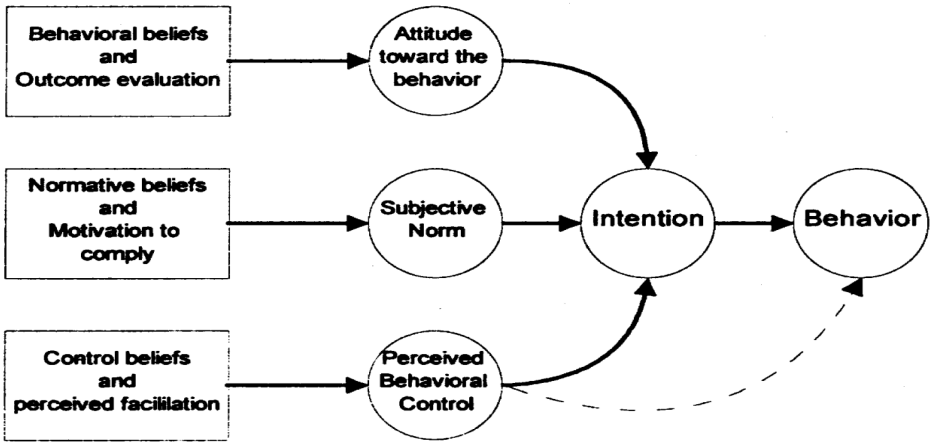

Figure 2**: Theory of planned behavior** (Adopted from Mathieson, 1991 and Ajzen 1991)

Attitudes (towards the behavior)

Attitude toward the behavior refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question (Ajzen, 1991). It is assumed to involve the individual's beliefs about the consequences of the behavior (behavioral beliefs) and the corresponding positive or negative judgments about the behavior (Francis, Eccles, Johnston, Walker, Grimshaw, Foy, & Bonetti, 2004).

In the theory of planned behavior, behavioral beliefs determine the individual's attitude about outcomes or attributes of performing the behavior (Ajzen, 2002). As such when an individual has strong beliefs that he/she is going to get positive outcomes from performing the behavior, they will have a positive attitude toward the behavior. On the contrary, a person who holds strong beliefs that negative outcomes will result from the behavior will have a negative attitude toward the behavior (Ajzen, 2002).

Subjective Norms (about the behavior)

Subjective norms refer to the social pressures to perform or not perform the target behavior (Ajzen, 1991). Subjective norms are assumed to have two components namely; how someone or others important to the person would like them to behave (normative beliefs) and the positive or negative judgments about each belief (outcome evaluations) (Francis, et al, 2004). Normative beliefs, refers to whether important individuals approve or disapprove of performing the behavior (Ajzen, 2002). A person who believes that others important to them think he/she should perform a behavior and is motivated to meet expectations of those referents will hold a positive subjective norm. On the other hand, a

person who believes others close to them think he/ she should not perform the behavior will have a negative subjective norm. A person who is less motivated to comply with those important to them will have a relatively neutral subjective norm (Ajzen, 2002).

Perceived Behavioral Control (of the behavior)

Perceived behavioral control is the extent to which a person feels able to enact the behavior. It has two aspects: how much a person has control over the behavior and how confident a person feels about being able to perform or not perform the behavior (Francis et al., 2004). Perceived control is determined by control beliefs concerning the presence or absence of facilitators and barriers to behavioral performance (Ajzen, 2002).

In the theory of planned behavior, it is assumed that high perceived behavioral control is the biggest predictor of intention, thus it can be associated with behavioral intention. It is also assumed that perceived behavioral control is an accurate predictor of an actual behavioral control over a particular behavior. Ajzen and colleagues (Ajzen, 1991; Ajzen and Driver, 1991; Ajzen and Madden, 1986) added perceived behavioral control to TRA to account for factors outside individual control that may affect intentions and behaviors (Ajzen, 2002).

Intentions and Behavior

The theories of reasoned action, as well as the theory of planned behavior both identify intention to perform a given behavior as the central focus of both theories (Ajzen, 1991). Intentions to perform the given behavior refer to how hard people are willing to try or how much effort they are planning to exert, in order to perform the behavior (Ajzen, 1991).

An individual's behavior refers to the individual's observable response in a given situation with respect to a given target. According to Azjen (2005) behavior is a function of well-matched intentions and perceptions of behavioral control such that a favorable intention produces the behavior only when perceived behavioral control is strong (Azjen, 2005).

Together, all three constructs namely; attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention (Ajzen, 2002). As a rule of thumb, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question (Ajzen, 2002). Intention is thus assumed to be the immediate antecedent of behavior (Ajzen, 2002).

Intention and Motivation

Most theories and models of health behavior all agree on the idea that intention is a determining factor of behavior (Webb & Sheeran, 2006). Intentions are self-instructions to undertake certain behaviors or achieve set out goals (Triandis, 1980) and are usually measured by statements such as "I intend to do x." Forming an intention signifies how hard one is prepared to try, or how much effort one will exert, in order to achieve desired outcomes (Ajzen, 1991; Webb & Sheeran, 2005).

Reviews of intention–behavior relations to date have relied on correlational evidence as such does not provide us with clear that intentions have a causal effect on behavior (Webb & Sheeran, 2006). In this study using the theory of planned behavior, "motivation to use a condom" will be used as a proxy measure for "intention to use a

condom" because the CBS instrument did not have an "I intend to do" statement. This replacement of intention to use condoms with motivation to use a condom will enable us to measure the extent to which changes in intention lead to changes in behavior and this is consistent with the self-determination theory. The self-determination theory posits that self-determined motivation, which is a more sophisticated form of intention, is a better predictor of behavior, including dietary behavior (Pelletier, Dion, Slovinec-d'angelo, & Reid, 2004) and that intrinsic goals motivate behavior (Deci & Ryan, 2008).

Sub-Saharan Africa and HIV

Sub-Saharan Africa consists of all the countries south of the Sahara desert in Africa with the exclusion of only seven countries on the continent of Africa (see Figure 2). Sub-Saharan Africa remains the most heavily affected region in the global HIV epidemic (Joint United Nations Program on HIV/AIDS (UNAIDS, 2012a). In 2011, an estimated 23.5 million people living with HIV resided in sub-Saharan Africa, representing 69% of the global HIV burden (UNAIDS, 2012a).

In 2011, 92% of pregnant women living with HIV and more than 90% of children who acquired HIV lived in sub-Saharan Africa (UNAIDS, 2012a). Women in sub-Saharan Africa remain disproportionately impacted by the HIV epidemic, accounting for 58% of all people living with HIV in the region in 2011(UNAIDS, 2012a).

However the picture is not all gloomy, sub-Saharan Africa recorded a 25% decline in new HIV infections and AIDS related deaths as the number of estimated cases of new HIV/AIDS infections dropped from 2.4 million in 2001 to 1.8 million (UNAIDS, 2012a). Also between 2005 and 2011, the number of people dying from AIDS-related

causes in sub-Saharan Africa declined by 32%, from 1.8 million to 1.2 million (UNAIDS, 2012a)

Figure 3: Sub-Saharan Africa

Ghana

The Republic of Ghana is a country in West Africa. It is bordered by Ivory Coast to the west, Burkina Faso to the north, Togo to the east, and the Gulf of Guinea to the south. The official language spoken is English and as at 2012, it has a population of 24,652,402 (The Central Intelligence Agency, (CIA), 2012). The predominant religion is Christianity (68.8%).

The two major cities are Accra which is the capital with 2.269 million inhabitants and Kumasi the second largest city with about 1.773 million as of 2009 (CIA, 2012).

More than half of the Ghanaian population lives in urban areas (51%) as of 2010 (CIA, 2012). The Climate is mainly tropical; warm and comparatively dry along southeast coast; hot and humid in southwest; hot and dry in north parts of the nation.

The majority of the population falls in the age group of 15-64 years (57.1%) (CIA, 2012). Ghana is multiethnic country with over 75 ethnic groups and the main ethnic groups are the Akans (49%), the Mole-Dagbani (17%), the Ewe (13%) and the Ga-Adangbe (8%) (CIA, 2012).

Figure 4: Ten Regions of Ghana

HIV/AIDS and National Response in Ghana

The HIV epidemic in Ghana has been described as a generalized epidemic because it has a prevalence of more than 1% in the general population (Joint United Nations Program on HIV/AIDS (UNAIDS) 2012b). Since detection of the first case of HIV in Ghana in 1986, spread of the disease has remained relatively low (below 5%) when compared to prevalence rates in other sub-Saharan countries (UNAIDS, 2012b). The National HIV prevalence in 2009 was 1.9%, this has dropped further to 1.5% in 2011(UNAIDS, 2012b). The HIV prevalence in Ghana exhibits variation with geographic areas, gender, age and residence.

In Ghana, urban areas have higher prevalence rates than rural areas .The HIV prevalence rates for Central, Eastern, Greater Accra, Ashanti and Volta regions increased between 2010 and 2011. Rate for Brong-Ahafo region remained the same during the latter timeframe. A decline in rate was observed for the Northern, Upper East, Upper West and Volta regions between 2010 and 2011. Overall, prevalence rates range from a low of 0.3% in the Northern Region to a high of 4.7% in the Central Region (UNAIDS, 2012b).

When considering age, HIV prevalence was highest among the 30 - 34 year age group (2.8%) and lowest in the 15- 24 year age group (1.5%) in 2010. Prevalence rates among 15-24 year olds rose marginally to 1.7%, in 2011. Even though a high awareness of HIV has been reported for the general population (98% for women and 99% for men) (Demographic Health Survey, (DHS) 2008), this awareness has not translated into safer

sexual behaviors. As at 2011 there were 225,478 adults and children living with HIV in Ghana. In the same year 12,077 new infections was recorded (UNAIDS 2012b).

