MALES AND MALE HORMONAL CONTRACEPTION (201 pp.)

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The World Health Organization’s Taskforce on the Regulation of Male fertility has recently made inroads in the development of a safe and effective hormonally based method of contraception for use by men. Various forms of Male Hormonal Contraception have entered phase II and phase III clinical trials. This study’s purpose was to assess the attitudes, beliefs, and intentions of males regarding Male Hormonal Contraception. This correlational study employed the Theory of Planned Behavior to examine participants’ Intentions to Try Male Hormonal Contraception and their Intentions to Use Condoms in Conjunction with Male Hormonal Contraception. Final data collection was preceded by formative research, including an elicitation survey and a draft survey, used to develop the study’s instrument. Males attending a public university in the Midwest (N=205) were surveyed about Male Hormonal Contraception via an online survey. General Perceived Behavioral Control was the most effective predictor of participants’ Intentions to Try Male Hormonal Contraception. Stepwise linear regression produced a model comprised of four variables (General Perceived Behavioral Control, Perceived Behavioral Control related to Method of Administration, Behavioral Beliefs related to Pregnancy, Normative Belief about Partner(s)) with an adjusted R squared of .621. Behavioral Beliefs about Condoms were the strongest predictors of the Intentions to Use Condoms in Conjunction with Male Hormonal Contraception. Regression analysis of Intentions to Use Condoms in Conjunction with Male Hormonal
Contraception produced an adjusted R squared of .488. Fifty-six percent of participants indicated Male Hormonal Contraception would decrease their use of condoms. Factors which will influence the effective introduction and sustained success of Male Hormonal Contraception need to be studied throughout the development and introduction of these new methods of contraception for males. As developers, clinicians, and educators prepare for the introduction of Male Hormonal Contraception to the public they also need to take into account its potential effects on condom use.
MALES AND MALE HORMONAL CONTRACEPTION

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CHAPTER I
INTRODUCTION

Statement of the Problem

Human reproduction, like that of the majority of the species on planet earth, is sexual in nature. For humans however, procreation has evolved into a very complex phenomenon, which is now fundamentally linked to science, economics, commercialism, spirituality, ecology, health, culture, literature, art, and politics. During an epoch in which we are witnessing developments in cloning, genetic testing, and genetic manipulation take place around the globe, most creation of new human life still continues on as it has for millennia. Reproductive technology however, now plays roles in both facilitating and limiting the breeding of Homo sapiens in many ways. An understanding of how the functions and consequences of reproduction can be manipulated has become a cornerstone of public health practice (CDC, 1999). The intent of the research presented here is to examine the projected introduction of a novel form of contraception that its developers anticipate will be made available to the general public within the next five years.

Contraception and Health

“The real hope of the world lies in putting as painstaking thought into the business of mating as we do into other big businesses.”

Margaret Sanger

The recorded history of birth control extends back to the Roman and Egyptian empires; undocumented attempts to control fertility are believed to have begun much
earlier (Riddle, 1992, Potts & Thapa, 2002). While the ethical validity of preventing or terminating pregnancy currently remains shrouded in debate, the demand for means of controlling fertility has been a consistent component of human societies at least since its discovery in historical records. Although these past accounts contain descriptions of ineffective, as well as effective, methods of contraception and abortion their range and permanence speak to the ongoing demand within social systems for effective means of manipulating human reproduction (Riddle, 1992; Potts & Thapa, 2002). Despite the moral and legal debates that continue to beleaguer modern day proponents of contraceptive and abortion services, family planning has been recognized as a critical part of public health, both in the United States and Internationally (CDC, 1999; Ross, 1992). Substantial public and private investments have been made in the development of a more diverse, safe, and effective array of methods for preventing unintended child birth (Hatcher, Trussel, Stewart, Nelson, Cates, Guest, & Kowal, 2005). Although contraceptive users now have a greater variety of dependable options to chose from than ever before, the progress has not impacted men and women uniformly (Ringheim, 2002). Whether the imbalance is a product of the nature of human reproduction itself, or other social, cultural, and/or technological factors, is a debatable point. However, the fact remains that women currently have a greater number of contraceptive options available to them, which they can control without a partner’s involvement, than do men (Drennan, 1998).

Assessing the value or impact of contraception, in any form, presents many interesting questions, in and of itself. The merit to an individual of being empowered to
control their fertility may be measured in a multitude of ways and must also be recognized for the role it plays in the health of community, which can be also defined on many levels (McLeroy, Bibeau, Steckler, & Glanz, 1988). Economic, social, physical and emotional dimensions of life can all be greatly impacted when individuals are able to direct the timing and frequency of childbirth without having to forego sexual intercourse (Potts & Thapa, 1991; Ross, 1992).

Risks to maternal health increase with the frequency of pregnancy and delivery. Also, as a family increases in size, greater financial and time demands are placed on family members (Potts & Thapa, 1991; CDC, 1999). Mothers who do not report positive sentiments about their pregnancies have been shown to have statistically worse perinatal outcomes than those who indicate positive attitudes (Laukaran, 1980). In addition to intrapersonal and interpersonal ramifications, unintended or undesired childbirth has powerful implications for the health of societies. Although the concepts of carrying capacity and population control represent extremely contentious and volatile topics, human populations whose resource needs exceed what is locally available and/or readily obtained often face shortages of food and potable water. Researchers from many disciplines contend such shortages have persistently had negative consequences on population health including: malnutrition, greater prevalence of infectious disease, and violence (Read & LeBlanc, 2003; Gehrt, 1996; Howard, 1993). Despite advances in the production and distribution of safe and nutritionally adequate food and water, malnutrition and a lack of potable water persist as major public health issues in many parts of the world. Furthermore, population and resource mismatches can rapidly evolve
into catastrophic problems when natural disasters, such as droughts, swarms, floods, or fires put further stress on the social ecological environment (McMichael & Kovats, 2000). Family planning has long been recognized as a critical component of sound public health programming because of the positive impact birth spacing and reduced family size have on the overall health of communities, including reduced infant and maternal mortality, as well as a reduction in unintended pregnancy and pregnancy termination (CDC, 1999).

**Sexually Transmitted Infections and Contraception**

Contraception and the prevention of the spread of sexually transmitted infections (STI) are inextricably linked. Abstinence is not simply the only completely effective method by which unintended pregnancy can be avoided, but it is also the only certain means by which the sexual transmission of infectious diseases can be averted. Contraceptive decisions which do not involve abstaining from all sexual activity impact an individual’s vulnerability to STIs (FDA, 2003, Hatcher et al, 2004). The research proposed herein is intended to further develop the current understanding of how males would react to the availability of Male Hormonal Contraception (MHC), not only with regards to its impact on pregnancy, but disease transmission as well. As methods of MHCs, in their current incarnation, will provide protection solely against unintended pregnancy and not against the spread of STIs, it would be remiss not to explore the impact MHC may one day have on the decisions men make regarding abstinence, outercourse, and condom use.
At this point in history condoms hold a very unique position among men’s contraceptive options. As a means of contraception, latex and polyurethane male condoms are more reliable than withdrawal, more reversible than vasectomies, and, although they are not typically as effective, offer greater personal control for males than female controlled contraceptive methods, such as: the oral contraceptive pill, contraceptive patch, contraceptive ring, and contraceptive injections. When used correctly, condoms also provide some degree of protection against the spread of STIs (FDA, 2003).

The future introduction to the commercial market of the MHCs which are at present being developed through phase II and phase III clinical trials would dramatically alter the landscape of male contraceptive choice (WHO, 2002; Merrigiola, Constantino, & Cerpolini, 2002). In their current incarnation MHCs represent an option that, like condoms, will be more reliable than withdrawal and more reversible than vasectomies. Unlike condoms however, MHCs will offer males’ complete control over a contraceptive method that has efficacy rates comparable to existing hormone based female controlled contraceptive methods. Although communication and cooperation between partners is considered a key goal for any successful contraceptive decision making, the use of MHC will not require the knowledge, assistance, or consent of a female partner or partners. Developers of MHCs are expecting a major change in how males view and use existing contraceptive methods to occur once MHCs are introduced (Merrigiola et al, 2002; Jensen, 2002; Lye, Sipila, Vernet, & Wagenfeld, 2004).
With both males and females reporting dissatisfaction with the mechanics of condom use it is not inconceivable that the use of male condoms may decline for some users and/or with certain sexual activities if other contraceptive methods that are perceived to have more benefits become readily available. The World Health Organization (WHO) has already been examining the relationship between the use of hormonal contraception by females and the transmission of the Human Immunodeficiency Virus (HIV) in order to try and develop policies to reduce the risk of transmission (WHO, 2005).

The Centers for Disease Control and Prevention (CDC) estimated that in 2003 approximately nineteen million cases of reportable STIs occurred in the United States and that nearly half of those infections involved individuals’ ages fifteen to twenty-four years of age (CDC, 2004). The WHO estimates approximately three hundred thirty-three million people worldwide are infected with curable STIs each year (WHO, 1995). However, these estimates provide only limited insight into the actual impact STIs have in the United States and internationally. These figures represent statistics related only to reportable and curable STIs; diagnosed cases of Gonorrhea, Chlamydia, Syphilis are recorded in the United States, WHO statistics also include data on Trichomoniasis (WHO, 2005; CDC, 2004).

The Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) pandemic continues to have a profound impact on the relationship between public health and STIs. Despite the emergence of new treatment regimens, which extend the length and quality of life for HIV positive individuals, without a cure or
a vaccine available to combat the fatal virus the primary focus of public health efforts has been on controlling the spread of HIV by preventing its transmission. More than twenty million people are believed to have died as a result of infection with the HIV virus since the pandemic began (UNAIDS, 2004). An estimated forty point three million people worldwide are living with HIV as of 2005; approximately one point two million of which reside in North America (UNAIDS, 2005). In much the same way condoms needed to be re-examined vis-à-vis their ability to prevent the transmission of HIV, any new product which could impact the use of condoms or sexual behavior in general needs to be evaluated for its potential impact on transmission of the virus, as well as all STIs (Lye et al, 2004). If the availability of MHCs alters sexual and/or contraceptive behavior in any way, the significance of those changes must be recognized and integrated into ongoing efforts to reduce the rates of both unintended pregnancies and STIs.

Gender, Males, and Contraception

Many studies about the knowledge, attitudes, and behaviors related to existing methods of contraception have examined males in various cultural settings around the globe (Ringheim, 1993; Ringheim, 2002; Grady & Tanfer, 1996). The search for a better understanding of how males view family planning and disease prevention has thrown the limitations of existing methods into sharp relief. Survey based research has indicated some males have a desire to play an expanded role in family planning activities (Drennan, 1998).

At present, contraceptive options considered to be available to men directly include: abstinence, sterilization, withdrawal, and latex, polyurethane, or animal
membrane (lambskin) condoms (Jensen, 2002). Abstinence, while the optimal means of preventing both pregnancy and the transmission of STIs, is not always considered a practical option by men and women involved in relationships where sexual intercourse is desired, but pregnancy is not (Drennan, 1998; Grady, Klepinger, & Nelson-Wally, 1999). Latex and polyurethane condoms have played a critical role in campaigns to reduce the spread of STIs like HIV, yet they are not, by themselves, the most effective means of preventing pregnancy (CDC, 1993; FDA, 2003). Furthermore, condoms are often not considered by users to be the most desirable contraceptive method for reasons unrelated to efficacy rates. In addition to requiring some degree of partner cooperation and/or consent, condoms are often viewed as reducing sensation and interfering with the intimacy and/or spontaneity of sexual intercourse (Grady et al, 1999; Pinkerton & Abramson, 1997). Condoms made from natural membranes are often touted by manufacturers as allowing for greater sensitivity during intercourse, yet their permeability to bacteria and viruses have not made them a popular choice among condom users and providers. Sterilization, though surgically reversible in many cases, is not considered an acceptable contraceptive method for men who are still undecided about future childbearing desires (Grady et al, 1999; Drennan, 1998).

Female controlled contraceptive options are abundant by comparison to male controlled methods. Many reversible, hormone based female contraceptives, such as the depo-provera contraceptive injection, also have efficacy rates which approach those of surgical sterilization (Hatcher et al, 2004). The inequity of contraceptive choices across the two sexes has consequences that impact both males and females in many ways.
Women seeking contraception may have a wider array of choices available to them than their male partners; however when investing in procuring and using a method of birth control with greater choice, often comes greater responsibility. Women commonly bear the sole responsibility for selecting, obtaining, and maintaining a means of preventing pregnancy (Ringheim, 1996). Within a sexually active heterosexual couple, side effects, costs, clinical visits, inconvenience, perceived embarrassment, and even failures associated with contraceptive use can become the exclusive property of a female partner. By the same token, male partners may face feelings of inability to either influence their reproductive fates and/or to share the burden of contraception with their partners (Grady et al, 1999; Drennan, 1998; Ringheim, 1996).