In Ghana, Behavior change communication (BCC) programs and campaigns have been adopted with the aim of promoting the practice of safer sex as a means of protection against HIV infection among the general population. Although awareness about HIV infection prevention methods among the general population and most at risk populations is high, this knowledge has necessarily translated into behavior change. The DHS, (2008) indicated that only 25% and 45% of females and males respectively reported using condoms during high risk sex behavior.

Condom Use in Ghana

Ghana's HIV prevalence rate at 1.5% is considered to be relatively low compared to other African countries (UNAIDS, 2012b). However, even with a low prevalence rate, HIV/AIDS in Ghana continues to be a major public health concern because the epidemic may have the potential to increase if steps are not taken to curtail it. Heterosexual intercourse has being the main stay of the spread of the HIV in Ghana and it accounts for about 70-80% of all transmissions (UNAIDS, 2004). The proper and consistent use of condoms during sex has being identified as one of the cost effective ways to thwart the spread of HIV (WHO 2012b). However in Ghana the prevalence of condom use by adults aged 15-49 years during higher risk sex was only 45% for males and 25% for females in the period of 2005-2008 (DHS, 2012).

The high percentage of non-condom use during high risk sex among the Ghanaian population makes it very important for a comprehensive examination of the barriers and enablers of condom use among this population.

Barriers to Condom Use

There are arrays of barriers that decrease motivation to use condoms. These barriers have been studied with a variety of health theories (Schaalma, 2009; Hounton, Hélène Carabin, & Henderson, 2005; Boer & Mashamba, 2007; Bosompra, 2001; Hounton, Carabin, & Henderson, 2005; Jemmott et al., 2007). It's important to understand, identify, and control these barriers that hinder actual condom use to be able to develop appropriate interventions (Sunmola, 2001).

Partner relationships are an important factor as to whether condoms are used or not. Often in monogamous relationships condoms use is often associated with mistrust and infidelity (Agha et al., 2002; Chimbiri, 2007; Tavory & Swidler, 2009), an idea which may have been possibly reinforced by AIDS prevention messages that suggest individuals either be faithful or use condoms (Hattori, Richter, & Greene 2010).

Factors such as insufficient supply of condoms, access to it, or affordability of condoms may affect its use or non-use (Foss, Watts, Vickerman & Heise, 2004). These factors have been identified to be barriers which affect ones motivation to use a condom.

Another important factor which acts as a barrier to condom use may be the individual's personal attributes which may influence whether an individual uses a condom. One may not use a condom if one is too shy to purchase condoms, has low condom use self-efficacy, has little knowledge of condoms, perceives weak social

support for use, or feels unable to negotiate condom use with his partner (Adih & Alexander, 1999; Meekers, Silva, & Klein, 2005; Sunmola, 2005).

Finally another important barrier to condom use identified would be the perception that condom use reduces sexual satisfaction.(Chakrapani, Newman, Shunmugam & Dubrow, 2010; Mufune, 2005; Sunmola, 2005).

Quite clearly, barriers to contraceptive use in general vary by geographical, behavioral, social and cultural settings within which the study is conducted. In Ghana, there is a dearth in the number of studies to measure or determine these barriers to condom use. Yet, consistent and proper usages of condoms have been identified to reduce HIV infections markedly. It's therefore imperative to examine these barriers to gain a better understanding of them, to enable us to develop appropriate interventions or the population at large to reduce the spread of HIV.

In summary HIV/AIDS is a major public health concern in Sub- Saharan Africa and Ghana as well. Its main mode of transmission has been identified to be mostly through heterosexual intercourse. Condoms have been identified as a cheap and effective method to prevent the transmission of HIV/AIDS when used consistently and properly. Knowledge about condom use has been found to be pronounced in the Ghanaian population but this knowledge has not translated to its use. It's therefore imperative that we are able to identify the barriers impeding its use and that's the main purpose of this study. To do this we will use the theory of Planned Behavior (TPB), which provides a framework to predict reasoned behavior that may or may not be under an individual's willful control. This study will determine what effect attitudes toward condom use,

subjective norms, and perceived behavioral control have on participant's intention to use condoms among the Ghanaian populace.

CHAPTER III

Methodology

The purpose of this study was to examine motivation to use condoms among Ghanaians (West Africa) by applying the theory of planned behavior (TPB). The research aimed to determine the effect subjective norms, attitudes toward condom use and perceived behavioral control had on participant's motivation to use a condom during sexual intercourse.

Study Design and Data Source

This was a cross-sectional study on the motivation to use condoms using the theory of planned behavior (TPB) as the theoretical framework. Post hoc data obtained from the barriers to condom survey done in Ghana by the Regional Institute of Population Studies (RIPS) of the University of Ghana, was analyzed to answer the research questions.

The barriers to condom use survey were carried out in Ghana utilizing a mixed methods approach by employing both quantitative and qualitative methods for data collection.

The quantitative method employed involved the administration of individual questionnaires to a representative sample of females (15-49 years) and males (15-59 years) in all ten regions of Ghana. Focus group discussions (FGDs) and individual in-depth interviews recorded on tape recorders and transcribed for analysis served as the main qualitative methods employed for this study. This combination of the quantitative

and qualitative methods is considered effective in providing answers to gaps in the study where either method may fail to address.

Population and Sampling Procedures for the Ghana Barriers to Condom Use Survey

The eligible population sampled for the Ghana barriers to condom use survey constituted females' aged 15-49 years and males' aged 15-59 years. Sample selection involved three stages: the first stage involved creating a sampling frame using the 2010 Ghana census Enumeration Areas (EAs) as the blue print for the selection of EAs and households in each of the 10 administrative regions of Ghana.

The second and third stages respectively involved stratifying the EAs by region and by rural and urban settlements to be able to obtain a representative sample of Ghanaians for the study.

Institutional Review Board Approval for the Ghana Barriers to Condom Use Survey

In Ghana ethical clearance for the Ghana barriers to condom use survey study was secured from the Ethical Review Committee of the Noguchi Institute for Medical Research by the Regional Institute for Population Studies (RIPS). To participate, respondents were read the informed consent form and asked to sign the consent form before participation. Participants were informed about the general nature of the study including potential risks due to participation. For minors (18 years), parental consent and assent were sought before being allowed to participate in the study. All Participants were informed they could stop answering the questionnaire at any time without any repercussions. Respondents completed the questionnaire anonymously.

For the current study examining motivation to use condoms using the theory of planned behavior, Institutional Review Board approval was sought from Middle Tennessee State University before data analysis of the existing data set was done.

The Condom Barrier Scale (CBS)

The instrument used in the barriers to condom use study was the Condom Barrier Scale (CBS). It's a 29-item instrument designed to assess individual responses concerning perception and attitudes towards condom use in four dimensions: Partner barriers, Effects of sexual experience, Access/Availability and Motivational barriers. Items in each dimension were assessed on a 5-point likert-type scale ranging from "strongly agree" to "strongly disagree."

Measurement of Barriers to Condom Use

Barriers to condom use were measured using CBS. To do this, scores or points were allotted to responses from individuals regarding their experiences with the use or non-use of condoms during sexual activity.

The same sub-region as Ghana in Africa, CBS was utilized to examine barriers to condom use in Nigeria which focused on the measurement of three dimensions related to the perception and attitudes towards condom use (Sunmola, 2001). In that study, a modified version of the CBS questionnaire consisting of 22 items was utilized. Each item was one worded in a short statement and was structured on one of three dimensions namely: condom sexual satisfaction; condom health hazard and condom sexual interest (Sunmola, 2001). The 2011 Ghana condom use barriers survey utilized the original and validated 29 item CBS scale (Doyle, et al., 2009). It consisted of 29-items designed to

assess individual responses concerning perception and attitudes towards condom use in four dimensions: Partner barriers, Effects of sexual experience, Access/Availability and Motivational barriers.

On the CBS, each dimension was assessed on a 5-point likert scale. Scores were assigned for each item under the four dimensions. Scores ranged from a low score (representing a lesser barrier) to the highest score (representing a strong barrier). For example:

- Strongly Agree-5
- Agree-4
- Indifferent-3
- Disagree-2
- Strongly Disagree-1

From the scale above, the higher the score, the higher the perceived barrier to condom use. To see which dimension constituted the highest level of barrier to condom use, a compound or composite index was computed for each dimension of interest and compared with the other dimensions (Sunmola 2001).

Creation of TPB Constructs from CBS Items

For the current study, examination of motivation to condom use using the theory of planned behavior (TPB), items on CBS will be categorized according to the constructs of TPB.

The seven items on CBS assessing "Partner Barriers" were re-categorized as "Subjective Norms." The seven items primarily dealt with the respondent's perception of partner's views on condom use.

The seven items on CBS assessing "Effect of Sexual Experience" were re-categorized as "Attitudes towards Behavior." The seven items dealt with respondents view about the effect of condom use on sexual experience.

The nine items on CBS assessing "Access/Availability" were re-categorized as "Perceived Behavioral Control." These nine items addressed the extent to which participants felt they had access and extent to which condoms were available to them.

Finally, the six items on CBS assessing "Motivational Barriers" were re-categorized as "Intention to Use Condoms." These items assess the extent to which participants were motivated to use condoms. "Motivation to use condoms" was then used as a proxy measure for "intention to use condoms" construct.