Working within the confines of existing contraceptive technology, efforts have already been made to create a larger role for males in family planning activities. The Healthy People 2010 framework includes fifteen objectives, which relate directly to family planning activities. Eleven of these fifteen have relevance to men as participants in family planning processes (HHS, 2000). Objective 9-6 of Healthy People 2010 specifically targets the need to increase male involvement in family planning efforts. Among the remaining ten family planning objectives targeting males are several which relate to increasing the dissemination of health information and services to men. Male involvement in both preventative and episodic programs dealing with physical and mental health has long been an issue for services providers. Men are typically more reticent about seeking assistance related to wellness and sickness, than are their female counterparts (Addis, 2003). Contraception, far from being an exception to this rule, is a
particularly powerful example of this phenomenon. The hesitation of males to seek health related services, coupled with a dearth of contraceptive options for men has left many family planning services providers dealing almost exclusively with female clients. While male client participation in Title X, a federally funded family planning program, had risen twelve percent between 2002 and 2003, it increased only eight percent between 2003 and 2004. In 2004 males represented only five percent of the record number of individuals serviced by the Title X program that year (AGI, 2005). Attempts to generate greater male participation in general healthcare, as well as family planning, are ongoing. With only a limited number of male controlled contraceptive options available; however family planning providers are regularly forced to involve males with either a strong emphasis on their role in STI prevention or as support for female partners in pregnancy prevention. Very infrequently are males approached as autonomous clients (Ringheim, 1993; AGI, 2002).

The FDA’s approval of the female contraceptive pill in 1960 has had public health, economic, social, and personal ramifications for people living all over the world (Ory, Rosenfield & Landman, 1980; FDA, 2003; Hatcher et al, 2004). Health risks associated with the use of the oral contraceptive pill have not been completely eliminated since its introduction, yet they have been greatly reduced as hormonal contraception for women has evolved. Despite risks, however, health professionals continue to champion the benefits of contraceptive use as outweighing their threats (Snider, 1990; Ory et al, 1980). In the United States the birth control pill has been linked to a significant increases in female participation in higher education and age of first marriage (Goldin & Katz,
2002). Not long after the introduction of hormone based contraception for women the discussion about a similar product for men began for researchers and lay people alike; the male birth control pill however, was not forthcoming. While hormone based contraception for women improved and diversified in both form and function throughout the 1970s, 1980s, and 1990s, research on similar forms of contraception for men seemed to stop and start without any real evidence that a safe, effective, product would ever reach commercial markets (Merrigiola et al, 2002). Despite many setbacks experienced by researchers seeking to develop new forms of contraception for men, the endeavor was never completely abandoned (Lye et al, 2004; Waites, 2003).

The Development of Male Contraception

A commitment by the WHO to develop safe, effective, reversible contraception for males has generated a line of inquiry which has brought the possibility of a widely available, male controlled, hormone based, contraceptive much closer to being a reality (Waites, 2003). The WHO’s involvement in contraceptive research in the early 1950s was greeted with both widespread interest and scandal; however by 1965 The Human Reproduction Unit had been formally established and was heavily invested in studying the safety and efficacy of the recently released female birth control pill (Waites, 2003). In the early 1970s divisions of WHO’s Special Programme of Research, Development, and Research Training in Human Reproduction established taskforces to deal with the pursuit of various objectives related to reproductive health. In 1973 the Task Force on the Regulation of Male Fertility (TFRMF) was created in order to increase the understanding of precisely how male fertility functions, as well as to explore how that
understanding might be used to regulate fertility in males (Waites, 2003). Despite a brief suspension of the Taskforce’s activities from 1979 to 1982 many approaches to suppressing spermatogenesis or interfering with post-meiotic sperm function were explored as the possible bases of new forms of contraception for men. Research activities involved both developed and developing nations and represented a significant financial and chronological investment on the part of the WHO and participating nations (Waites, 2003; Merrigiola et al, 2002).

Early in the TFRMF’s research activities androgen based therapies had shown great promise as a means of suppressing spermatogenesis, without affecting long-term fertility or generating toxic effects elsewhere in the body. However, in the 1970s androgen preparations did not have durable effects and therefore required administration schedules which were prohibitive to practical use as a means of contraception. Unfortunately, many other promising pharmaceutical agents, such a Gossypol and derivatives of the plant *Tripterygium wilfordii*, examined by the TFRMF proved too toxic either to testicular tissue or other parts of the body to be considered for practical use (Merrigiola et al, 2002). Research lines examining those agents were therefore abandoned by the network of TFRMF researchers WHO had assembled to test each of the agents.

Testicular heating has also been proposed as a potential “no cost” means of contraception; however, despite its efficacy and reversibility, resistance to this approach has been strong based on concerns over the general population’s willingness and ability to properly heat the testes in the required manner (Liu, 2005). Recent research on
methods of occluding the vas deferens using plugs made of substances such as silicon has
generated interest in techniques; these methods would be similar to current vasectomy
techniques, but would be less invasive and more easily reversible in nature. Reservations
about occlusion methods' superiority over current vasectomy techniques have been
questioned however, on the grounds of reversibility, costs, and advantages as perceived
by users and clinicians (Sheng-cai, 1990; Ringheim, 1996).

Recently, the availability of new forms of synthetic testosterone with
pharmokinetic properties different than those of their predecessor has regenerated interest
in hormones as a possible contraceptive agent for males. During the late 1990s, and into
the new millennium, clinical trials of male hormonal contraception using androgens
and/or progestins have induced Azoospermia and oligospermia in human males
(Merrigiola et al, 2002; Anderson & Baird, 2002). In keeping with the WHO’s original
vision for the TFRMF, research has been conducted in multiple sites around the world
and has focused on creating a reversible suppression of fertility through the use of
synthetic testosterone and progesterone compounds (Waites, 2003; Bett, Bradley,
Christensen, Paulsen, Bremner, & Matsumoto, 1996; Cummings & Bremner, 1994;
success in suppressing spermatogenesis to subfertile levels has been achieved and
duplicated in clinical trials in several different nations, challenges that may accompany
the introduction of hormonal based contraception for males have also emerged
(Cummings & Bremner, 1994; Merrigiola et al, 2002; Anderson & Baird, 2002).
Side effects such as changes in: lipid panels, acne, weight, mood, testicular consistency, and libido have all been experienced by some clinical trial participants receiving the various experimental androgen based contraception regimens. (Merrigiola et al, 2002; Waites, 2003; Bett et al, 1996; Cummings & Bremner, 1994; Davidson et al, 1985; WHO, 1990). Developers of the new contraception also face concerns over the methods of administration these new forms of birth control will require. The delivery of hormones in clinical trials have regularly employed the used of hypodermic injections on monthly and sometimes weekly schedules. Oral delivery of the hormones has been tried, but without equal success (Finger, 1995; Cummings & Bremner, 1994; Merrigiola et al, 2002). In addition to the possibility that side effects and/or any inconvenience associated with mode of delivery may prove too great a barrier for many would be MHC users, the variability of individual responses to the hormones may also necessitate initially testing the effects of the contraception on all users through the collection of semen samples. There is also still debate among researchers over what the definition of success for male contraception is. Azoospermia is clearly the ideal effect of a new MHC; however inducing oligospermia at a level which renders male functionally infertile is considered by some developers to be an equally valid outcome for new male contraceptives (Anderson & Baird, 2002; Merrigiola et al, 2002; Finger, 1995; Bett et al, 1996; Cummings & Bremner, 1994; Davidson et al, 1985; WHO, 1990). Despite the fact that synthetic hormones are typically considered to be a relatively affordable pharmaceutical agent, answers to questions regarding how much of their economic resources males will be willing to invest in contraception cannot be assumed or extrapolated from existing
contraceptive purchases with a great degree of confidence. There is no cost associated with coitus interruptus; vasectomies require only a one time investment, which may be subsidized; and the overall cost of condoms can vary greatly based on frequency of use and brand used. Also, as the introduction of a new hormonal form of male contraception will not necessarily eliminate the need for condom use for STI protection, the cost associated with new contraceptive methods may only increase the investment some males will make in purchasing contraception.

Contraceptive attitudes, knowledge and practices among women have been extensively studied, yet throughout all contraceptive research the interaction between any one individual and the available contraceptive options is recognized to be incredibly complex (Hatcher et al, 2002). The initial reaction men will have to new contraceptive methods, as well as the ongoing relationships that will evolve among males, their health care providers, their sexual partners, and male controlled methods of contraception may be impossible to predict with a great deal of certainty and detail. With some forms of hormonally based contraceptives for men now in phase III and phase II clinical trials, (WHO, 2002; WHO, 1990; Waites, 2003; Merrigiola et al, 2002; Anderson & Baird, 2002) it is critical that educators, clinicians, product developers, researchers, marketers, policy makers, and others who will play a role in the introduction and management of these novel methods of contraception for males begin to carefully examine how best to prepare themselves and the public at large for these new forms of contraception. One of the primary objectives of the research presented here is to enhance the understanding of male’s attitudes, behaviors, and beliefs regarding contraception, as it is, as well as what it
may soon become. In this study a theoretical framework will provide an organizing structure to systematically examine the factors associated with adoption of MHC by college student males.

The Theory of Planned Behavior

The study of male contraception, both in clinical research and studies examining fictional forms of male contraception, has been largely atheoretical in nature. Although this research has addressed many of the factors likely to impact compliance for would be users of new contraceptive methods for males, no studies have undertaken the application of the constructs of a health behavior model in their entirety to the question of how males who are not participating in trials will react to the availability of these novel forms of contraception. From the time of its inception as the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB) has been applied to behavior and behavioral intentions associated with contraceptive decision making (Ajzen & Fishbein, 1980). Contraceptive use involves multiple phases of both decision making and action. For a male or a female to successfully use a contraceptive method they must first possess at least some rudimentary understanding of fertility and fertility regulation. Prospective users must also possess or obtain knowledge related to procuring and effectively employing contraceptive methods. In addition to an appropriate knowledge base, contraceptive use requires motivation to obtain and correctly utilize any method. Obtaining and using contraception involves expending resources such as: money, time, and, in some instances, accepting and tolerating side effects (Ajzen & Fishbein, 1980; Hatcher et al, 2004).
It is the intention of the study presented here to apply the framework of the TPB to the introduction of a new form of contraception that will be exclusively under the control of male users. For the purposes of this study the theoretical male contraceptive examined through the TPB framework will be represented based on the characteristics of the MHCs currently being tested in clinical trials. Examining MHCs in the context of the TPB is intended to enrich the understanding of mens’ relationships with the phenomena of contraception through the use of common a health behavior model.

The selection of a behavioral model that measures behavioral constructs at the level of the individual is intentional. The intimacy of clinical services necessitates the creation of service models, protocols, policies, and manuals for clinicians and other health service delivery personnel. Emergent forms of male hormonal contraception, which currently appear to be headed toward commercial markets, will most likely require medical examinations and prescriptions, in somewhat the same manner as existing hormone based female contraceptive methods (Lye et al, 2004; Merrigiola et al, 2002; Jensen, 2002). The selection of an individual health behavior model is not however intended as a dismissal of the relevance of population based models to family planning practices and/or novel male contraceptives. Although the scope of this work is limited to the individual level in order to develop a greater understanding of what factors will motivate males to try or not try using MHC, that restriction is made with the recognition that population level health models may also play an important role in furthering the success of MHCs.
Successfully understanding the choices individuals make related to family planning practice methods includes an appreciation for what health impacting behaviors an individual does not engage in, as well as the actions they do actually take. TPB is designed to allow for the measurement of behavioral intention in cases where actual behavior cannot, or will not, be measured. Although intentions and behaviors do not correlate perfectly in all cases, for behaviors that cannot be directly measured, evaluating intentions provides insight into the cognitive processes that precede and predict actual behavior (Montano & Kasprzyk, 1996; Ajzen & Sexton, 1999). As no hormonal contraceptives that act directly on the male anatomy in order to suppress fertility are currently available in the United States, intentions to use these new contraceptive measures, if and when they become available, are relegated to measuring individuals’ portrayals of their intention regarding the use of a theoretical MHC. Examining interpersonal and intrapersonal factors that impact reproductive and contraceptive behaviors helps establish the basis for the development of best practice or service delivery models and quality assessment measures for various contraceptive methods (Green, 2001; Shears, 2003). Socioecological and community models are certain to be of relevance to MHC, particularly once it be comes available to the public (McLeroy et al, 1998); however exploring a wide range of factors external to the experience of obtaining and using a MHC as a contraceptive method is beyond the scope of the work presented here. The sensitive nature of sexuality, coupled with the difficulty in studying a population’s perceptions of contraception when, at any given time many individuals will not be actively engaged in the use of the contraceptive method(s) in question, limits the
capacity of researchers to capture the actual mechanics of obtaining and using of any fertility control methods (WHO, 1997; Hatcher et al, 2004). Even if an individual intends to use a readily available contraceptive method, there is always the possibility that the effort needed to acquire and sustain use of the method will prove sufficient enough of a barrier to result in the method being abandoned before the individual intended to cease using it. Self-reports of intent to carry out specific behaviors related to contraceptive decision making and contraceptive use are therefore commonly used tools in the study of contraceptive behavior. In the case of MHC, because the technology remains available only to clinical trial participants, the use of MHC cannot, as of yet, be directly measured outside of the special conditions of clinical research. The proposed study seeks therefore to collect data on the composition of attitudes, beliefs, and intentions that underpin males’ reactions to the availability of an increasingly diverse array of contraceptive technology.