CBS Instrument Reliability and Validity

The reliability of the condom barrier scale has been well documented. Doyle, Calsyn & Ball (2009) assessed the psychometric properties of the Condom Barriers Scale (CBS) with a sample of men at high risk for human immunodeficiency virus (HIV). Participants included 590 male patients in drug abuse treatment involved in a gender-specific HIV prevention intervention for teaching safer sex skills. The overall internal consistency of the total CBS scale was found to be high (.90). The Cronbach Alpha coefficients for Partner Barriers (.91), Effect on Sexual Experience (.85), Access/Availability (.67) and Motivational Barriers (.69) reported ranged from high to

moderate respectively. They concluded from the results that CBS had good psychometric properties and was a reliable instrument. Similarly, they evaluated the criterion related validity for CBS and found out it to be low to moderate. The overall validity of the instrument was found to be 0.38

Similarly, Lawrence, Chapdelaine, Devieux, O'Bannon, Brasfield & Eldridge (1999) also examined the reliability of the condom barrier scale in series of three studies. After item generation and selection, Study 1 evaluated the CBS in a sample of minority women *(N* = 178), reduced the number of items, assessed the factor structure, evaluated the internal consistency, and explored the convergent validity of the CBS. In Study 2, the CBS was administered to a cross-validation sample *(N* = 278). Confirmatory factor analysis and internal consistency were compared against the original sample and construct, criterion, and discriminant validity were assessed. In Study 3 *(N* = 30), temporal stability of the CBS was evaluated. The total Cronbach's Alpha for the overall scale obtained after analyses was 0.92. The Cronbach's Alpha for motivational barriers was 0.67, Partner barriers was 0.91, Access/Availability barriers, was 0.74 and effect on Sexual Experience was 0.84. They reported that CBS had sound psychometric properties.

Finally, Sunmola (2001) examined content and reliability of a scale for measuring the barriers to condom use in Nigeria. The scale consisted of 22 items and was structured on three dimensions: condom sexual satisfaction; condom health hazard; and condom sexual interest. It was evaluated on a sample of 786 students attending the University Of Ibadan, Nigeria. He employed the test-retest reliability method to establish how reliable the instrument was. For twenty of the items on the scale, correlation coefficients greater

than 0.70 were obtained, while the remaining two items had coefficients in the range 0.60–0.70. The reliability of the whole scale was estimated by the Spearman-Brown prophecy formula. The estimated reliability of the whole scale was 0.88.

In the same study evidence of validity was also examined by evaluating the discriminant and convergent validity. For convergent validity, correlation coefficients for Condom sexual satisfaction (0.73), Condom health hazard (0.77) and Condom sexual interest(0.72) were reported .Similarly in investigating discriminant validity, correlation coefficients lay in the range 0.42–0.57 ($P<0.05$).

In summary, the above studies provided reliability and validity evidence for the use of the condom barrier scale as an instrument that can be used to measure key constructs in the leading theoretical models of health behavior.

Data Analysis

The analysis for the current study included doing an Exploratory Factor Analysis (EFA) to identify the number of latent-factors among the 29 items on the condom barrier scale. Specifically, a Principal Factor Analysis (PFA) was done with Oblimin rotation using SPSS version 20. To further corroborate the results of the EFA, Confirmatory factor analysis was done using SPSS AMOS version 20, to see if the indictors of the latent variables identified from the exploratory factor analysis fit the model well.

Descriptive statistics for demographic variables and prevalence estimates for the items on CBS was also computed. In addition, complex sample tables and regression analyses were utilized to quantify the relationship between TPB constructs and

motivation to use a condom. Specifically, Multiple Regression Analysis was used to test the predictive power of the Theory of Planned Behavior (TPB) using SPSS Version 20.

The following categories of variables were included in the analysis: socio-demographic characteristics, Perceived Behavioral Control, Attitude toward condom use, Subjective Norms and Intention to Use Condoms (i.e. the variables representing TPB).

CHAPTER IV

RESULTS

Introduction

The purpose of this study is to examine barriers to condom use in Ghana, West Africa using the Theory of Planned Behavior (TPB). This research examines what effect perceived behavioral control, subjective norms and attitudes toward condom use have on participants' motivations to use condoms during sex.

The instrument used in this study was the Condom Barrier Scale (CBS). It's a 29-item instrument designed to assess individual responses concerning perception and attitudes towards condom use in four dimensions: Partner barriers, Effects of sexual experience, Availability and Motivational barriers. Items in each dimension were assessed on a 5-point likert-type scale ranging from "strongly agree" to "strongly disagree."

Demographic Data

Table 1 presents the demographic characteristics of the participants in the study. Six thousand and twenty seven participants completed the surveys administered by the researchers in all ten administrative regions of Ghana. Most (60%) of the participants were aged 25years and above and over half of the participants were female (65.6%). Majority of the participants had some level of formal education up from the primary level up to the middle school level (55.1%). The majority of participants reported being Christians (71.8%) as well as being married (51.3%).

Table 1: Participant Characteristics, Ghana Barriers to Condom Use (N =6027)

Characteristic	***n***	***%***
Demographics		
Gender		
Males	2070	34.4
Females	3953	65.6
Age		
Less than 15 years	429	7.1
15-19 year years old	959	15.9
20-24years	955	15.8
25-39 years	2381	39.5
40years and older	1236	20.5
Educational Status		
No education	1512	25.1
Primary School	1344	22.3
JHS/Middle School	1974	32.8
SSS/SHS	658	10.9
Vocational /Technical school	118	2.0
Polytechnic/Teacher Training	217	3.6
University	190	3.2
Religion		
Christianity	4326	71.8
Islam	1094	18.2
Traditional/spiritualist	277	4.6
Other religion	24	0.4
No religion	302	5.0

Table 1 (continued)

Characteristic	*n*	*%*
Regions		
Western Region	503	8.3
Central Region	451	7.5
Greater Accra Region	829	13.8
Volta region	485	8.0
Eastern region	663	11.0
Ashanti region	919	15.2
Brong Ahafo region	572	9.5
Northern region	785	13.0
Upper east region	477	7.9
Upper west region	343	5.7
Ethnic background		
Akan	2551	42.3
Ga-Adangbe	380	6.3
Ewe	809	13.4
Mole Dagbani	1267	21.0
guan	222	3.7
Other Ghanaian	415	6.9
Other African	59	1.0
Non -African	2	0.0
Other	309	5.1
Marital status		
Never married	2178	36.1
Currently married	3091	51.3
Living together	386	6.4
Separated	105	1.7
Divorced	154	2.6
widowed	107	1.8

Table 2: Descriptive for Theoretical Constructs

	Strongly Agree or Agree	
	n	%
Perceived behavioral control		
I can never find a condom right before sexual intercourse	1432	23.8
I would not know where to buy/get a condom	714	11.8
Condoms cost too much	289	4.8
I would be afraid to suggest to my partner to use condom	1456	24.2
I do not have transport to buy or get a condom	628	10.4
Condoms are against my religious values	1612	26.7
I would be embarrassed to buy condoms or ask for them	2586	42.9
It's up to a man to provide a condom	2450	40.7
Motivation to use condom		
Most of the time neither of us has a condom available	2532	42.0
I do not want my partner to put a condom on me	2281	37.8
I usually forget about using a condom	2438	40.5
I do not need to use a condom; I never get any STI and HIV	1642	27.2
When I use a condom, I feel less involved or committed to the relationship	1914	31.8
I do not use a condom, I use another method	1953	32.4
Subjective Norms		
My partner does not want us to use condoms**.**	1799	29.8
If I use a condom my partner might get angry.	2058	34.1
If I use a condom my partner might think I am cheating on him	2278	37.8
If I suggested we use a condom My partner would think I am accusing him/her of cheating	2258	37.5
If I suggest to my partner we use a condom he/she might end the relationship	1475	24.5
If I suggested my partner use a condom he/she might think I am putting him/her down or insulting him/her	1845	30.6
If I suggested my partner use a condom she might be turned off and lose interest in sex	1841	30.5
Attitudes towards condom		
Condoms rub and cause irritation	1437	23.8
Condoms do not feel good	2424	40.2
Condoms interrupt the mood	2300	38.2
Condoms feel unnatural	2956	49.0
Condoms do not fit right	1139	18.9
I feel closer to my partner without a condom	2922	48.5
Condoms change the climax or orgasm	2126	35.3

Re-categorization of Theoretical Variables

The theoretical variables in this study included Attitudes toward condoms use, Perceived behavioral control and Subjective norms. Each question under theses constructs was initially answered on a 5-point Likert-type scale with answer categories ranging from *strongly agree, agree, indifferent, disagree* to *strongly disagree*. These five category answer choices were recoded into three categories by combining the positive answer choices into one category, keeping the neutral category the same and combining the negative answer choices into another category. The final answer categories then ranged from Strongly *Agree* to *agree, indifferent and strongly disagree or disagree.* Table two above displays the results for the number of participants who strongly agreed /agreed to the various questions asked them.

Exploratory Factor Analysis

Exploratory factor analysis (EFA) was employed to identify the number of latent-factors among the 29 items on the condom barrier scale. Specifically, a principal component analysis (PCA) was done with Oblimin rotation. In total 4922 subjects were included in this analysis as well as 24 items from the condom barrier scale. Initial analysis indicated that five items on the condom barriers scale did not fit the model well as such were dropped in a bid to get a better model. The five items excluded from the model include: “Condoms are against my religious values,” “I would be embarrassed to buy condoms or ask for them,” “It is up to the man to provide a condom,” “I would be afraid to suggest to my partner we use condoms” and “I do not use a condom, I use another method.”

The eigenvalue-greater-than-one rule, also known as K1 (Kaiser, 1958), was implemented to determine the appropriate number of factors to retain. This technique resulted in a four factors. Observation of the Scree test (Zwick & Velicer, 1986) also suggested that four factors be should be retained. Based on the cutoff correlation of 0.4., Eight (8) questions loaded significantly on the first factor: Partner Barriers. Seven questions also loaded better on to the Second factor: Effect on sexual experience. Six questions also loaded better on the third factor: Motivational barriers. The last three items loaded better on the fourth factor: Access/Availability barriers.

Confirmatory factor analyses

Confirmatory factor analysis was done using SPSS AMOS version 20, to see if the indicators of the latent variables identified from the exploratory factor analysis fit the model well. A closer inspection of all the standardized regression weights for each indicator of the four latent variables identified from the exploratory factor analysis were above the cut off of 0.4 indicating that all the indicators fit the latent factors identified well.

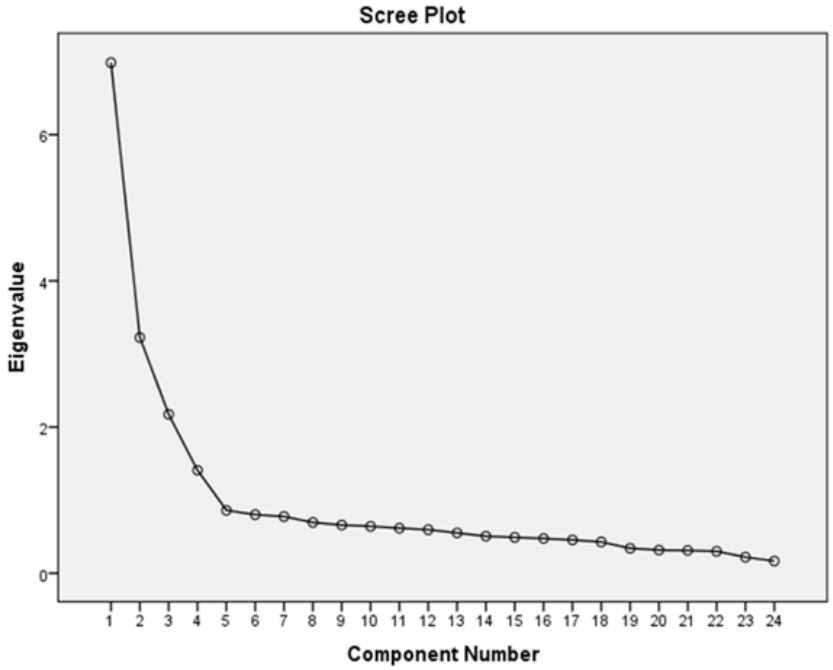

Figure 5: Scree Plot

An examination of the proportion of variance explained, showed that Partner barriers (i.e., factor 1) accounted for 29.10% of the total variance; Effect on sexual experience barriers (i.e., Factor 2) accounted for 13.43% of the variance; Motivational barriers (i.e., Factor 3) explained 9.05% of the variance and Access to condom barriers accounted for 5.87% of the variance. These four factors combined explain 57.45% of the total variance. This total proportion of variance represents a very large latent effect size. Latent effect sizes represent effect sizes that pertain to non-observable, underlying aspects of the phenomenon being studied (Onwuegbuzie & Teddlie, 2002). The total variance explained in shown in table 5.

Table 3: Factor loadings on the Rotated Component Matrix

Rotated Component Matrix[a]

	Component			
	1	2	3	4
1	.838			
2	.832			
3	.806			
4	.781			
5	.776			
6	.770			
7	.614			
8	.528			
9		.862		
10		.853		
11		.829		
12		.704		
13		.611		
14		.561		
15		.509		
16			.723	
17			.695	
18			.638	
19			.581	
20		.408	.503	
21			.499	.437
22				.798
23				.794
24				.772

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 4: Total Variance Explained by Components

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.98	29.10	29.10	6.98	29.10	29.10	4.81	20.05	20.05
2	3.22	13.43	42.53	3.22	13.43	42.53	3.96	16.52	36.57
3	2.17	9.05	51.59	2.17	9.05	51.59	2.65	11.04	47.62
4	1.40	5.86	57.45	1.40	5.86	57.45	2.36	9.83	57.45
5	.86	3.58	61.04						
6	.80	3.34	64.38						
7	.77	3.23	67.61						
8	.69	2.89	70.51						
9	.66	2.74	73.26						
10	.64	2.67	75.93						
11	.61	2.56	78.50						
12	.59	2.48	80.98						
13	.55	2.29	83.28						
14	.50	2.11	85.39						
15	.49	2.04	87.43						
16	.47	1.97	89.41						
17	.45	1.89	91.31						
18	.42	1.78	93.09						
19	.34	1.42	94.51						
20	.31	1.32	95.84						
1	.31	1.30	97.14						
22	.29	1.24	98.38						
23	.22	.91	99.30						
24	.16	.69	100.00						

Crosstabs Analysis

Crosstab analyses showed a relationship between the independent variables in the study and the dependent variable, motivation to use condoms. Table 5 shows the demographic variables (age, gender, region, marital status and educational status) and their relationship between participants who were motivated to use condoms and participants who were not. Gender showed a significant relationship ($\chi^2 = 18.30$, $df = 1$, $p < .001$). Men were more likely (42.2%) to be motivated to use condoms than women (38.3%). Among the participants aged 30-34 years, 52.80% of participants reported having no motivation to use a condom. By marital status, 52% of those who reported being currently married reported having no motivation of using condoms. Among participants with no level of education, 50% reported that they had no motivation to use condoms. Results of crosstabs are displayed in table 5 below.

Table 5: Participants Motivated to Use Condoms by Control Variables *(n = 5777)*

Characteristics	**No motivation to use condom**	**Indifferent**	**motivation to use condoms**	X^2	***df***	***p***
Gender	2441	1044	2292	13.1	2	p<.001
Men	39.0%	18.8%	42.2%			
Women	43.9%	17.7%	38.3%			
Age	2441	1044	2292	753.5	10	p<.001
<15 yrs	15.6%	61.0%	23.4%			
15-19yrs	28.5%	29.6%	41.9%			
20-24yrs	40.7%	13.3%	46.0%			
25-29yrs	47.0%	10.8%	42.2%			
30-34yrs	52.8%	13.6%	33.6%			
Age not known	45.5%	15.2%	39.4%			
Region	2441	1044	2292	355.6	18	p<.001
Western Region	55.4%	13.9%	30.6%			
Central Region	47.4%	16.0%	36.6%			
Greater Accra Region	32.1%	13.3%	54.6%			
Volta Region	45.8%	22.4%	31.9%			
Eastern Region	49.8%	14.6%	35.5%			
Ashanti Region	46.2%	15.8%	38.0%			
Brong Ahafo Region	40.9%	17.6%	41.6%			
Northern Region	29.2%	36.1%	34.7%			
Upper East Region	37.7%	11.4%	50.9%			
Upper West Region	49.1%	14.7%	36.2%			

Table 5 Cont'd: Participants Motivated to Use Condoms by Control Variables *(n = 5777)*

Characteristics	**No motivation to use condom**	**Indifferent**	**motivation to use condoms**	X^2	***df***	***p***
Marital Status	2440	1042	2289	473.8	10	p<.001
Never Married	26.0%	29.6%	44.3%			
Currently married	52.2%	12.3%	35.5%			
Living together	49.3%	6.3%	44.4%			
Separated	48.0%	10.2%	41.8%			
Divorced	40.0%	11.3%	48.7%			
Widowed	45.6%	18.4%	35.9%			
Educational Background	2436	1042	2286	381	12	p<.001
No Education	50.0%	20.2%	29.8%			
Primary	41.0%	28.4%	30.6%			
JSS/JHS/Middle	44.1%	13.9%	41.9%			
SSS/SHS	31.0%	11.3%	57.7%			
Vocational/Technical	41.6%	14.2%	44.2%			
Polytechnic/Teacher Training	30.0%	9.2%	60.9%			
University	23.5%	7.1%	69.4%			

Multiple Regression Analysis

Both theoretical variables and demographical variables were entered into the regression model. Interaction terms consisting of both demographic variables and the theoretical variables were also entered separately into the model. Every interaction term was tested along with the main effect terms. None of the interaction terms were significant in the prediction of motivation to use condom as such were excluded from the final model. The resulting modified model included the study's main effects: gender, age, and region, attitudes towards condom use, subjective norms, and perceived behavioral control.

Interaction effects Model

For the multiple regression analysis, six interaction terms were added to the main effects model, the model was able to explain 32.4% of the variation in *motivation to use condoms*. The multiple R squared (0.324) was not statistically significant, F (6, 5660) =1.259, p=.273 and the change in variance was .001. The interaction model did not significantly increase the variance explained (see table 7).

Main Effects Model

This model consisted of the study's main effects. The model was able to explain 32.3% of the variation in motivation to use condoms F (7, 5666) = 61.81, p<.001 (see Table 6). This model indicated that Gender (B=-.019, t (5674) = -1.437, p = 0.151) and Region, specifically the Central Zone of Ghana (B=.007, t (5674) =.463, p = 0.644), were not significant predictors of motivation to use condoms respectively. Five main effect terms namely Age (B=-0.04, t (5674)=-7.229, p<.001), the Northern Zone of Ghana

(B=.061,t(5674)=3.837,p<.001) Attitudes towards condom use (B=.436, t (5674)=29.797, p<.001) Subjective norms(B=.218, t (5674)=21.179, p<.001) , and Perceived behavioral control(B=.166, t (5674)=13.381, p<.001) respectively, were significant predictors of motivation to use condoms in the main effects model. Amongst the significant predictors of motivation to use condoms, Age was negatively related to motivation to use condoms when controlling for all the other main effects variables entered in the model .When controlling for the gender, age and region, Attitudes towards condom use, subjective norms, and perceived behavioral control respectively were positively related to motivation to use condoms. (See Table 6). An analysis of variance of the whole main effects regression model showed it to be statistically significant (F (7, 5666) = 385.98, p < .001). A closer inspection of the residuals also appeared to be normally distributed.