The success of a new form of contraception for men will extend far beyond its theoretical or user efficacy rates. One of the central questions which has helped to shape the nature of contraceptive research over the last four decades has been, “Will there be a market for the method?” (Anderson, 2000). Creating an effective and safe means of suppressing fertility does not insure that the method will be sought out and used. The constructs of TPB have been selected for this research to help develop a better understanding of the factors that will have the greatest impact on the interaction between potential users and MHC once these new forms of contraception for men become available.
The application of the TPB is expected to return information that illustrates the dynamics of decision making processes surrounding intention to try or not try MHC, if such a method were legally available (Ajzen & Fishbein, 2005). In the future, should MHC become readily available, a recognition of what might motivate males representing a variety of perspectives to seek, avoid, or ignore any MHC methods will be critical to insuring positive and healthy experiences for individuals making contraceptive decisions. Future study of MHC through TPB will also help cultivate a better understanding of how intentions to try MHC articulate with the actual use of MHC.

One of the quintessential components of the Theory of Planned Behavior is the measurement of attitudes (Ajzen & Fishbein, 2005; Ajzen & Sexton, 1999). Through the model, beliefs and sentiments about health behaviors are examined with regards to: Behavioral Beliefs, Value Judgments, Normative Beliefs, Motivations, and Perceived Behavioral Control (PBC). Positive perceptions of a behavior are expected to be positively correlated with stronger intentions to engage in a behavior and/or a greater likelihood that the behavior will actually be performed (Ajzen & Fishbein, 2005; Ajzen, Brown & Caraval, 2004; Ajzen & Sexton, 1999; Montanao, 1996). Recently the TRA was expanded into the TPB in order to include the construct of PBC in recognition of the fact that perceptions of a particular behavior can mediated by additional factors including how confident an individual is they can actually engage in the actions necessary to complete a behavior(Ajzen, 2002).

Use of the TPB requires formative research in order to develop an instrument that integrates the beliefs and normative groups relevant to both the behavior and population
it will be used to study. Formative research for TPB questionnaire construction was originally developed around the involvement of focus groups, although other approaches are now commonly used to develop TPB questionnaires (Glanz, Rimer & Lewis, 2002). The first construct which must be developed is behavioral beliefs. According to TPB what individuals in the target population believe to be true about a behavior are central to determining whether or not an individual will engage in that behavior, regardless of the veracity of the beliefs or the sentiments they hold regarding that behavior (Ajzen & Fishbein, 1980). Through elicitation activities like focus groups, interviews, or qualitative surveys individuals representative of the intended target population are asked to identify beliefs they hold about the behavior being studied.

Using these elicitation activities participants are also asked to identify individuals or groups who influence their decision making related to the behavior. The responses of participants in formative research to these elicitation questions form the basis for questions which will represent the construct of Normative Beliefs in the TPB questionnaire. Normative Beliefs, as presented through TPB, are meant to account for the influence of groups and/or individuals whose opinions might influence the individuals within the target population. It is important to note that, as with Behavioral Beliefs, the Normative Beliefs an individual holds may not always accurately reflect the actual sentiments of the Normative Group in question. It is the individual’s perception of those opinions which are theorized to influence their decision making regarding the behavior in question.
The other main constructs of TPB are control beliefs. These constructs are the most recent and also the most controversial. The operationalization of Control Beliefs, and the associated concept of PBC, has been the source of much debate (Glanz, 2002, Sutton, Mcvey, & Glanz, 1999). As presented by Azjen (2002) Control Beliefs represent factors which individuals perceive as either impeding or facilitating a behavior. PBC represents an individual’s beliefs regarding how they feel about those factors and their ability to perform a specific behavior. In addition to problems with operationalization of Control Beliefs and PBC if control beliefs are identified exclusively through elicitation, action steps critical to the completion of a particular behavior may not be included (Azjen, 2002). This representation of Control also does not account for factors which may be beyond an individual’s control, and which cannot be altered by perception of control, such as financial resources or cognitive and physical ability. PBC as currently represented in the TPB serves only as a surrogate measure of actual behavioral control (Azjen, 20020, Glanz, 2002, Sutton et al, 1999).

The TPB is intended to measure Behavioral Beliefs, Normative Beliefs, and Control Beliefs about a specific behavior or sets of behaviors in both strength and direction (Azjen, 2002). Once the most prevalent normative groups, behavioral beliefs, and control beliefs have been identified through formative research items, a TPB questionnaire will ask subjects to identify how they feel about each particular belief or group related to the behavior in questions. These responses give direction to each of the three main TPB constructs. A second set of questions corresponding to each of these beliefs and groups is also included to measure the relative importance of the Behavioral
Beliefs, Normative Beliefs, and Control Beliefs. These are known as Attitude Toward the Behavior, Subjective Norm, and PBC respectively. The ultimate product of the TPB is a series of scores which represent the product of the directionality of a belief multiplied by its corresponding strength as reported by subjects responding to a TPB questionnaire (Azjen, 2002).

TPB postulates that higher products representing: positive sentiments about the behavior and its effects, perceived support for the behavior by influential normative groups, and a strong belief that one can successfully engage in all aspects of the behavior, will correspond with an intention to perform the behavior. This intention to perform the behavior in turn will correspond with a greater likelihood that the behavior will actually occur (Azjen, Fishbein, 2005).

One problem which persists with TPB is that Intentions, as self-reported by individuals, do not always correlate strongly with measures of actual behavior (Azjen, 2004; Azjen, 2002, Sutton, 1998). As MHC is not yet available to the general public however, a model which incorporates an intermediary measure, such as Behavioral Intention, offers an alternative until the behavior can be measured directly. Measuring perceptions of an, as yet unavailable, contraceptive method through an established health behavior framework is hoped to provide, not only meaningful data on how males will react to a new form of contraception, but also insight into the efficacy of the TPB at predicting behavioral intentions and behavior related to MHCs.

In addition to the incorporation of a measure of behavioral intention and constructs which examine individual beliefs, perceptions, and attitudes regarding a
behavior, TPB offers the benefit of having previously been used to examine not only contraceptive behavior, but the contraceptive behavior of males. Several studies have applied the constructs of TRA and TPB to condom use. These studies have included both male and female subjects. Meta-analysis of several studies investigating condom use behavior has shown that the constructs of TRA and TPB can be effective predictors of intentions to use condoms and actual condom use (Albarracin, Johnson, Fishbein, & Muellerleile, 2002, Bennett & Bozionelos, 2002, Sheeran & Taylor, 1999). Studies of TPB as applied to condom related behavior have also shown that it has validity across diverse ethnic and cultural groups (Godin, Maticka-Tyndale, Adrien, Manson-Singer, Willms & Cappon, 1996)

Until such time as FDA approval and commercial manufacturing make MHC available to the general public, how American society will react to such an innovative form of contraceptive technology must be extrapolated from research involving either clinical study participants or segments of the general population responding to hypothetical representations of MHC. To increase the overall success of the introduction and continued use of MHC, it is the intent of this research to expand the current understanding of men’s attitude toward contraception through an examination of how males react to a description of MHC based on the forms of MHC currently being studied in clinical trials. The overarching goal of this study is to provide the individuals who will be responsible for planning and executing the introduction of new forms of contraception for males with greater insight as to which factors will have the most influence on the relative success of the new methods.
Statement of Purpose

The purpose of this study is to increase the knowledge base regarding men and their relationships with contraceptive technologies. With the introduction of any new contraceptive technology come new questions about how it will impact the reproductive health of individuals, as well as the communities and the individuals responsible for the development and distribution of said technologies. It is beyond the scope of this study to establish best practice models for the clinicians or to dictate the nature of marketing to be used to introduce MHC. It is hoped however that this study will enhance the body of literature that will inform such processes. The possible influence of MHC on condom use has been incorporated into this study because of its potential impact on the transmission of STIs. Although it will be impossible to track the effects of MHC on the general population regarding condom use until it is widely available, the inclusion of questions regarding the use or failure to use condoms in conjunction with MHC is intended to help anticipate how the availability of MHC might impact condom use. As this study precedes the introduction of MHC for general use, any results are meant only to add to the existing research in order to inform future decision making related to males and contraception.

Significance

This study is intended to help developers and distributors of MHC plan for its introduction to the general public. Knowledge regarding how men perceive a new form of contraception is needed to guide the development of marketing strategies, education programs, and best practice models intended to foster and support the safe and effective
use of MHC. In conjunction with other studies, data collected through this research is
directed at enhancing the common understanding of how males interact with novel
contraceptive technology.

In addition to providing information concerning males and contraception, this
research is expected to produce data useful to further elucidating the nature of
relationships among behavioral intentions, actual behaviors, and attitudes related to
MHC. Future research that more directly measures the use of new contraceptive
methods by males may be compared and contrasted with measurements included in this
inquiry.

Contraceptive and sexual behaviors represent enormously complex phenomena.
The availability of a new form of contraception may create many significant changes in
the way groups and individuals manage their reproductive and sexual decisions. The
examination of different and specific facets of contraceptive technology, such as MHC,
contributes to a more dynamic appreciation of sexual and reproductive health.

A major public health concern, on the national and global levels, is the sexual
transmission of disease. Proper condom use can decrease the rates of STI transmission.
Contraceptive decision making therefore impacts both the prevention of unintended
pregnancy and STIs. With the introduction of MHC come new options for managing
reproductive health, which will potentially impact current patterns of condoms use,
thereby altering their role in STI prevention.

The TPB constructs are employed here in order to provide a common foundation
when comparing and contrasting studies which also employ the TPB framework.
Demographic variables, sexual history, and contraceptive history are also included in this study to insure continuity with existing, ongoing, and future research on MHC. The beliefs, attitudes and practices of males involved in this study will be representative only of males attending one Midwestern, public university.

Research Questions and Hypotheses

Research Question I
How will the availability of MHC impact males’ contraceptive behavior?

Research Question II
When assessed through multivariate analysis, will males’ contraceptive behavior, attitudes and beliefs have significant independent relationships with their intentions to try MHC?

Research Question III
When assessed through multivariate analysis, will males’ contraceptive behavior, attitudes and beliefs have significant independent relationships with their intentions to use condoms in conjunction with MHC?

Hypothesis I
Perceived Behavioral Control will be the best predictor of males’ Intentions to Try Male Hormonal Contraception.

Hypothesis II
The Total Number of Female Sexual Partners a male has had will be the best predictor of their Intention to Use Condoms in Conjunction with Male Hormonal Contraception.
Limitations

One of the primary limitations of all research examining contraceptive behavior is the dynamic nature of reproductive health. Any individual’s contraceptive needs can transition rapidly as they progress through different relationships; within each of which reproductive goals can also change over time. What further complicates tracking transitioning reproductive expectations is that individuals may not always accurately predict their own long term reproductive goals. Someone anticipating a particular timeline for childbearing or a number of offspring may alter their expectations in response to any number of events. The study discussed here represents only the view of contraception as expressed by the participants during one period in their lives.

In addition to the chronological limitations of the data related to each participant’s developing contraceptive perspective, this study is limited by the character of the sample employed in the research. As the participants in this study were limited to males over eighteen years of age enrolled at Kent State University’s main campus, the results are not generalizable beyond that population.