Table 6: Multiple Regression Analysis for Participants Motivation to use condoms *(n = 5674)*

Variable	***B***	***SE B***	***b***	***p***
Main Effects:				
(Constant)	0.422	0.046		<0.001
gender	-0.019	0.013	-0.016	0.151
Age	-0.004	0.001	-0.08	0.001
Northern Zone of Ghana	0.061	0.016	0.048	<0.001
Central Zone of Ghana	0.007	0.015	0.006	0.644
Subjective norms	0.218	0.01	0.255	<0.001
Perceived behavioral control	0.166	0.012	0.153	<0.001
Attitudes towards condom use	0.436	0.015	0.352	<0.001

Table 7: Multiple Regression Analysis Summary

Variable	***B***	***SE B***	***b***	***P***
Interaction Effects				
Constant	0.455	0.138		0.000
Gender	-0.016	0.083	-0.014	0.846
Age	-0.005	0.004	-0.100	0.151
Ghana Northern Zone	0.061	0.016	0.047	0.000
Ghana Central zone	0.007	0.015	0.006	0.615
Subjective norms	0.262	0.039	0.306	0.000
Perceived behavioral control	0.200	0.042	0.184	0.000
Attitudes towards condom use	0.326	0.053	0.263	0.000
Age*Subjective norms	-0.001	0.001	-0.054	0.323
Gender*Subjective norms	-0.019	0.022	-0.037	0.401
Age*Perceived behavioral control	-0.001	0.001	-0.073	0.236
Gender*Perceived behavioral control	0.004	0.027	0.010	0.873
Age*Attitudes towards condom use	0.003	0.001	0.145	0.000
Gender*Attitudes towards condom use	0.013	0.030	0.022	0.670

Summary

The results of this study support the theoretical hypothesis for this study. Participants attitudes toward condom use, subjective norms and perceived behavioral control are positively related to participants motivation to use condoms

Hypothesis 2 was supported by the results in this study ($p < .001$). Participants' perceived behavioral control over their own protective sexual behavior is positively related to participants motivation to use a condom during sex. Hypothesis 3 was supported by the results in this study ($p < .001$). Participants' subjective norms toward their own condom use were positively related participants motivation to use condoms during sex. Hypothesis 4 was also supported by the results in this study. Participants' attitudes toward condom use were positively related to their motivation to use condoms.

The final model in this study was able to predict 32.3% of the variation in motivation to use condoms.

CHAPTER V

DISCUSSION

This study examines motivation to use condom among the Ghanaian population by applying the Theory of Planned Behavior (TPB). This well-established theoretical framework holds that TPB constructs of subjective norms, attitudes toward condom use and perceived behavioral control all lead to an individual's intention to perform behavior. Normally, the stronger an individual's intention to perform a behavior, the more likely the individual is to perform the behavior (Ajzen, 1991, 2002; Fishbein & Ajzen, 1975). In this study, motivation to use condom was the proxy measure used to measure intention.

Demographics

A total of Six thousand and twenty seven (6027) participants completed the surveys administered by the researchers in all ten administrative regions of Ghana. The sample comprised of 2,070 men and 3953 women. Most (60%) of the participants were aged 25years and above. Majority of the participants had some level of formal education up from the primary level up to the middle school level (55.1%) and more than half of the participants were married (51.3%).

Initial Analysis (Cross tabulations)

The crosstabs analysis showed a significant relationship between gender and participants' motivation to use condoms. Women were significantly less likely motivated to use condoms than men. The low use of condoms among women compared to men may be due to condom availability and use being thought as a man's job. Women may be less motivated to use condoms because most often they are not putting the condom on their

male partners during sexual intercourse or they may have very limited knowledge about the existence and use of female condoms. This result was consistent with that of the DHS, (2008) which reported that in Ghana the prevalence of condom use by adults aged 15-49 years during sex was only 45% for males and 25% for females in the period of 2005-2008. However, these findings do not take into account married couples or individuals in monogamous relationship.

Studies from other sub-Saharan African countries have shown that people tend to reserve condoms for casual partners and its introduction into monogamous relationships may lead to mistrust and allegations of infidelity (Eaton & Flisher, 2003). With polygamous marriages being common in Ghana, it's imperative to advocate condom use among married couples and females in general (Berhane, 2000).

The theoretical variables namely attitudes toward condom use, subjective norms, and perceived behavioral control used in the analysis were significantly related to participants motivation to use condoms. If participants reported positively on these variables, they were more motivated to use condoms during sexual intercourse as compared to participants who reported being indifferent about condom use or negatively on the theoretical variables.

Multiple Regression Analysis

Multiple regression analysis was used to test the predictability of TPB constructs in measuring motivation to use condoms. The analyses revealed that subjective norms, attitudes towards condom use and perceived behavioral control significantly predicted

motivation to use condom by accounting for 32.3% of the variance in motivation to use condoms ($R^2 = 0.323$).

In previous studies in sub-Saharan Africa (Fekadu & Kraft, 2001; Molla, Åstrom & Brehane, 2007; Jemmott III et al., 2007) the explained variances in intended condom use based on TPB variables have usually fallen between 25-48%. The present study's result compares favorably with this range and that obtained in meta-analytical reviews (Armitage & Conner, 1998, Nurmala, 2013) examining the predictive ability of TPB upon motivation to use condom. Interaction terms added to the regression model did not significantly add to the prediction of motivation to use condoms.

Subjective Norms

The subjective norm variable was a significant predictor of participants' motivation to use condoms. Subjective norms and attitudes toward condom use were the strongest predictors of motivation to use condoms. This result was consistent with other TPB studies (Glasman & Albarracın, 2003; Villarruel *et al*., 2004; Gilesi & Bydawell, 2005) which had subjective norms being a major predictor of condom use. This result may be so given that other research has revealed that social norms have an influence on sexual behavior (Schaalma et al., 2009; Kirby, 2001).

Another possible reason may be the assertion that African cultures are more socialistic than individualist and that in such cultures; subjective norms will play a strong role (Aarø, Schaalma & Astrøm 2007; Giles, Liddell, & Bydawell, 2005) in predicting condom use. This meant that, among participants, social approval of their behavior is an essential determinant as to whether they are motivated to use condoms.

Attitudes toward Condom Use

The attitude toward condoms use variable was a significant predictor of participants' motivation to use condoms. Just like subjective norms, previous studies have also found out to be a good predictor of condom use (Salabarria-Pena, Lee, Montgomery & Hopp, 2003; Glasman & Albarracın, 2003; Villarruel, Jemmott, Jemmott & Ronis, 2004). The results show that participants having more positive attitudes toward condoms use will lead to better motivation to use condoms during sexual intercourse.

Perceived Behavioral Control (PBC)

The perceived behavioral control variable was also a significant predictor of participants' motivation to use condoms even though it did not account for the highest proportion of variance. The result for perceived behavioral control for this study was found to be contrary to what the theory of planned behavior posits (i.e. that the strongest predictor of intention is PBC). A couple of reasons may be responsible for the result obtained in this study. Initially PBC was measured by nine (9) indicators. After Exploratory factor analysis, only three were found to fit the model and this reduction in indicators may have affected its ability to effectively predictive motivation to use condom very well.

Another possible reason may be due to the fact that African cultures are more socialistic than individualist and that in such cultures subjective norms will play a strong role (Aarø, Schaalma & Astrøm 2007; Giles, Liddell, & Bydawell, 2005) in predicting sexual behavior.

Limitations

The current findings may not be able to be generalized to all populations, especially against western societies considering the complex social, religious and cultural differences that affect motivation to use condoms in Ghana. Another limitation of the study could be that the study design was cross-sectional and thus the results may not necessarily measure causality. It is possible that participants gave responses to the questions to reflected their previous intentions and behaviors. Lastly another limitation of this study is that the present study does not address the need for a longitudinal study on actual motivation to use condoms among Ghanaians

Implications for HIV/AIDS and STI interventions

Irrespective of the limitations of this study, the results suggest that the theory of planned behavior is a good theoretical framework for developing sexual risk interventions amongst the Ghanaian populace. The results further suggest that subjective norms and attitudes towards condom use are most useful constructs in predicting motivation (proxy for intention) to use condoms among the Ghanaian population. So rather than focus on perceived behavioral control (such as on skills such on how to be able to wear a condom effectively), interventions should be more geared toward participants attitudes toward condom use and their perception of the significant people in their lives' approval of their use of condoms.

Conclusion

This study validated the use of the Theory of Planned Behavior (Ajzen, 1991, 2002) to be an effective tool in predicting the motivation (proxy measure for intention)

to use condoms among Ghanaians. Therefore practitioners should consider using TPB as a theoretical framework when designing interventions.

REFERENCES

Aarø LE, Schaalma H, Astrøm AN (2007) Predicting health behavior : the applicability of social cognition models in an African context. Promoting Adolescent Sexual and Reproductive Health in Eastern and Southern Africa. Uppsala, Sweden: Nordic Africa Institute; Adih, W. K., & Alexander, C. S. (1999). Determinants of condom use to prevent HIV infection among youth in Ghana. Journal of Adolescent Health, 24(1), 63-72.

Agha, S., Kusanthan, T., Longfield, K., Klein, M., & Berman, J. (2002, July). Reasons for non-use of condoms in eight countries in sub-Saharan Africa. PSI.

Ajzen, I. (2005). Attitudes, Personality, and Behavior .Milton-Keynes, England: Open University Press (McGraw-Hill).

Ajzen, I. (2002). Constructing a TPB questionnaire: Conceptual and methodological considerations. *Retrieved December*, *7*, 2012.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes,* 50, 179-211**.**

Ajzen, I., & Madden, T. J. (1986). Prediction of goal directed behavior: Attitudes, intentions and perceived behavioral control. *Journal of Experimental Social Psychology,* 22,453-474.

Ajzen, I**.,** & Driver, B. L. (1991). Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure Sciences,* 13, I 85-204.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice-Hall.

Albarracin, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned action and planned behavior as models of condom use: a meta-analysis. *Psychological bulletin*, *127*(1), 142.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British journal of social psychology*, *40*(4), 471-499

Awusabo-Asare, K., Abane, A. M., Badasu, D. M., & Anarfi, J. K. (1999). 'All die be die': obstacles to change in the face of HIV infection in Ghana. *Resistance to Behavioral Change to Reduce HIV/AIDS Infection in Predominantly Heterosexual Epidemics in Third World Countries, Health Transition Center, Canberra*, 125-32

Bankole, A., Ahmed, F. H., Neema, S., Ouedraogo, C., & Konyani, S. (2007). Knowledge of correct condom use and consistency of use among adolescents in four countries in Sub-Saharan Africa. *African Journal of Reproductive Health, 11*(3), 197.

Boer, H., & Mashamba, M. T. (2007). Gender power imbalance and differential psychosocial correlates of intended condom use among male and female adolescents from Venda, South Africa. British Journal of Health Psychology, 12(1), 51-63.

Bosompra, K. (2001). Determinants of condom use intentions of university students in Ghana: an application of the theory of reasoned action. Social Science & Medicine, 52(7), 1057-1069.

Chang, M. K. (1998). Predicting unethical behavior: a comparison of the theory of reasoned action and the theory of planned behavior. *Journal of business ethics*, *17*(16), 1825-1834.

Chakrapani V., Newman P., Shunmugam M., & Dubrow R. (2010). Prevalence and Contexts of Inconsistent Condom Use Among Heterosexual Men and Women Living with HIV in India: Implications for Prevention. AIDS Patient Care and STDs, 24(1), 49-58.

Chimbiri, A. M. (2007). The condom is an 'intruder'in marriage: Evidence from rural Malawi. *Social science & medicine*, *64*(5), 1102-1115.

Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of applied social psychology*, *28*(15), 1429-1464

Doyle, S. R., Calsyn, D. A., & Ball, S. A. (2009). Factor structure of the Condoms Barriers Scale with a sample of men at high risk for HIV. *Assessment*, *16*(1), 3-15.

Fishbein, M. & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research (Addison Wesley, Reading, Mass.)

Francis, J. J., Eccles, M. P., Johnston, M., Walker, A. E., Grimshaw, J. M., Foy, R., & Bonetti, D. (2004). Constructing questionnaires based on the theory of planned behaviour. *A manual for health services researchers*.

Foss, A. M., Watts, C. H., Vickerman, P., & Heise, L. (2004). Condoms and prevention of HIV: Are essential and effective, but additional methods are also needed. *BMJ: British Medical Journal*, *329*(7459), 185.

Gaston, G. & Kok, G. (*1996*) The Theory of Planned Behavior: A Review of Its Applications to Health-related Behaviors. American Journal of Health Promotion, Vol. 11, No. 2, pp. 87-98.

Ghana Demographic and Health Survey (2008). Accra, Ghana. retrieved from http://www.measuredhs.com/pubs/pdf/SR172/SR172.pdf on 12/07/2012.

Giles, D. M., Liddell, C., & Bydawell, M. (2005). Condom use in African adolescents: The role of individual and group factors. *AIDS care*, *17*(6), 729-739.

Hattori, M. K., Richter, K., & Greene, J. (2010). Trust, caution, and condom use with regular partners: an evaluation of the trusted partner campaign targeting youth in four countries. *Social Marketing Quarterly*, *16*(2), 18-48.

Heeren, G. A., Jemmott III, J. B., Mandeya, A., & Tyler, J. C. (2007). Theory-based predictors of condom use among university students in the United States and South Africa. *AIDS Education & Prevention*, *19*(1), 1-12.

Hounton, S. H., Carabin, H., & Henderson, N. J. (2005). Towards an understanding of barriers to condom use in rural Benin using the Health Belief Model: A cross sectional survey. *BMC Public Health*, *5*(1), 8.

Jemmott III, J.B., Heeren, G. A., Ngwane, Z., Hewitt, N., Jemmott, L. S., Shell, R., & O'leary, A. (2007). Theory of planned behaviour predictors of intention to use condoms among Xhosa adolescents in South Africa. *AIDS care*, *19*(5), 677-684.

Joint United Nations Programme on HIV/AIDS. (2012a). Regional fact sheet 2012 Ghana Country Aids Progress Report. Retrieved from :

http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_GH_Narrative_Report[1].pdf on 12/07/2012

Joint United Nations Programme on HIV/AIDS, (2012b). Ghana Country Aids Progress Report. Retrieved from: http://www.unaids.org/en/media/unaids/contentassets/documents/epidemiology/2012/gr2012/2012_FS_regional_ssa_en.pdf on 12/07/2012.

Joint United Nations Programme on HIV/AIDS. (2004). 2004 report on the global AIDS epidemic: 4th global report. Geneva: Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO).

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika, 23*(3), 187-200.

Kirby D (2001) Understanding what works and what doesn't in reducing adolescent sexual risk-taking. Fam Plann Perspect 2001;33:276.

Lawrence, J. S. S., Chapdelaine, A. P., Devieux, J. G., O'Bannon, R. E., Brasfield, T. L., & Eldridge, G. D. (1999). Measuring perceived barriers to condom use: Psychometric evaluation of the Condom Barriers Scale. Assessment, 6(4), 391-404.

Luginaah, I. (2008). Local gin (Akpeteshie) and HIV/AIDS in the Upper West Region of Ghana: The need for preventive health policy. *Health & Place, 14*(4), 806-816.

Lugoe, W., & Rise, J. (1999). Predicting intended condom use among Tanzanian students using the theory of planned behaviour. *Journal of Health Psychology, 4*(4), 497-506

Madden, D. R., & Wiley, D. C. (1992). Peptide binding to the major histocompatibility complex molecules: Current Opinion in Structural Biology 1992, 2: 300–304. *Current Opinion in Structural Biology*, *2*(2), 300-304.

Mathews, C., Aarø, L. E., Flisher, A. J., Mukoma, W., Wubs, A. G., & Schaalma, H. (2009). Predictors of early first sexual intercourse among adolescents in Cape Town, South Africa. *Health Education Research*, *24*(1), 1-10.

Mill, J. E. (2001). I'm not a "basabasa" woman: An explanatory model of HIV illness in Ghanaian women. Clinical Nursing Research, 10(3), 254-274.

Molla, M., Åstr, A. N., & Brehane, Y. (2007). Applicability of the theory of planned behavior to intended and self-reported condom use in a rural Ethiopian population. *AIDs care*, *19*(3), 425-431.

Mufune, P. (2005). Myths about condoms and HIV/AIDS in rural northern Namibia. International Social Science Journal, 57(186), 675-686

Nurmala, I. (2013). Determinants of Condom-Use Behavior from Studies Using the Theory of Planned Behavior: A Literature Review. *The Indonesian Journal of Public Health*, *6*(1).

Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. *Handbook of mixed methods in social and behavioral research*, 351-383

Pelletier, L. G., Dion, S. C., Slovinec-D'Angelo, M., & Reid, R. (2004). Why do you regulate what you eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment.*Motivation and Emotion*, *28*(3), 245-277.

Pletzer, K. (2000). Factors affecting condom use among South African University students. *East African Medical Journal*, *77*(1).

Posthuma, R.A, & Dworkin, J.B., (2000). A behavioral theory of arbitrator acceptability. *International Journal of Conflict Management*, *11*(3), 249-266.

Schaalma, H., Aarø, L. E., Flisher, A. J., Mathews, C., Kaaya, S., Onya, H., & Klepp, K. I. (2009). Correlates of intention to use condoms among Sub-Saharan African youth: The applicability of the theory of planned behaviour. *Scandinavian journal of public health*, *37*(2 suppl), 87-91

Schaalma, H. (2009). Correlates of intention to use condoms among Sub-Saharan African youth: The applicability of the theory of planned behaviour. Scandinavian Journal of Public Health, 37(1), 87-91

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer research*, 325-343.

Sunmola, A. M. (2005). Evaluating the sexual behaviour, barriers to condom use and its actual use by university students in Nigeria. AIDS Care, 17(4), 457-465.

Sunmola, A. M. (2001). Developing a scale for measuring the barriers to condom use in Nigeria. *Bulletin-World Health Organization*, *79*(10), 926-932.

Tavory, I., & Swidler, A. (2009). Condom semiotics: meaning and condom use in rural Malawi. *American Sociological Review*, *74*(2), 171-189.

The Central Intelligence Agency (2012).The world fact book. Retrieved from: https://www.cia.gov/library/publications/the-world-factbook/geos/gh.html on 12/07/2012 UNAIDS. (2004). 2004 Report of the global AIDS epidemic. Geneva: UNAIDS.

Triandis, H. C. (1980). Values, attitudes, and interpersonal behavior. In H. E. Howe, Jr. & M. Page (Eds.), Nebraska symposium of motivation (Vol. 27, pp. 195–259). Lincoln: University of Nebraska Press.