This study deals with measurement of the Intention to Try MHC and not the Use of MHC. As intention cannot be assumed to correlate in any specific manner with the actual use of MHC there can be no conclusion drawn about this studies predictive nature regarding whether males will or will not use MHC. As MHC is not available for public use the relationship between Intention to Try MHC and actual Use of MHC cannot be tested at this point in time.
Terms and Abbreviations

AIDS - Acquired Immune Deficiency Syndrome

Azoospermia - The absence of spermatozoa in the semen or failure of formation of spermatozoa

CDC - Centers for Disease Control and Prevention

GnRH - Gonadotropin Releasing Hormone

HIV - Human Immunodeficiency Virus

HMC - Male Contraception - Contraceptive method employing hormones which acts directly on the male reproductive anatomy to limit fertility (Current forms of HMC being tested involve synthesized testosterone and progesterone compounds) AKA MHC

IHM Injectable Hormonal Method – Hormone based contraception delivered via subcutaneous injection

MBCP Male Birth Control Pill – A hypothetical method of birth control that would be administered to males in pill form (Various descriptions of this hypothetical method have been used as the basis for research on new forms of contraception for men conducted after the introduction of the female birth control pill) AKA MCP

MCP Male Contraceptive Pill - A hypothetical method of birth control that would be administered to males in pill form (Various descriptions of this hypothetical method have been used as the basis for research on new forms of contraception for men conducted after the introduction of the female birth control pill) AKA MBCP

MFC Male Fertility Control – A generic term applied to an array of technologies, both theoretical and existent, which are designed to suppress fertility in males
MHC Male Hormonal Contraceptive – Contraceptive method employing hormones that act directly on the male reproductive anatomy to limit fertility (Current forms of MHC being tested involve synthesized testosterone and progesterone compounds) AKA HMC

Oligospermia/Oligozoospermia - A low sperm count, commonly associated with infertility

STI - Sexually Transmitted Infections

Teratospermia/Teratozoospermia - Condition characterized by the presence of malformed spermatozoa in the semen

Title X - Federal program, which funds Family Planning and other fertility related services in the United States

WHO - World Health Organization
CHAPTER II  
REVIEW OF THE LITERATURE

Introducing novel contraceptive methods is not, in and of itself, a reality contemporary clinicians have never faced. The impact of the female contraceptive pill was unique due to its coexistence with the remnants of the Comstock laws and its extremely unique characteristics relative to previously available methods (Beisel, 1998). Hormone based contraceptives however, have improved and diversified over the past five decades. They have been joined by female contraception in the form of: emergency birth control, transdermal patches, improved methods of sterilization, IUDs, vaginal rings, female condoms, subdermal implants, vaginal sponges, spermicidal films, foams, creams, and jellies, and injectable methods delivered monthly and quarterly (FDA, 2003). The impact of each new contraceptive form has been studied in various ways, representing an increase in our overall knowledge base pertaining to contraception and contraceptive research. The greatest source of uncertainty which family planning must now confront is introducing new contraceptive methods to male users, as opposed to female contraceptive users.

The intent of this study is to measure male attitudes toward different forms of male controlled contraception through the constructs of an individual health behavior model. The studies discussed in this chapter represent efforts by research teams operating across four decades, and from locations around the world, to gauge what the responses to new forms of male controlled contraception will be. Research on male contraception has been primarily atheoretical in nature and has continued to evolve in
parallel with the development of the methods themselves. In early research various descriptions of hypothetical methods of birth control for males, identified as a Male Birth Control Pill MBCP or Male Contraceptive Pill MCP, have been used as the basis for research on prospective contraceptive methods for men. These studies were conducted after the introduction of the female birth control pill when many individuals theorized a similar product for males would soon follow. The first half of this chapter discusses the examination of new methods of male contraception as theoretical constructs, often without any connection to the clinical research taking place during the data gathering period. The second half examines data that were collected from participants directly involved in the testing of emerging methods of male contraception. The studies are presented chronologically within each section to illustrate the progress to date of this line of inquiry.

Research Involving Hypothetical Methods of Male Fertility Control

While direct measures of the physiological, intrapersonal, and interpersonal responses males have to using innovative contraceptive methods remains the property of clinical trials taking place around the world, several research teams have undertaken population based surveys of the attitudes and expectations men and women hold regarding the future introduction of a novel, male controlled, reversible forms of contraception. Some of the studies discussed here extend back to an era when the development of a new form of contraception for men was still in its infancy; well in advance of the phase II and phase III clinical trials of Male Hormonal Contraceptives that are now underway. Measuring attitudes, beliefs, and behaviors regarding male fertility
control, contraception in general, female partners, and demographic data, as well as relationships among these factors, have been the primary focus of the majority of these studies.

Balswick (1972) reported on a study of the attitudes of low Socioeconomic Status (SES) males pertaining to female contraceptive pills, vasectomies, and an anticipated MBCP. Using a stratified sample, the study selected men who represented categories four or five of Holling’s head’s index of social position based on education and occupation (Hollinghead, 1957). The sample was fifty-nine percent Black, forty-one percent White; had a mean age of thirty-nine years, a mean number of two point five children, and a mean education of nine point five years. All ninety-three participants were married men living in a city in the Southeastern United States with their families. These participants answered questions about contraception posed by an interviewer who visited them in their homes.

Qualitative data from the interviews was dichotomized into yes or no responses to questions about the acceptability of their spouses taking birth control pills, they themselves taking a fictional MBCP that did not interfere with sexual activities, and they themselves having a sterilization procedure without side effects referred to as “an operation which would prevent you from producing children”. When responding to questions about contraception, the participants were asked to respond as though they were at a point in their lives when they did not wish to father any further children, regardless of whether or not they intended to have more children. For the sample as a whole, acceptability of the female pill, a MBCP and a vasectomy were measured and
broken down according to the demographic characteristics of the subjects including: age of participant, age of spouse, number of children, level of educational attainment, and race. The researcher used Goodman’s Gamma (1965) as a measure of association between acceptability of the three contraceptive methods and each demographic variable. Overall forty-seven percent (12% undecided) of participants objected a MBCP, fifty-one percent objected to their spouse taking a female birth control pill (2% undecided), and fifty-nine percent objected to the male sterilization procedure (8% undecided). The two highest measures of associations existed between attitudes toward a fictional Male Contraceptive Pill (MCP) and the subjects’ level of educational attainment ($G=-.53$) and between the subjects’ the number of children and their attitudes toward vasectomy ($G=-.45$). A higher total number of years of formal education was associated with a significant reduction in objection to the use a MCP. A greater number of children, three or more, was associated with a significant decrease in reported objection to a male sterilization procedure. Although Balswick’s findings are limited by the size and character of his sample, as well as by the unique social and technological characteristics of the point in time during which his research was conducted; the results of his research indicated a need to study the interplay of personal characteristics and contraceptive decision making among males more closely in advance of the introduction of new contraceptive methods for men (Balswick, 1972).

A similar study involving one hundred fifty-one married men from the San Francisco Bay area asked males about a MBCP as part of a larger battery of personality and lifestyle assessments (Gough, 1979). Gough examined several demographic and
cognitive variables against a single item on males’ willingness to try a theoretical and
generic, MCP. Using random sampling from a Bay area phone book, four hundred fifty
initial contacts were selected from among married couples in the San Francisco Bay
Area. This resulted in the participation of two hundred one couples in a survey. One
hundred fifty of the male subjects, as part of an exploratory study, responded to an
additional item “If a contraceptive pill for men were available would you be willing to
use it?” Existing cognitive instruments which measured verbal ability, sexual
knowledge, social attitudes, political attitudes, personality traits, and contraceptive
preferences were administered to each couple by interviewers working in co-ed teams.
For every interview the female interviewer questioned the female spouse, while her male
counterpart interviewed the male spouse in a separate location. Although some interviews
were carried out at the Institute of Personality Assessment at the University of California
at Berkley the majority of data collection took place in the couples’ homes. For the
dependent measure fifty-five point six percent of participants stated “yes” they would use
a MCP if available, eighteen point five percent responded “probably yes”, eighteen point
five percent, “probably no”, and seven percent, “no”.

Using simple measures of correlation, Gough and his team found no statistically
significant relationships to reported desire to try a MCP when assessed against measures
of personality, nor for measures of information and ability, which included assessments
of vocabulary and sexual knowledge. For social-demographic predictors, only the
number of children desired was significant at the $p < .05$ level. All measures of attitude,
except one (modernity), were significant at either the $p < .05$ (birth control, population
management, California F-scale*) or \( p < .01 \) level (family planning, abortion). The acceptability subjects reported regarding various contraceptive methods showed significant relationships for vasectomies \( (p < .01) \), tubal ligations \( (p < .01) \), and the female pill \( (p < .05) \), wherein positive attitudes toward the acceptability of these methods correlated with a greater expressed desire to use a MCP (Gough, 1979).

Gough also analyzed partner’s perceptions of their husband related to personality traits and as they correlated to the male spouses’ responses to the MCP item included in their interviews. Descriptions provided by the female spouses were first given by a fifty item interpersonal Q-sort (Block, 1961), then through a three hundred item Adjective Check List (Gough & Heilbrun, 1965). For the Q-sort item, t-tests were performed on the means of a seven step scale for males reporting “no” or “probably no” against those who said either “yes” or “probably yes” on the dependent measure. Eight of the fifty Q-sort items and twenty-one of the three hundred items in the Adjective Check List showed significant differences between the two groups identified. Results of the Adjective Checklist were further condensed into twenty-four standard scales based on predetermined item clusters. Four of the subscale contrasts were significant at the \( p < .05 \) level including: self-control, exhibition, abasement and counseling readiness. For self-control, a lower rating by a spouse on self-control was associated with a greater likelihood that they would reject MCP. For exhibition, husbands who were rated as more exhibitionistic or attention seeking were more likely to report rejecting MCP. For abasement, males who expressed both rejection and acceptance for MCP

* The California F-scale is a survey of opinions about the Male Contraceptive Pill.
were viewed by spouses as non-abasing; however males who objected to MCP were viewed as significantly less prone to self-abasement. Finally for counseling readiness, which researchers identified as a measure of introspectiveness, males who accepted MCP were more likely to be identified as introspective or open to seeking and participating in psychotherapy.

Twelve of the one hundred California Q-sort items showed significant relationships to the dependent measure. Men who responded “no” or “probably no” to the MCP question were more power-oriented, masculine, outspoken, and moralistic than those who responded “yes” or “probably yes”. Those who responded “yes” or “probably yes” appeared less likely to show condescending behavior in interpersonal relationships, more likely to show mood fluctuation, and more likely to day dream according to the Q-sort.

Gough’s finding suggest that among married men in the Bay area during the late 1970s interest in a MCP was high; however the level of interest varied greatly based on personality traits, desire for children, and opinions about social issues, as well as other forms of contraception. Although Gough’s work, like Balswick’s, preceded phase II and phase III clinical trials for new methods of male-controlled contraception, perceptions of such novel forms of contraception seem to indicate a diversity of attitudes, which vary significantly in relation to personal characteristics (Gough, 1979).

In a study conducted at Purdue University with undergraduate students enrolled in a psychology class, researchers asked male and female participants to read fictitious medical reports about advances in male contraception (Jaccard, Hand, Ku, Richardson, &
Abella, 1981). After reading the reports students were required to fill out questionnaires, which contained both open and close ended questions. In addition to demographic information, the surveys contained two items representing the dependent variables which asked males to rate the fictitious MCP described in their report based on its acceptability to them and their intention to try and/or use it when it became available. Female participants, in contrast, were asked about acceptability and whether or not they would encourage their boyfriend or spouse to use the method if it was released on the commercial market. Researchers used a between factorial design to test main effects and interaction effects of: effectiveness (99%, 95%, 90%), health risks (major, minor), cost (expensive, inexpensive), convenience (daily dosing, weekly dosing) and sex (male, female). Each of the forty-eight cells in the factorial design was represented by ten subjects.

For acceptability (rated on a 5 point scale of “definitely acceptable” to “definitely unacceptable”), analysis showed three statistically significant main effects for: sex, health risks, and effectiveness. Females tended to rate the MCPs as more acceptable than their male counterparts. Major side effects reduced ratings of acceptability over minor side effects, and the dependent measure varied significantly across all three levels of effectiveness. For intentions to use a MCP, the dependent variable was coded as a dichotomous variable; “yes” or “no”. The statistically significant main effects for intentions to use a MCP were the same as those for measures of acceptability of a MCP; however there was also an interaction effect for sex by health risks. For minor health risks, females were more likely to report intentions to encourage use than males were to
report intentions to use. For major health risks the difference between males and females was not significant. Two significant three way interactions were also found through factorial analysis. For health risks by cost by convenience, cost and convenience did not have an effect on the dependent variable when side effects of the contraceptive pill were high; when side effects were minor intention to use the MCP was significantly greater only when the method was also presented as both inexpensive and convenient. There was also a significant three way effect of effectiveness by health risks by cost. Cost of the method had a significant influence on intentions when health risks were minor and efficacy was low, but only under those conditions. These interactions however, only accounted for one one hundredth of a percent and three hundredths of a percent of the total variability in the dependent variable respectively.

Despite interactions for measures of intentions to use the MCP, researchers concluded that attitudes and beliefs about the MCP were consistent with an additive model due to the lack of interaction effects for attitudinal measures and the small amount of variability for which the interaction effects accounted. The lack of diversity in the sample and the between-subject nature of the design, however limit the conclusions that can be drawn from these results. Of greater significance is the variability explained by the main effect of health risks for both acceptability and intentions to use MCP; health risks accounted for twenty point three percent and twenty point six percent for the variance observed in the dependent measures of acceptability and intentions respectively while effectiveness accounted for ten point four percent and seven point five percent of the variability, respectively. These results suggest that in addition to innate male-female
differences the precise characteristics of new methods of contraception for men may play a major role in whether or not men will seek out and use these methods (Jaccard et al, 1981).

In anticipation of the introduction of a MBCP, forty-seven married couples in the Columbus, Ohio area completed a ten page survey regarding their attitudes about contraception and specifically a MBCP, as well as their beliefs about the attitudes their partners held regarding the same subjects (Marsiglio & Menaghan, 1987). Initially, two hundred questionnaires were mailed out to couples identified through a birth listing column in the Columbus Dispatch newspaper. Forty-nine husbands and fifty-three wives completed surveys, resulting in a twenty-three point five percent response rate of complete couple responses. Items contained in the survey addressed demographic information, contraceptive behavior, and intentions to have additional children. The survey also contained items regarding opinions about contraceptive responsibility (including locus of control and current contraceptive decision making), sex-roles preferences (as measured by the SRPI, (Scanzoni, 1980)), likelihood of using a MBCP, and beliefs about how each individual expected their spouse to respond to the same questions.

Attitudinal data were collected using a four and five point Likert-type scales. Results were analyzed with paired t-tests and Pearson’s product moment correlation to test for differences between responses from husbands and wives. Significant differences were found for sex-role preferences using both paired t-tests and Pearson’s product moment correlation. Using paired t-tests significant differences were found for locus of
contraceptive responsibility, and perceptions of spouse’s attitude. Using Pearson’s product moment correlation significant differences were also found for likelihood of MBCP use and decision making regarding current contraceptive decision making. Wives were more likely than husbands to correctly predict their spouse’s responses regarding contraceptive attitudes; although within couples husbands and wives were similar in their orientation to contraceptive responsibility, sex-roles, and likelihood of using a MBCP. Husbands were more likely than wives to report positively on the possibility of MBCP use; although they perceived their wives’ orientations to the MBCP to be more positive than the attitudes their wives actually reported. Couples were also asked specifically about how the chemical nature of a MBCP would influence the likelihood that they would consider its use. This item was phrased, “Would the chemical nature of a male pill inhibit your personal selection of a male pill as a form of birth control for you and your spouse? If so, to what extent?” (Marsiglio & Menaghan, 1987). Both men and women in the study reported being concerned about the chemical nature of the MBCP; only seventeen percent of females and seven percent of males stated this would inhibit their personal selection of a male pill either “not at all” or “to a limited extent”. Regarding intentions to initiate a discussion regarding a MBCP thirty-six point two percent of women and forty point four percent of men reported they would be “very likely” and twenty-seven point seven percent of women and thirty-four percent of men reported they would be “somewhat likely” to initiate a discussion if such a product were available.

A multiple regression analysis of the relationships between sex-role preferences, shared contraceptive responsibility, inhibitions regarding chemical nature of MBCP, and
perceptions of a spouse as favorable to MBCP use was run on three models in order to test the researchers hypothesis that beliefs in more egalitarian sex-roles would be associated with greater belief in shared contraceptive responsibility. Researchers also hypothesized this in turn would directly correlate to greater likelihood to adopt MBCP. Beliefs in shared contraceptive responsibility were not found to be associated with egalitarian sex views however, and beliefs in shared contraceptive responsibility were unrelated to reported likelihood of MBCP use. The second model, which examined sex-role preferences, shared contraceptive responsibility, and inhibitions regarding chemical nature of MBCP, showed a statistically significant relationship \((p<.001)\) between inhibitions regarding the chemical nature of a MBCP and likelihood of MBCP use for wives only. Controlling for inhibitions regarding the chemical nature of a MBCP in the second model did reveal a significant relationship between sex-role preferences and likelihood of MBCP use for both husbands and wives at the \(p<.05\) significance level. A third model, which involved sex-role preferences, shared contraceptive responsibility, inhibitions regarding chemical nature of MBCP, and perceptions of spouse as favorable to MBCP, showed beliefs that one’s spouse was favorable to MBCP increased likelihood of intention to consider the method for both husbands and wives. Although the small sample size and its lack of demographic diversity severely limit the conclusions that can be drawn from this study, the results indicate a need to develop a better understanding of the influence interpersonal dynamics of heterosexual relationships may have on the adoption of new methods of male controlled contraception (Marsiglio & Menaghan, 1987).
Self-administered questionnaires using a quantitative, descriptive approach were used to assess the attitudes toward MHC of a small number of males in the United Kingdom (Brooks, 1998). The study employed a convenience sample of heterosexual British men, most of whom were recruited through a fitness club. The original sample was augmented through snowballing or networking techniques. The participants in the study did represent men of reproductive age; however the sample contained disproportionate representation of young men ages sixteen to thirty-nine relative to the United Kingdom’s total male population. Paper surveys were distributed to participants for anonymous completion; the survey’s items addressed three main areas: demographic characteristics, contraceptive practices and preferences, and characteristics of the “male pill”. Within the section on a MHC, researchers asked about accessibility (delivery, availability, health monitoring, costs), side effects, and benefits. The two hundred and fifty questionnaires distributed in December of 1996 resulted in a forty-six percent response rate. The response rates to individual items on returned surveys were very high; no rate was below ninety-eight percent for any of the items. During the analysis phase one survey was removed because the respondent did not adhere to the direction provided with the questionnaire; rather than filling in tick marks as indicated, the respondent provided commentary for several items. One hundred and fourteen surveys were used in the final analysis, which consisted of descriptive statistics and chi-square used to test for group differences.

Eighty-two percent of respondents indicated that contraceptive decision making in their relationship was shared, although across age groups the percent differed
significantly. Ninety-six percent of respondents age thirty-six to forty-five indicated contraceptive choices were shared (four percent indicated it was their decision as the male partner), while only sixty-eight percent of participants ages sixteen to twenty-five reported the decision was shared (twenty-three percent indicated the female partner made the choice). A daily tablet (46%) was the preferred method of delivery for a male contraceptive, followed by an injection every six months (36%) and an injection every three months (19%). When asked to rank contraceptive methods, the MBCP was the third most popular. The female pill was the method identified as a first choice most often, followed by the male condom. A greater preference for the MBCP was seen among males in the thirty-six to forty-five year age group. When asked about where they would like to obtain male contraception, fifty point one percent of respondents indicated they would choose to go to their doctor for a MBCP, while only thirty-one percent indicated they would opt to go to a family planning clinic for the MBCP. The strongest preference for the MBCP was seen among males in the thirty-six to forty-five year age group and those respondents who indicated that their primary objective when using contraceptives was pregnancy prevention. When asked about where they would like to obtain male contraception the majority of respondents (50.1%) indicated they would choose to go to their doctor for a male pill, while only thirty-one percent indicated they would opt to go to a family planning clinic for the MBCP. The vast majority of participants indicated that they felt health screening would be a component of MCP use in which they would participate. Brooks suggests this might be a critical mean of getting males involved in health related screening for problems such as testicular cancer.
Regarding costs, thirty-eight percent, the largest percent, of respondents were willing to pay five £ to ten £ per month for male contraception. Chi-square tests comparing groups across occupations revealed that respondents with professional employment were significantly more willing to pay more for male contraceptives. In reference to side effects researchers asked about headaches, reduced sex drive, weight gain, and complexion spots; seventy-one percent of the responses indicated the men were not willing to tolerate any side effects whatsoever. The least tolerated side effect was complexion spots. Regarding expected benefits, participants were allowed to select from “There would be no need to interrupt sex to put on a condom”, “My partner would not have to take the female pill”, and an open-ended comment area. Seventy respondents selected the first comment and seventy-seven respondents ticked off the latter (Brooks, 1998). Older respondents were more likely to provide comments indicating the need for greater shared responsibility for contraception, whereas younger participants included many comments on the need to protect against unintended pregnancy and gain greater control over their fertility (Brooks, 1998).

The small sample size and lack of representativeness limit the value of Brooks study with regards to extrapolating beyond males in the United Kingdom with the resources and motivation needed to attend a fitness facility. Similarities between Brook’s (1998) results and previous studies on new methods of male contraception however seem to indicate that males’ interest in new methods of male contraception may follow predictable patterns, which could be used to help inform family planning programs as they prepare for the introduction of these new methods.
In addition to the lack of a fully developed contraceptive method on which to base their research, early investigators of beliefs and attitudes about male contraception used relatively small and homogenous subject populations. In an attempt to further develop an understanding of how individuals representing different cultures and various life perspectives feel about male contraception, Martin, Anderson, Cheng, Ho, Van Der Spuy, Smith, Everington, & Baird (2000) surveyed men in Edinburgh, UK; Cape Town, SA; Shanghai, China; and Hong Kong. Participants in the study were recruited from blood donation centers, new or expectant fathers, army personnel and firefighters in an attempt to capture men at different stages in their reproductive lives. Of the one thousand eight hundred twenty-nine men recruited to participate, two hundred and thirty five refused to participate either due to time constraints or because of the nature of the survey. A standard questionnaire was translated into the local languages of each country and/or ethnic group and administered by a trained interviewer. Most interviews took approximately thirty minutes and addressed current contraceptive use, contraceptive knowledge and attitudes, attitudes about various potential forms of Male Hormonal Contraception (MHC), and demographic information.

Multivariate analysis was completed on the data collected to determine the likelihood of various individuals using the various forms of MHC portrayed and existing preferences for various forms of contraception through multivariate linear regression and multivariate logistic regression respectively. In addition to classification by their center of origin, participants from Cape Town were further subdivided according to ethnicity (Black, White, Coloured). New and expectant fathers were excluded from measures on
current contraceptive use, which showed female methods as the most widely used among respondents. Condoms were the most commonly used method only in Shanghai.

Regarding potential contraceptive methods for men, participants were asked about pills, implants, and injectable methods that were all described as reliable, free of significant side-effects, and requiring three to four months to become effective. Despite these descriptions men in the study expressed concerns over the efficacy and safety of the fictional methods. The lowest rates of confidence in the efficacy of a male pill or male injectable contraceptive were found among participants in Hong Kong (36% pill, 38% injectable) and Shanghai (52% pill, 46% injectable). The lowest rates of confidence in the safety of a male pill or male injectable contraceptives were found among participants in Edinburgh (30% pill, 27% injectable), Hong Kong (11% pill, 11% injectable) and Shanghai (36% pill, 33% injectable). Decreased sexual satisfaction with condom use was reported to be a problem among a greater percent of participants across all of the groups than decreased sexual desire for either a male pill or an injectable hormonal method. Concern over the effects MHC would have on lessening masculinity was highest among Black participants in Cape Town (34% pill, 30% injectable). A majority of all participants expressed that they would “definitely” or “probably” use a male pill, but the rate was lower for the injectable form. The strongest predictor for willingness to use either an injectable or pill form of MHC was whether the men believed their partners would wish them to use the method. When asked to rank preferences for condoms, a daily pill, a 3-monly injection, or a long term implant preferences varied greatly across
the centers involved in the study; although implants were the method least preferred everywhere except Shanghai, where a daily pill was the least popular method (8%).

Regarding contraceptive decision making and responsibility, a majority of respondents in all of the centers considered the decision making process to be shared; ranging from forty-eight percent among Black men in Cape Town to ninety percent among White men in Cape Town. Only in Edinburgh did less than half (42%) of the participants affirm that they felt the responsibility for contraception fell too heavily on women. An item about the acceptability of providing a semen sample to test the efficacy of MHC was included in the study. Men from Shanghai and Hong Kong were significantly less likely to find this acceptable than participants in other centers like Cape Town, where acceptance of semen analysis was highest. The research also attempted to assess subjects’ attitudes related to a potential delay between the commencement of MHC use and impairment of fertility, which is likely to accompany MHC use. An item describing a three to four month delay before the onset of contraceptive efficacy with MHC had results similar to those for acceptability related to the need for a semen analysis.

Although Martin, et al (2000) found a high rate of Intention to Try MHC overall, contraceptive beliefs, attitudes, and current practices showed a great deal of variability across participants from different settings. These findings suggest that whereas MHC may be eagerly received when released to commercial markets, the nature of acceptance may vary widely depending on its modes of administration and the characteristics of the populations to which it is made available.
In a study of one hundred forty-eight Australian born, English speaking men surveyed after their female partners had just given birth, Weston, Schlipalius, & Vollenhovern, (2002a) found seventy-five point four percent of the participants would consider trying male hormonal contraception (MHC) if it became available. Participants were recruited from a public teaching hospital in Australia in 2000 and 2001 and asked a series of questions about contraception after being given a brief information sheet on MHC. The information sheet described MHC as effective, requiring three to four months to become effective, requiring semen samples, and having no effect on sexual performance. On the dependent measure of likelihood to try MHC respondents selected from five options: “definitely”, “probably”, “maybe”, “probably not”, and “definitely not”. “Non-triers” were distinguished from “Triers” as those responding: “probably not” or “definitely not”, whereas “Triers” included individuals who responded “definitely”, “probably”, or “maybe”. Out of one hundred forty-eight men approached, one hundred twenty-four agreed to participate in the study and one hundred eighteen provided usable data sets. The majority, eighty-nine individuals (75.4%) were classified as “Triers”. If participants who responded “maybe” were removed, fifty-six individuals (47.5%) affirmed an interest in MHC use by responding “definitely” or “probably”. A daily oral pill (33.3%) was the preferred method of MHC use among all “Triers”, followed by a three-monthly injection (27.4%) and a twice-yearly injection (21.4%). Only three respondents selected a skin patch as their preferred method and only a single participants selected weekly injections. “Triers” and “Non-triers” did not differ significantly on prior contraceptive use, acceptability of condoms, reported decision making related to
contraceptive use, or satisfaction with contraceptive use. “Triers” (70.5%) were more likely to find vasectomies acceptable than “Non-triers” (44.5%). There were no significant differences between the groups related to age, children, or intentions to increase family size. Regarding what they believed their partners’ perceptions would be, forty-eight point three percent of “Non-triers” indicated that their partner would not approve of them trying MHC, while seventy-nine point eight percent of “Triers” reported believing their partner would approve. A larger percent of “Non-triers” (37.9%) reported being unsure of how their partner would feel about MHC, than “Triers” (19.1%). The small number of participants in the study, the sample’s homogeneity, and the mental state of new father’s during the postpartum period all limit the generalizability of Weston, et al’s (2002a) findings; however the results do not diverge radically from those of other studies on male’s attitudes toward new forms of contraception for men.