Warner, L., Newman, D. R., Austin, H. D., Kamb, M. L., Douglas, J. M., Malotte, C. K.,& Peterman, T. A. (2004). Condom effectiveness for reducing transmission of gonorrhea and chlamydia: the importance of assessing partner infection status. *American journal of epidemiology*, *159*(3), 242-251

Webb, T. L., & Sheeran, P. (2005). Integrating concepts from goal theories to understand the achievement of personal goals. European Journal of Social Psychology, 35, 69–96.

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. Psychological bulletin, 132(2), 249

World Health Organization, (2012). HIV/AIDS fact sheet. Retrieved from: http://www.who.int/mediacentre/factsheets/fs360/en/index.html on 11/15/2012.

World Health Organization, (2012). Sexually transmitted infections fact sheet. Retrieved from:

http://www.who.int/mediacentre/factsheets/fs110/en/index.html on 11/15/2012

Yeboah, I. E. (2007). HIV/AIDS and the construction of Sub-Saharan Africa: Heuristics lessons from the social sciences for policy. Social Science and Medicine, 64(5), 1128-1150

Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological bulletin*, *99*(3), 432.

APPENDICES

Appendix A

Barriers to Condom Use in Ghana

INDIVIDUAL QUESTIONNAIRE
(TO BE ADMINISTERED TO PERSONS AGED 12 YEARS & ABOVE)

QUESTIONNAIRE NO:__ __ __

IDENTIFICATION

DATE INTERVIEW:__ __/__ __/__ __ __ __ TIME:__ __/__ __.

LOCATION OF INTERVIEW: .....

NAME OF EA : .....

REGION: .....

NAME AND SIGNATURE OF INTERVIEWER:

.....

SECTION 1: RESPONDENT'S SOCIAL AND DEMOGRAPHIC BACKGROUND

101. In what month and year were you born? MONTH__ __YEAR__ __ __ __ (**IF DON'T KNOW ENTER 99 FOR MONTH AND 9999 FOR YEAR**)
102. How old were you on your last birthday **(IN COMPLETED YEARS) __ __**
(CHECK RESPONSE TO QUESTION 101 AND CORRECT IF NECESSARY)
103. Sex 1. MALE 2. FEMALE
104. Do you currently attend school?
1. YES 2. NO
105. What is your highest level of education?
1. NO EDUCATION 3. MIDDLE/JSS
2. PRIMARY 4. SEC/SSS
5. TERTIARY

106. What is your religious affiliation?
1. Catholic 2. Protestant 3. Other Christian 4. Traditional/Spiritualist
5. Moslem 6. Atheist 7. Other (Specify)……
107. Which ethnic group do you belong?
1. Akan 2. Ga-Dangme 3. Ewe 4. Guan 5. Mole-Dagbani
6. Grussi 7. Gruma 8. Hausa 9. Other (specify)……..
108. What is your marital status?
1. NEVER MARRIED **(SKIP TO Q111)**

2. CURRENTLY MARRIED
3. LIVING TOGETHER
4. SEPARATED **(SKIP TO Q111)**
5. DIVORCED **(SKIP TO Q111)**
6. WIDOWED **(SKIP TO Q111)**

109. If married/living together, what work does your spouse/partner do?
……
…

110. If married/living together, what is the educational status of your spouse/partner?
1. NO EDUCATION 3. MIDDLE/JSS
2. PRIMARY 4. SEC/SSS 5. TERTIARY

111. With whom do you currently live?
1. ALONE
2. PARENTS
3. SIBLING(S)
4. SPOUSE
5. BOY FRIEND/GIRL FRIEND
6. OTHER RELATIONS (SPECIFY)……..
7. FRIENDS
8. OTHER UNRELATED PERSONS (SPECIFY)……..….

112. What is your occupation? …….

113. What is the occupation of your spouse? ……..

SECTION 2: KNOWLEDGE, PERCEPTIONS AND USE OF CONTRACEPTION

Now I would like to talk to you about the various ways or methods a couple can use to delay or avoid pregnancy.

201. Do you know of any method or ways that an individual or couple/sexual partners can use to protect themselves when they have sex or when they desire to delay or avoid a pregnancy?
1. YES 2. NO **(SKIP TO Q204)**

202. What are some of the methods or ways you know of? (**ANYTHING ELSE?)**

a.	Female Sterilization/ Tubal Ligation	1. YES	2. NO
b.	Male Sterilization/ Vasectomy	1. YES	2. NO
c.	IUD (Intra Uterine Device)	1. YES	2. NO
d.	Implants/ Norplant	1. YES	2. NO
e.	Injectables/ Depo	1. YES	2. NO
f.	Pill/ Oral Contraceptive	1. YES	2. NO
g.	Emergency Contraception/ day after pill	1. YES	2. NO

h.	Male Condoms	1. YES	2. NO
i.	Female Condoms	1. YES	2. NO
j.	Diaphragm	1. YES	2. NO
k.	Spermicide/ Vaginal Foam or Jelly	1. YES	2. NO
l.	LAM (Lactational Amenorrhoea Method)	1. YES	2. NO
m.	Rhythm or Periodic Abstinence	1. YES	2. NO
n.	Withdrawal/ Coitus Interruptus	1. YES	2. NO
o.	Herbs	1. YES	2. NO
p.	Other, (Specify)……	1. YES	2. NO

203. Where did you hear, see or read about the contraceptive method(s)? **(CIRCLE ALL THAT APPLY)**

a. Television	1. YES	2. NO
b. Radio	1. YES	2. NO
c. Newspaper/ magazine/leaflets/brochure	1. YES	2. NO
d. Husband/Partner	1. YES	2. NO
e. Parents	1. YES	2. NO
f. Other relative	1. YES	2. NO
g. Friends	1. YES	2. NO
h. Health worker	1. YES	2. NO
i. Other (Specify)……	1. YES	2. NO

204. In the last 12 months, have you discussed the practice of family planning with your spouse/sexual partner, friends, neighbours or relatives?
1. YES 2. NO **(SKIP TO Q206)**

205. With whom did you discuss these issues? **(ANYONE ELSE?)**

a. Husband/Partner	1. YES	2. NO
b. Mother	1. YES	2. NO
c. Father	1. YES	2. NO
d. Sister	1. YES	2. NO
e. Brother	1. YES	2. NO
f. Mother-in-law	1. YES	2. NO
g. Other relatives	1. YES	2. NO
h. Friends	1. YES	2. NO
i. Health worker	1. YES	2. NO
j. Other (Specify)……	1. YES	2. NO

206. Which method(s) have you ever used to protect yourself when you have sex or wish to delay or avoid a pregnancy? **(CIRCLE ALL THAT ARE MENTIONED)**

a.	Female Sterilization/ Tubal Ligation	1. YES	2. NO
b.	Male Sterilization/ Vasectomy	1. YES	2. NO
c.	IUD (Intra Uterine Device)	1. YES	2. NO
d.	Implants/ Norplant	1. YES	2. NO
e.	Injectables/ Depo	1. YES	2. NO

f.	Pill/ Oral Contraceptive	1. YES	2. NO
g.	Emergency Contraception/ day after pill	1. YES	2. NO
h.	Male Condoms	1. YES	2. NO
i.	Female Condoms	1. YES	2. NO
j.	Diaphragm	1. YES	2. NO
k.	Spermicide/ Vaginal Foam or Jelly	1. YES	2. NO
l.	LAM (Lactational Amennorhoea Method)	1. YES	2. NO
m.	Rhythm or Periodic Abstinence	1. YES	2. NO
n.	Withdrawal/ Coitus Interruptus	1. YES	2. NO
o.	Herbs	1. YES	2. NO
p.	Other, (Specify)……	1. YES	2. NO

…

207. Which method are you currently using to protect yourself when you have sex or wishto delay or avoid a pregnancy? **(CIRCLE ALL THAT APPLY)**

a.	Female Sterilization/ Tubal Ligation	1. YES	2. NO
b.	Male Sterilization/ Vasectomy	1. YES	2. NO
c.	IUD (Intra Uterine Device)	1. YES	2. NO
d.	Implants/ Norplant	1. YES	2. NO
e.	Injectables/ Depo	1. YES	2. NO
f.	Pill/ Oral Contraceptive	1. YES	2. NO
g.	Emergency Contraception/ day after pill	1. YES	2. NO
h.	Male Condoms	1. YES	2. NO
i.	Female Condoms	1. YES	2. NO
j.	Diaphragm	1. YES	2. NO
k.	Spermicide/ Vaginal Foam or Jelly	1. YES	2. NO
l.	LAM (Lactational Amennorhoea Method)	1. YES	2. NO
m.	Rhythm or Periodic Abstinence	1. YES	2. NO
n.	Withdrawal/ Coitus Interruptus	1. YES	2. NO
o.	Herbs	1. YES	2. NO
p.	Other, (Specify)……	1. YES	2. NO

…

208. **CHECK Q207: IF RESPONDENT MENTIONS MORE THAN ONE METHOD, PICK THE MOST EFFECTIVE AND ASK:** Where do you or your spouse/partner usually obtain this method?

1. Hospital/Clinic/Health Centre 2. Maternity Home
3. Mobile Clinic 4. Pharmacy/Chemist/Drug Store
5. Other Shop 6. Church
7. Friends 8. Relatives 9. Other(specify) ……..