In another Australian study by Weston, Schlipalius, Bhunneain, & Vollenhovern, (2002b) researchers compared migrant fathers to English-speaking fathers, Australian born participants from Weston, et al’s (2002b) previous study regarding their views on Male Hormonal Contraception (MHC). Seventy-six English speaking, Indian or Southeast Asian men were sampled from a population of new fathers identified through their connection with a post-natal ward. Questions presented in the study focused on attitudes regarding contraception, including the individual’s history with contraception, and included a set of items about attitudes toward possible characteristics future forms MHC could be expected to possess. Using a chi-square goodness of fit test for categorical variables and \( t \)-tests for continuous variables, significant differences between
Australian participants and migrant fathers were found for overall enthusiasm toward MHC and for preferred method of administration. Migrant fathers showed less enthusiasm for the possibility of using MHC at the $p<.001$ level for a chi-square comparisons of responses to the item “would you try MHC?”, measured on a five point scale from “Definitely” to “Definitely Not”. Only four point one percent of migrants verses nineteen pint five percent of Australian born fathers reported they would “definitely” try MHCs. Also, the majority of Australian fathers selected a daily pill as their preferred means of MHC use, while Migrant fathers preferred two yearly injections to daily oral administration, which was the second most popular choice among migrant fathers. Consistent with the findings of Martin (2000) this study illustrates the diversity of relationships that can exist between cultures and attitudes regarding various forms of contraception. Findings suggest factors relating to the cultural identity of male clients seeking MHC will play a major role in determining how they will react to the availability of novel forms of contraception controlled by males. Further research on how diversity in personal characteristics can be used to predict or breakdown contraceptive behavior are needed before such relationships can used to effectively inform education, counseling, prescription, and marketing related to the introduction of MHC. (Weston et al, 2002b)

Research of varying scopes already represents a diversified attempt by varying disciplines to measure the perceptions men hold with regards to the future introduction of new reversible forms of contraception for men. Identifying this issue as Male Fertility Control (MFC) an international team surveyed over nine thousand men around the world regarding perceptions of contraceptive methods currently in use and future methods
likely to be introduced in coming years (Heinemann, Saad, Wiesemes, & White, 2005). Countries involved in the study included Germany, France, Spain, the United States, Argentina, Brazil, Mexico, and Indonesia. Measurement of demographic and cognitive variables across languages and cultures required some modifications in survey content and means of administration. Sampling methods also varied from country to country. The lack of samples from Africa and Australia limit the external validity of the data on a global scale. While data was being gathered from the nine participating countries, located across four continents, the study was based in Germany. Sample size for each nation was around one thousand males between the ages of eighteen and fifty; except for France, where only seven hundred fifty males were surveyed and the United States, where one thousand five hundred men participated. The study measured knowledge about contraception, personal histories with contraception, attitudes toward contraception, and finally attitudes toward MFC. Acceptance of MFC methods ranged from twenty-eight point five percent (Indonesia) to seventy-one point four percent (Spain); the overall acceptance rate was just over half (>55%).

Current contraceptive use was highest in Germany (83.2%) and lowest in Mexico (46.5%). In all of the nations surveyed a majority of the respondents reported that decisions about contraceptive method selection were made jointly with a female partner. In all nations participants stating that contraceptive selection was not a shared decision were also more likely to declare that the decision was made by a female partner. Moral and religious objections to contraceptive use were highest in Indonesia; thirteen point one percent of participants there declared they held a moral objection to any contraceptive
method and fifty-eight point three percent stated that they believed contraceptive methods were not approved of by their religion. The lowest rates of moral and religious objection were observed in Germany, where they were one point three percent and three percent respectively. Overall, the majority of subjects reported experiences with at least one form of contraception. Condoms were the most popular male controlled contraceptive method used, followed by withdrawal. Reported experience with condoms ranged from ninety-two point four percent (Sweden) to forty-six point five percent (Indonesia), for withdrawal the range was from seventy point five percent (Sweden) to twenty-three point seven percent (Brazil), but the contraceptive method with which the greatest number of participants were familiar was the female oral contraceptive pill (66.4%). Vasectomy, as a birth control method, was very uncommon in France (0.3%), Argentina (1.4%), Indonesia (1.8%), Brazil (2.3%), and was most popular in the United States (19.4%) and Spain (14.4%).

Using logistic regression analysis and odds ratios, the characteristics of participants who reported interest in MFC were compared to those who did not indicate acceptance of the methods. The greatest predictor of willingness to consider MFC by participants was education level, although this relationship was significant only in France, the United States, Mexico, and Indonesia. Researchers suggested this might be due in part due to the differences in educational practices across the various study sites. Age showed a significant association with MFC acceptance only in Germany, where higher age was associated with higher acceptance.
When asked about mode of administration the majority of study participants favored a daily oral pill; a pill form of MFC was also the most popular mode of administration in each region surveyed. When asked to compare MFC to condom use, most participants who had indicated a lack of interest in MFC favored condoms over the theoretical MFC methods (67.8%), whereas of participant who expressed acceptance of MFC, only forty-two point six percent preferred condoms to the other proposed forms of MFC. Regarding implants and injectable methods, participants were asked to select their preference for various timelines of administration. As expected there was an overall preference for medium to long terms of administration, which reflected a reduction in the number of visits per annum to maintain the fictitious methods. However, comparisons of those individuals identified as “willing” verses “unwilling” to try MFC revealed that, although both groups preferred once a year procedures, the second choice of the “willing” group showed a preference for shorter intervals, while the “unwilling” group was significantly more likely to select “once every five years”. Only thirteen percent of the “willing” group preferred five years, which was the longest interval presented in the survey, while twenty-nine percent of the “unwilling” group selected the longest interval as their preference. Although the absence of actual administration schedules, details on the side effects and mode of administration for commercially available MFC makes all surveys of this nature speculative, the cultural differences in contraceptive practice and preference observed by Heinemann, et al (2005) enhance the understanding clinicians will carry with them as they begin a dialog with male clients about MFC in earnest.
Research Involving Participants in Clinical Trials of Male Contraceptives

Early studies of attitudes and beliefs about new forms of contraception geared toward the male family planning client were relegated to asking hypothetical questions about theoretical products, which were known to be years, if not decades, from introduction into the commercial market. Once clinical trials began, data could be gathered on attitudes and beliefs which reflected experiential understanding of early forms of contraception for males. Through its World Bank Special Programme of Research, Development and Research Training in Human Reproduction and the Task Force on Methods for the Regulation of Male Fertility, the World Health Organization has chiefly been responsible for directing international research efforts aimed at expanding the family planning options available to men who are not satisfied with the current array of birth control options (World Health Organization, 1980; 1982). In addition to interest in trying a male controlled contraceptive method, volunteers in initial WHO clinical trials of MHC were provided incentives for their continued participation in surveys, medical exams, blood draws, and the collection of semen samples intended to measure the overall impact of MHC on users. Recognizing the importance of marrying field trials on attitudes toward MFC with attitudes among clinical trial participants, the variability across MHC preparations, treatment groups, and locations was a priority as studies were executed in locations including: Bangkok, Thailand; Santiago, Chile; London, United Kingdom; Mexico City, Mexico; Seoul, South Korea; Toronto, Canada; and Hong Kong. A social science collaborator was present at each of these trial locations working in conjunction with interviewers who, employing local languages, conducted
three standard interviews and discontinuation interviews for participants who did not complete the trials. Preliminary results from the first clinical trials held in the late 1970s were presented by the WHO in 1980 when it was unclear as to whether or not London and Mexico City trials would reach completion. When a final report was released in 1982 Mexico City has been dropped from the trials and London provided only partial data sets.

Males between the ages of twenty-five and forty-five participating in clinical trials of a hormonally based contraceptive in Bangkok, Thailand; Santiago, Chile; London, United Kingdom; Seoul, South Korea; Toronto, Canada; and Hong Kong were asked about their experiences with various hormonal regimens being tested for their efficacy at suppressing spermatogenesis. Of the two hundred six men who volunteered for the studies only one hundred nineteen committed to participating in the trial and provided complete data sets. Four men exited the trial based on complaints about treatment effects; two of the four had been assigned to control groups receiving placebos. Completed data sets included a pretreatment interview that consisted of items on demographics, contraceptive history, beliefs about and evaluations of new contraceptives being tested, and their reasons for participating in the study; a follow-up interview, which represented an abbreviated version of the pretreatment interview was administered as well, once during treatment and once during recovery. A sexuality interview was also administered, which examined psychological and behavioral factors related to each participant’s sexuality. The sexuality interview was repeated every four weeks during the fifteen month trials, for a total of sixteen sexuality interviews for each volunteer who
completed the trial. Internal consistency and temporal stability were assessed for all measures; alphas for sexual measures were higher than those for belief and acceptability measures. All alphas for reliability were $\alpha > .60$ and median reliability for sexuality measures was $\rho = .91$ (World Health Organization, 1982). Dependent measures included sexuality and the beliefs and attitudes volunteers held regarding contraception. Although volunteers were assigned to a variety of treatment conditions, including a wide range of hormonal regimens and placebos, data on trends related to participation were analyzed for all participants as a single group and by geographic, rather than treatment conditions.

At the initiation of the trial, participants rated the new method of contraception as more acceptable than either condoms or a vasectomy; this ranking held across pretreatment, treatment and recovery. Although a decrease in optimism about the new method did show a statistically significant decrease from pretreatment to recovery, no significant changes for acceptability of MHC occurred at any point during the trials. Acceptability of MHC increased across all treatment groups increased from pretreatment to treatment phases.

Examination of data segregated by treatment modality revealed experiences varied significantly relative to which hormonal regimen participants received. Both efficacy at suppressing spermatogenesis and impact on sexuality and beliefs and attitudes about the new methods did vary based on the hormonal regimen participants received. Volunteers who received cyprotene acetate and depomedroxyprogesterone acetate reported more negative effects than trial participants who received androgen based or placebo treatment. Cyprotene acetate and depomedroxyprogesterone however, were
most effective at suppressing sperm production. The change in acceptability from pretreatment to treatment was highest for participants in control groups and changes in sexuality measures were lowest for those in control groups. Changes in sexuality measures from pretreatment to treatment were greatest for individuals receiving the higher dose of cyproterone acetate treatments (10 mg.). For measures of intentions to use a method in the future, vasectomy outranked the new hormonal methods for volunteers in Toronto and Bangkok, as well as Santiago where both condoms and a vasectomy outranked the new hormonal method with regards to future use. Examining trends from the first to last measurements using two-tailed t-tests researchers found statistically significant changes in only three of the thirty measures of sexuality and almost all measures of belief. Hierarchical multiple regression analysis indicated that the use of the various forms of MHC in the clinical trials had the largest effects on: overall sexual energy ($R^2=0.22$), number of masturbation problems ($R^2=0.20$), and speed of orgasm ($R^2=0.20$). Although the cultural diversity represented in the study is great, the small sample size, the experimental nature of the treatment regimens, the multiplicity of treatment regimens, and the voluntary nature of participation limits the generalizability of the finding of this study related to the acceptability of MHC methods as a commercially available form of contraception. While clinical researchers continue to search for a form of male contraception that is effective at controlling fertility, yet carries minimal risks of detrimental side effects, it is becoming clear that, as is the case with many hormonally based contraceptives for females, side effects will play a key role in the introduction, use and continued development of new contraceptive methods for men. The maintenance of
positive orientation toward the new contraceptive methods, despite the reporting of 
negative impacts on sexuality, does suggest that for some male family planning clients 
seeking new contraceptive options a male controlled hormonal method could be a viable 
option, even if they carried some degree of liability (World Health Organization, 1982).

Although azoospermia has been the original goal of many studies pursuing the 
development of new contraceptive methods for males, it is not a requirement for 
functional infertility. The difficulty in achieving azoospermia, while minimizing health 
risks, has lead to research on the possibility of inducing oligospermia or teratospermia as a means of suppressing fertility in men. Between 1990 and 1994, men in Australia, 
China, Hungary, France, Singapore, Thailand, Sweden, the United Kingdom, and the United States participated in studies of the effects of weekly injections of testosterone 
enanthate, administered over a period of several months, on sperm count (Ringheim, 
1995). After the completion of these studies, six centers where the research was conducted were contacted about a participation in a follow-up study employing focus 
groups to examine the participants’ perspectives on their experiences during the study and subsequent attitudes toward research participation and injectable contraception for men. Four of the six centers contacted (Australia, Singapore, Thailand, United Kingdom) agreed to participate in a follow-up study using focus groups; five to six men from each center participated in the moderated discussions resulting in twenty-three total participants. Low response rates to solicitation to participate in the focus groups were attributed to the time lapse between the termination of the trials and the staging of the focus groups. During this time many participants had moved away from the centers
where the original clinical research was based. Data collected from these groups was combined with information gathered through questionnaires completed by one hundred fifty-four men representing all of the centers involved in the oligospermia trials.

Focus groups discussion varied somewhat based on the individual moderator’s varied adherence to the protocol developed for the focus groups. Discussions focused on men’s reasons for participation, experiences with other forms of contraception used by the men and their partners, the nature of relationships and communication with sexual partners, side effects experienced during the trial, and speculation about the future of injectable methods of contraception for men. Responses to the questionnaires showed that dissatisfaction with current contraceptive methods was the most popular rationalization for participation in the study (36%), followed by the encouragement of a partner (23%) or physician (23%). In focus group discussions, dissatisfaction participants and their partners had experienced with female contraceptive pills and condom use was a common theme, as well as the need for a greater equity in contraceptive responsibility when discussing reasons for participation.

“I thought I should be shouldering my share of the responsibility for contraception because she was having problems with the pill” (Ringheim, 1995)

In Ringheim’s study (1995) expressions of dissatisfaction with other contraceptive methods included multiple comments about: negative side effects that accompany female contraceptive pill use experienced by female partners, the negative impact side effects experienced by men whose female partners used the female contraceptive pill, failure of female partners to consistently and correctly use their
contraceptive method, the difficulty of reversing vasectomies, the unreliable nature of withdrawal, and the negative impact of condoms on the enjoyment of sexual experiences. According to participants, some forms of contraception can also cause relationship problems.

“‘You don’t like wearing condoms and the wife is insisting – I mean, that can create problems. Whereas this was perfect. Both partners quite happy with it.’” (Ringheim, 1995)

Discussion of gender roles, equity, and communication in relationships revealed a great deal of diversity among focus group participants from different countries. Although gender equity and spousal support seemed to play a critical role in the decision to participate in the original study for some of the men, others, particularly those from Asian nations, expressed holding more traditional and rigid ideals regarding male and female gender roles. Economic consideration related to family size and spousal support during the use of the testosterone injections were also discussed as critical to decision making process regarding participation. Based on these comments investigators concluded that female partners would most likely play a key role in the future success of a new male controlled contraceptive methods.

“‘My wife was so involved she was the one who gave the injections.’” (Ringheim, 1995)

Most discussion of side effects related directly to the pain and inconvenience of administering the testosterone through monthly injections. In the questionnaire responses, eighty-two percent of respondents indicated they would prefer an injection
once every three months and focus group facilitators and focus group participants
discussed the pain and inconvenience of weekly shots in great detail. Weight gain, acne,
and changes in testicular size and consistency experienced by a few focus group
participants were brought up during discussions of side effects. Increase in libido was a
common topic and elicited many positive remarks, although one focus group participant
remarked that his increased libido was not a change welcomed by his partner.

“‘Let’s face it – you have to be a bit of a loony to get one stuck in your buttock
every week’”.

“‘My sex drive certainly changed. It increase and pleasure increased. It was a
bonus.’” (Ringheim, 1995)

Regarding the future of the method, focus group participants expressed a wide
range of opinions about how they felt would be received by the wider population. Many
of the men’s responses to questions about the future success of an injectable
contraceptive for men referred to conversations they had held about their participation
with individuals outside the study. Several men discussed the need for education and/or
the passage of time in order to promote the methods before acceptance of the
contraceptive could be expected. Others offered qualified responses that related to
specific types of men or men in specific types of relationships accepting the new method,
while they expected others to reject them.

“‘It depends on how well educated they are. It would take 10 to 20 years really
for it to be accepted…it would take a whole social consciousness.’” (Ringheim, 1995)
Regarding women’s attitudes toward hormonal contraception for men responses were often diametrically opposed, with some participants expressing certainty that women would either not trust the safety of the method or the reliability of a man to properly use it. Others expressed convictions that women would enthusiastically welcome the new option.

“’We found there was more interest in the study amongst our female friends, in fact, quite a few probably would have been interested in [having their partners participate] if they had known about it.’” (Ringheim, 1995)

Researchers stressed the need to integrate data collected through the questionnaires and focus groups into the fine tuning of research on the development of hormonal contraception for men, as well as the potentially valuable role it may play in the introduction of such methods to the commercial market. Chief among the concerns examined by focus group discussions was the nature of administration of the hormones through a weekly shot. The inconvenience of frequent and painful injections was considered a greater barrier to success than side effects, many of which were described as positive in nature by focus group participants (Ringheim, 1995).

“’I felt quite neat then because, not only was I furthering the cause of masculine development, but I liked the idea of being in control of my own fertility.’” (Ringheim, 1995).

Summary

Expectations that a MCP would quickly follow the introduction of the female birth control pill proved premature. Throughout its history research on new forms of
contraception for males has been largely defined by the start and stop progress of their development. The literature of male contraceptive research therefore represents a range of perspectives, which differ greatly based on their chronological orientations to each other. There can be little doubt that this body of research will expand in scope and form as research on the development of male controlled, chemically based contraceptive methods continues. In addition to needing to reflect progress made in the development of these new methods, studies that examine these contraceptives will need to incorporate advances in general research theory, research design and statistical analysis.
CHAPTER III

METHODOLOGY

The goal of this study was to expand the knowledge base related to male college students’ future use of Male Hormonal Contraception (MHC). The research design examined possible relationships between the constructs of the Theory of Planned Behavior (TPB), variables commonly applied to the study of contraceptive behavior, and Intentions regarding the Use of MHC and Condoms.

Research Questions and Hypotheses

Research Question I
How will the availability of MHC impact males’ contraceptive behavior?

Research Question III
When assessed through multivariate analysis, will males’ contraceptive behavior, attitudes and beliefs have significant independent relationships with their intentions to try MHC?

Research Question III
When assessed through multivariate analysis, will males’ contraceptive behavior, attitudes and beliefs have significant independent relationships with their intentions to use condoms in conjunction with MHC?
Hypothesis I

Perceived Behavioral Control will be the best predictor of males’ Intentions to Try Male Hormonal Contraception.

Hypothesis II

The Total Number of Female Sexual Partners a male has had will be the best predictor of their Intention to Use Condoms in Conjunction with Male Hormonal Contraception.

Participants

This study employed a convenience sample drawn from male students attending Kent State University, on the main campus, located in Kent, OH. Participants were required to be eighteen years of age or older, male and enrolled at the university during the Spring 2007 semester. All participation was voluntary and anonymous. One objective of the study was to involve a minimum of thirty individuals in the first phase of the formative research, one thousand in the second phase of formative research and an additional one thousand in the final phase of data collection. Another objective of the study was to receive completed online surveys from at least twenty-five percent of the two thousand individuals initially invited to participate in the second and third phases of data collection. Participants in the first phase of formative research were contacted through participation in student organizations. Prospective participants in the online surveys were contacted via official university e-mail accounts, after being randomly sampled from the registry of male students attending KSU main campus. Approximately eighty percent (n= 18,745) of students enrolled at the KSU Kent Campus are
undergraduates. Eighty-four percent of these undergraduate students are enrolled full-time, and forty percent are male (n= 7498) (KSU, 2005).

Ethical Considerations

Prior to the distributions of surveys to collect both formative and final data, applications to use human subjects in research were submitted to the KSU Human Subjects Review Board. Each survey for both formative and final data collection was preceded by a cover letter which explained the nature of the survey, identified its form and content, and stated that participation was both voluntary and anonymous. Contact Information for the study’s author, the Faculty Advisor overseeing the research, Scott Olds HSD, and the Vice President and Dean of the Division of Research and Graduate Studies, Peter Tandy Ph.D. were provided to participants on the cover letter and the final page of each survey.

Electronically collected data were stored in MSWord, MSExcel, FileMakerPro, and SPSS files, and/or a password encrypted KSU webpage. All individual data sets were assigned identification numbers to protect the anonymity of participants. No names or e-mail addresses were associated with any of the data sets. Once analysis was complete, paper surveys from the formative data collection were stored in the office of Professor, Scott Olds HSD in White Hall on the KSU Main campus.

This research involved the use of an incentive in the form of two tickets to a concert or a cash prize. The incentive was awarded to one participant in the second survey from among all individuals who completed the final online survey in its entirety. The winner was selected at random from a list of participants’ e-mail addresses
segregated from their responses to the survey. All participants were informed about the nature of the incentive when they were first invited to participate in the survey. The prize was comprised of a choice between two hundred dollars cash or two tickets, with a maximum cash value of two hundred dollars, for a performance in the state of Ohio within a year from the date the winner was contacted. The venue and artist(s) were to be of the winner’s choosing. The winner of the tickets was contacted via their Kent State University e-mail account. The winner selected the cash prize. The prize was signed for by the winner at the office of Scott Olds, HSD in the Department of Adult Counseling Health and Vocational Education program at Kent State University (ACHVE), located in White Hall on Kent’s main campus.

Data Collection

The collection of data in this study was divided into three steps encompassing formative and final research. Formative research involved the use of elicitation surveys in order to complete the development of the survey and a test of the draft in order to determine its content, concurrent, and construct validity. Prior to the collection of data an application to use Human Research Participants was submitted to the Kent State University Human Subjects Review Board. The application received approval November 30, 2006 and the primary investigator was notified February 26th of 2007 (see Appendix J). The study was approved as a Level One research project.

In order to solicit beliefs about MHC an elicitation questionnaire was distributed as the first phase of formative research. The survey contained open-ended questions regarding: who influences participants’ decisions regarding sex and birth control, what
they believe the positive and negative aspects of using MHC would be, and what would motivate them to try MHC. Coding of the answers collected through the elicitation surveys was used to identify the most frequent responses. These codes were then used to create content and multiple choice options for online survey items addressing normative groups and behavioral beliefs for the corresponding constructs of TPB, as well as motivations for using MHC. The text of these codes was added to the items in order to complete a draft of the survey to be used to test the validity of the items and scales it contains prior to its final administration.

Instrument Development

Elicitation Survey

A total of thirty-seven individuals submitted completed elicitation surveys (see Appendix H). Participants in the elicitation survey were all fraternity members, eighteen years of age or older, who were contacted at their off-campus fraternity houses during March, 2007. All responses, which were hand-written, were converted into typed text and entered into a FilemakerPro database. Narrative data from the first step of formative data collection were analyzed using basic qualitative coding techniques applied to text data collected from the elicitation questionnaires (Bogden, & Bilken, 1992). The responses for each open ended item were recorded, coded based on their content, and then sorted based on frequency of the appearance of each code. Open coding was used to identify categories initially. Two coders worked independently on the original un-coded text in order to confirm the validity of the codes (Bogden, & Bilken, 1992). After the text data were reviewed in its entirety the primary investigator developed codes and assigned
a code or codes to each response to each of the four items in the survey. A plain text copy of the complete data set and a blank copy of the survey were then sent to a coder who was not involved in the research project for blind coding. The coder was a graduate student with previous coding experience. The sets of codes developed by each reviewer were then entered into a FileMakerPro database for analysis, which allowed side by side comparison of all codes, as well as the generation of running totals of how often each code appeared for each item. The codes from each coder were compared and the two sets of codes were found to be consistent for the majority of responses. Where differences in the labels of codes existed the two labels were combined into a single label, which represented either the more all inclusive title or an amalgamation of both labels. More inclusive or amalgamated labels for codes reflected more general terminology; for example: “medical professional” superseded the code label “doctor”.

The four codes that appeared most frequently for each question in the elicitation questionnaire were identified. The four groups most frequently identified by participants as important to their decisions about whether or not to use birth control, from question one of the elicitation survey (see Appendix H), became the four normative groups within the survey draft’s items forty-nine through fifty-six (see Appendix A). The most commonly occurring codes from the second and third questions of the elicitation survey were used to construct four items in the online survey related to behavioral beliefs. Four codes, which were already represented within the existing Perceived Behavioral Control (PBC) items, were first disqualified from inclusion in the Behavioral Belief items. The four remaining codes which appeared most frequently in the elicitation surveys were then
inserted into the survey as the focus of the behavioral beliefs items. The codes from questions two, three, and four of the elicitation survey that appeared most frequently were then used as the options for an item in the first draft of the online survey which asked participants to identify what they thought would be their strongest motivation to try MHC. In total, four normative groups, four behavioral beliefs, and five motivations to use MHC were identified through the elicitation survey phase of the research for inclusion in the survey draft.