209. Have you ever encountered any difficulties in accessing family planning methods?

1. YES 2. NO **(SKIP TO SECTION 4)**

210. If YES, please explain.

……
……
……

SECTION 3: SEXUAL AND REPRODUCTIVE HISTORY

Now I would like to ask you some questions about your sexual and reproductive history. Remember that any information you provide will be kept strictly confidential. You may choose not to answer any of these questions. If you decide to answer the questions, please answer truthfully to enable us get a clear picture of the sexual and reproductive health practices of street vendors.

301. Have you ever had sex? 1. YES 2. NO **(SKIP TO Q312)**
302. At what age did you first have sex? (**COMPLETED YEARS**)…..…….
303. When was the last time you had sexual intercourse?
1. …….Days ago 2. ……..Weeks ago 3. …….Months ago
429.……Years ago **(SKIP TO Q305)**
5. DON'T REMEMBER/NO RESPONSE
304. How often did you have sex in the last 4 weeks? (**NO. OF TIMES)**……..
305. Would you say that you are currently in a sexually active relationship?
1. YES 2. NO
306. How many regular sexual partners do you have?
(NUMBER OF REGULAR PARTNERS) ...……..…
307. The last time you had sex with a <u>regular partner</u>, did you or your partner use any form of contraception? 1. YES
2. NO
308. Which method did you or your regular partner use? **(CIRCLE ALL THAT APPLY)**

a.	Female Sterilization/ Tubal Ligation	1. YES	2. NO
b.	Male Sterilization/ Vasectomy	1. YES	2. NO
c.	IUD (Intra Uterine Device)	1. YES	2. NO
d.	Implants/ Norplant	1. YES	2. NO
e.	Injectables/ Depo	1. YES	2. NO
f.	Pill/ Oral Contraceptive	1. YES	2. NO
g.	Emergency Contraception/ day after pill	1. YES	2. NO
h.	Male Condoms	1. YES	2. NO
i.	Female Condoms	1. YES	2. NO
j.	Diaphragm	1. YES	2. NO
k.	Spermicide/ Vaginal Foam or Jelly	1. YES	2. NO
l.	LAM (Lactational Amennorhoea Method)	1. YES	2. NO
m.	Rhythm or Periodic Abstinence	1. YES	2. NO
n.	Withdrawal/ Coitus Interruptus	1. YES	2. NO
o.	Herbs	1. YES	2. NO
p.	Other,	1. YES	2. NO

(Specify)……
…

309. How many sexual partners have you met on a casual basis in the last 4 weeks? NUMBER OF CASUAL SEXUAL PARTNERS…..…….

310. The last time you had sex with a casual partner, did you use any form of contraception?

311. Which method of contraception did you or your casual partner use? **(CIRCLE ALL THAT APPLY)**

a.	Female Sterilization/ Tubal Ligation	1. YES	2. NO
b.	Male Sterilization/ Vasectomy	1. YES	2. NO
c.	IUD (Intra Uterine Device)	1. YES	2. NO
d.	Implants/ Norplant	1. YES	2. NO
e.	Injectables/ Depo	1. YES	2. NO
f.	Pill/ Oral Contraceptive	1. YES	2. NO
g.	Emergency Contraception/ day after pill	1. YES	2. NO
h.	Male Condom	1. YES	2. NO
i.	Female Condom	1. YES	2. NO
j.	Diaphragm	1. YES	2. NO
k.	Spermicide/ Vaginal Foam or Jelly	1. YES	2. NO
l.	LAM (Lactational Amennorhoea Method)	1. YES	2. NO
m.	Rhythm or Periodic Abstinence	1. YES	2. NO
n.	Withdrawal/ Coitus Interruptus	1. YES	2. NO
o.	Herbs	1. YES	2. NO
p.	Other, (Specify)…… …	1. YES	2. NO

312. Please mention any STI you have heard about.

a.	HIV/AIDS	1. YES	2. NO
b.	Gonorrhoea	1. YES	2. NO
c.	Chlamydia	1. YES	2. NO
d.	Syphilis	1. YES	2. NO
e.	Trichomoniasis	1. YES	2. NO
f.	Candida/Yeast Infection	1. YES	2. NO
g.	Herpes	1. YES	2. NO
h.	Genital Warts	1. YES	2. NO
i.	Bacterial Vaginosis	1. YES	2. NO
j.	Urethral Discharge	1. YES	2, NO
k.	Genital Ulcer	1. YES	2. NO
l.	Other (Specify)……	1. YES	2. NO

313. What physical signs of STIs/STDs do you know about?

a.	Genital pain	1. YES	2. NO
b.	Genital discharge	1. YES	2. NO
c.	Genital sores	1. YES	2. NO

d. Itching 1. YES 2. NO
e. Pain/burning on urination 1. YES 2. NO
f. Testicular pain 1. YES 2. NO
g. Groin swellings 1. YES 2. NO
h. Anal sores 1. YES 2. NO
i. Other (Specify)…… 1. YES 2. NO

314. Mention all the ways in which a person can become infected with STI's, including HIV/AIDS **(CIRCLE ALL THAT APPLY)**.
a. Unprotected sexual intercourse 1. YES 2. NO
b. Anal sex 1. YES 2. NO
c. Oral sex 1. YES 2. NO
d. Transfusion of infected blood 1. YES 2. NO
e. Sharing of personal items (blades and razors) 1. YES 2. NO
f. Medical procedures with unsterilized equipment 1. YES 2. NO
g. Intravenous drug use 1. YES 2. NO
h. Witchcraft 1. YES 2. NO
i. Other (Specify)……
j. 1. YES 2. NO

315. Have you ever had an STI/STD?
1. YES 2. NO
(SKIP TO Q618)

316. When was the last time you had an STI? Years……Months……..

317. Have you had your HIV status checked?
1. YES **(SKIP TO Q 319)** 2. NO

318. Why have you not had your HIV status checked?
……..……
…..
……
….
……
….

319. What can a person do to prevent getting HIV/AIDS? **(CIRCLE ALL THAT APPLY)**
a. ABSTAIN FROM SEX
b. USE CONDOMS DURING SEX
c. BE FAITHFUL TO PARTNER/LIMIT SEX TO ONE PARTNER
d. AVOID USING UNSTERILISED NEEDLES
e. NEVER SHARE RAZOR/SHARP OBJECTS WITH OTHERS
f. AVOID SEX WITH IV DRUG USERS OR HIV INFECTED PERSONS
g. OTHER (SPECIFY)……..…

SECTION 4: CONDOM BARRIER SCALE

Now I would like to talk to you about some reasons why you may not be using condom regularly or not using it at all. I will read some statements and in each case answer if you strongly agree, agree, are indifferent, disagree or strongly disagree.

Partner Barriers					
401. My partner does not want us to use condoms.	**Strongly Agree**	**Agree**	**Indifferent**	**Disagree**	**Strongly Disagree**
402. If I use a condom my partner might get angry					
403. If I use a condom my partner might think I am cheating on him.					
404. If I suggested we use a condom My partner would think I am accusing him/her of cheating.					
405. If I suggest to my partner we use a condom he/she might end the relationship.					
406. If I suggested my partner use a condom he/she might think I am putting him/her down or insulting him/her.					

407. If I suggested my partner use a condom she might be turned off and lose interest in having sex					
Effect on Sexual Experience					
408. Condoms rub and cause irritation					
409. Condoms do not feel good					
410. Condoms interrupt the mood					
411. Condoms feel unnatural					
412. Condoms do not fit right					
413. I feel closer to my partner without a condom					
414. Condoms change the climax or orgasm					
Access/Availability					
415. I can never find a condom right before sexual intercourse					
416. I would not know where to get/buy a condom					

417. Condoms cost too much					
418. I would be afraid to suggest to my partner we use a condom.					
419. I do not have transport to buy or get a condom.					
420. Condoms are against my religious values.					
421. I would be embarrassed to buy condoms or ask for them.					
422. It is up to the man to provide a condom					
423. I would be afraid to suggest to my partner we use condom.					
Motivational Barriers					
424. Most of the time neither of us has a condom available.					
425. I do not want my partner to put a condom on me.					
426. I usually forget about					

using condom					
427. I do not need to use a condom, I never get any STI and HIV.					
428. When I use a condom, I feel less involved or committed to the relationship					
429. I do not use a condom, I use another method					

WE HAVE COME TO THE END OF THE INTERVIEW. THANK YOU VERY MUCH FOR TAKING YOUR TIME TO ANSWER THESE QUESTIONS. DO YOU HAVE ANY QUESTIONS?

Appendix B

IRB Approval

MIDDLE TENNESSEE STATE UNIVERSITY

May 13, 2013

Samuel Sowah, Dr. Andrew Owusu
Department of Health and Human Performance
ss4w@mtmail.mtsu.edu, andrew.owusu@mtsu.edu

Protocol Title: "Examining Barriers to Condom use in Ghana by applying the Theory of Planned Behavior"

Protocol Number: 13-349

Dear Investigator(s),

The exemption is pursuant to 45 CFR 46.101(b) (4). This is because the research being conducted involves the collection and study of publically available data that is de-identified.

You will need to submit an end-of-project report to the Compliance Office upon completion of your research. Complete research means that you have finished collecting data and you are ready to submit your thesis and/or publish your findings. Should you not finish your research within the three (3) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires on May 13, 2016.

Any change to the protocol must be submitted to the IRB before implementing this change. According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance. **If you add researchers to an approved project, please forward an updated list of researchers and their certificates of training to the Office of Compliance before they begin to work on the project.** Once your research is completed, please send us a copy of the final report questionnaire to the Office of Compliance. This form can be located at www.mtsu.edu/irb on the forms page.

Also, all research materials must be retained by the PI or **faculty advisor (if the PI is a student)** for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Andrew W. Jones

Compliance Office
615-494-8918
Compliance@mtsu.edu