Survey Draft

The first completed draft of the online survey consisted of eighty-nine items total (see Appendix A). The majority of items were multiple-choice in nature. There were eight open ended questions that requested numerical data including: year of birth, number of penetrative sexual partners, number of male sexual partners, number of female sexual partners, current number of biological children, current number of adopted or stepchildren, desired number of adopted or stepchildren children and desired number of biological children. Several multiple choice items also included fill in the blank options to allow participants to provide any answers not represented by the fixed choices presented with the question.

A formal request was submitted to the registrar’s office at the main campus of KSU for a list of e-mail addresses to be used in this research project. The request was for two-thousand five hundred addresses corresponding to male undergraduate students currently enrolled at KSU’s main campus. The request was approved and an electronic list of two thousand five hundred e-mail addresses was obtained. One thousand e-mail
addresses were randomly selected from the list by extracting every other address provided beginning from the top of the list provided.

An e-mail was sent April 4th, 2007 inviting the selected individuals to take the online draft survey about MHC. To avoid the appearance of junk mail the message was sent from a valid, individual, KSU e-mail account (see Appendix B). The e-mail message included an introduction to the topic and the characteristics of the survey, as well as a hyperlink that could be used to access the online survey directly. The e-mail also stated that participation in the survey was both anonymous and voluntary. A second reminder e-mail was sent out to participants on April 8th (see Appendix C) to remind them that they had been selected to respond to the survey about MHC; the hyperlink to the survey was again provided. Some invitees responded directly to the e-mail address used to send out the invitations. These responses either requested that no further invitations be sent to them or commented on the character of the survey. No invitees reported difficulty accessing the survey.

All responses provided by individuals who accessed the online survey about MHC were stored at a password protected website on the KSU server. Both partial and complete responses were collected, as well as the date and time the surveys were completed. Additionally, the survey included an option for individuals opting to exit the survey whereby they could identify the reason they were exiting the survey (see Appendix D). Fourteen individuals provided typed responses as to why they chose not to complete the survey. The most frequently provided reason (8 of 14) for not completing the survey was that it was too lengthy and/or time consuming. One hundred thirteen
individuals responded to the survey; eighty-seven of the surveys were completed in their entirety. The data from these responses was directly exported into an Excel spreadsheet file. This data was then transferred into an SPSS data file for analysis.

**Operationalization of Variables in the Survey**

Demographic information, including age, educational status, occupational status, ethnicity, religion, economic status, and marital or dating status, was collected through seven items presented to participants on the first page of the draft survey.

**Sexual Profile**

The survey included a series of items addressing: number of penetrative sexual partners to date, range of sexual activity to date, and sex or sexes of sexual partners. This sexual profile was included in order to gauge possible contraceptive need.

**Moral Profile**

Participants were asked a series of questions about their moral positions regarding premarital sex, infidelity, the use of contraception, homosexuality, multiple sexual partners, and gender roles. Each item was measured on a five point likert scale identified by the phrases “I believe this behavior is completely unacceptable”, “I believe this behavior is wrong in most cases”, “I am uncertain how I feel about this behavior”, “I believe this behavior is right in most cases”, “I believe this behavior is completely acceptable”.

**Reproductive Intentions**

Respondents were presented with a series of questions about the number of children they have and the number of children they desire in the future. A separate item
was included to assess the strength of each participant’s convictions regarding their intentions to have or not have a child or children that are biologically their own at some point in the future.

**Contraceptive History**

Previous contact with contraception was assessed for contraceptive methods currently recognized as legally available by the Food and Drug Administration [FDA] (FDA, 2003). In addition to FDA recognized methods, non-technology based methods not recognized as effective, specifically withdrawal and douching, were included. An open-ended option was also included, wherein participants could type in any additional contraceptive methods they may have encountered. This scale rated use via “I” or “A Partner”: “Have Never Used this method”, “Currently Use this method”, “Expect to Use this method in the future, but have not yet used it”, “Have used this method in the past, but do not plan to use it again”, “Have used this method in the past and might use it again in the future, though not currently using it”, and “I am unsure about my history with this method”.

**Normative Beliefs and Motivation to Comply**

Normative groups were first identified through open ended questions presented via the paper surveys used during formative research. Formative research participants were asked to identify the most influential individuals in their lives vis-à-vis their own contraceptive behavior. Participants were specifically queried about their beliefs regarding the support that they believed normative groups would or would not provide them relative to their use of MHC. The Normative belief items were structured as
follows: The Normative Group or Individual would think: “I should definitely try using Male Hormonal Contraception”, “I should probably try using Male Hormonal Contraception”, “Would not care whether or not I used Male Hormonal Contraception”, “I should probably not try using Male Hormonal Contraception”, “I should never try using Male Hormonal Contraception”. Motivation to Comply with each referent was be assessed through a second set of items about the four normative groups. These measures of the relative influence of each group were measured on a likert scale representing the likelihood that each referent would influence a participant’s decision making. The five point scale for the Motivation to Comply items included the options: “Very important to me”, “Somewhat important to me”, “Uncertain how I feel about their opinion’, “Unimportant to me”, “Very unimportant to me”

**Behavioral Beliefs**

Beliefs about the benefits of MHC were assessed relative to the perceived benefits of having access to MHC as a novel method of contraception. Attitudes about the use of MHC were modeled after the current incarnation of MHC as it is being tested in phase II clinical trials. A brief description of MHC was presented to participants at the beginning of both formative and final research in order to solicit what their behavioral beliefs were regarding the current incarnation of MHC. Behavioral beliefs were solicited during formative research through two questions in the elicitation survey which asked the male participants first what they believed the positive benefits of using MHC would be and secondly what the negative aspects of MHC might be. Four items assessed how strongly participants agreed with each behavioral belief on a likert scale including the options:
“Agree strongly”, “Agree somewhat”, “Unsure”, “Disagree somewhat”, and “Disagree strongly. A second set of four items asked participants to evaluate the positive or negative quality of each of the same four behavioral beliefs, identified as “good” or “bad” within the text of the items, using the same likert scale options.

**Perceived Behavior Control**

Although the concept of Perceived Behavioral Control (PBC) has been found to enhance the predictive power of TPB, much debate remains as to the best way to operationalize PBC as it relates to TPB (Godin & Kok, 1996). For this study the construct of PBC was developed around factors related to MHC that might interfere with compliance. For example, participants were asked about their ability to: pay for MHC, seek information about MHC, tolerate side effects of MHC, accept each potential method of administration for MHC, visit medical facilities, work with clinicians, and provide semen samples. The gender of clinical providers was also included in items assessing PBC. The distinction of male verses female clinicians was included in deference to the limited involvement of males in family planning activities in the United State and around the world (Ringheim, 2002).

**Intention to Use MHC**

The fact that MHC is still in the clinical research phase of its development, not available for use by the general public, required that MHC be defined for study participants before their attitudes toward MHC could be assessed. A brief definition of MHC was presented to each participant preceding the first page of the survey; the
description was presented once participants had indicated their consent to participate in the web-based survey on the preceding webpage.

Intention to Try MHC, if and when, it becomes legally available as an FDA approved method of contraception was the dependent measure in this study. In the draft survey Intention to Try MHC was assessed through four items. The first question related to the participants’ desires to learn more about MHC. The second question addressed how important they believed the availability of new methods of male controlled contraceptives was to them. The third question directly asked each individual how likely they believe it is that they themselves would try MHC if it became available as a safe and legal method of contraception. Based on a combination of narratives of MHC clinical trial participants an additional item was added to Intention to Try MHC, which examined the participants’ primary motivation to try MHC. This item explored why participants might seek MHC as a form of contraception by asking each participant to identify what their primary motive for seeking MHC would be. Because the motivations of MHC clinical trial participants could potentially differ from those of males selected from a broader population, possible motivations were also solicited through the elicitation questionnaire. An item related to motivation was included in the formative research in order to solicit motivations to use MHC that might not be present among participants in existing clinical trials of MHC. These responses were then integrated with motives discussed in clinical research studies. However, as it is not continuous, the item on motivation to try MHC was not part of the summated scale representing overall Intention
to Try MHC as the dependent measure. The item about motivation to try MHC instead represented an additional independent measure.

**Intention to Use Condoms in Conjunction with MHC**

Although the assessment of products not yet available to consumers is limited in its reliability, the seriousness of the potential impact of MHC on condom use necessitates advanced research. Should the availability of MHC correlate to a decrease in condom use, any gains made in contraceptive satisfaction and efficacy could be offset by increases in the sexual transmission of disease. Therefore two items were included in the survey which discussed condom use in the context of MHC use. First, each participant was asked whether or not he believed he would use condoms in conjunction with MHC. Secondly, participants were asked if they believed the availability of MHC would increase or decrease their current level of condom use.

**Data Collection for Online Draft Survey**

During the Spring, 2007 academic semester this study used an anonymous online survey including the variables described above to solicit responses from male students enrolled at KSU regarding MHC and related topics. The online survey was administered through WebPages within the KSU website which could only be accessed by individuals invited to take the survey and the survey’s administrator. Microsoft Excel and SPSS program were used to store and analyze data once it was exported from the website.

Each of the survey’s items was assigned a label. The multiple choice responses from every one of these variables were also labeled in SPSS and descriptive statistics were run on all of the items. Not all of the respondents to the survey identified
themselves as full-time undergraduate students at the university. Individuals who identified themselves as either part-time students or graduate level students were not excluded.

A reliability test of all of the multiple choice items in the pilot survey produced a Cronbach’s $\alpha=0.796$ and a standardized $\alpha=0.856$ for ninety-nine items. A reliability analysis of the seventy-two items to be included in the multiple regression analyses produced a Cronbach’s $\alpha=0.822$ and a standardized Cronbach’s $\alpha=0.887$. Correlation matrices were also produced. Finally, a factor analysis was run on all of the items which had been designed to function as scales. A total of forty-six items representing scales were included in the factor analysis, which employed a Varimax rotation. Only factors with eigenvalues greater than one were considered (Devellis, 2003; Hair, Anderson, Tatham, & Black, 1998, DiStefano & Hess, 2005) (Table 1). This analysis produced eleven viable iterations. Although factor loadings scores of .300 are considered by some sources to represent a minimally acceptable level of factor loading, within the component matrix (Table 2) all factor loading scores below .400 were disregarded (Hair et al, 1998, DiStefano & Hess, 2005). There were no items in the factor analysis which did not load on at least one factor with a score greater than .400. For items with two factor loading scores above .400 the larger value and the nature of the item and the other items loading on the factor were considered before the item was assigned to a factor. Ten factors with at least one item loading at .400 or above were identified. The majority of items loaded on factors with the items they had originally been grouped with in their respective scales.
Two items from the Moral Profile scale were eliminated from the survey because they failed to load on the factor with the additional remaining items from that Moral Profile scale. These two items dealt with survey participants’ views on the morality of contraception and the importance of adhering to traditional gender roles. A question similar to the eliminated item about the morality of contraception, which also asked participants how they felt about the morality of birth control, already appeared within the PBC Scale and loaded on the same factor. The second item eliminated from the moral profile loaded on a factor which only included one other item from the behavioral belief scale that discussed the individuals’ beliefs about sexually transmitted infections.

The items within the PBC Scale loaded on four different factors (Table 2). These items loaded on factors related to their subject matter including: side effects of MHC, cost of MHC, gender of clinical provider of MHC, and methods of administration for MHC. After review of the factor loadings, descriptive statistics, and recent research on MHC one item related to cost was eliminated and one item related to the method of administration for MHC was added. One of the eliminated items asked participants if they would pay five dollars per month for MHC removed because all respondents indicated they would consider MHC use at that level of cost. An additional method of administration, the transdermal patch, was added to PBC items discussing methods of administration for MHC.

Descriptive statistics were used to reduce the number of items within the contraceptive use scale. The items in this scale represented the largest total number of items within the survey; however for many of the contraceptive methods presented within
the items an overwhelming majority of survey participants reported that they had either
never used or were unsure of their experience with the methods. After reviewing the
distribution of responses to each item only eight contraceptive methods were maintained
as individual items. Methods with fewer than five individuals reporting current use of the
method were not maintained as separate items. Additionally, the two forms of oral
contraception (combined and mini-pills) were combined into a single item asking
participants about their experience with a generic female oral contraceptive pill. The
additional contraceptive methods originally presented as items were still listed by name
within an open ended item at the end of the contraceptive use scale that allowed
participants to list any additional contraceptive methods with which they had already had
experience.

A total of two items were added to the original draft and twenty items were
removed after a review of the factor analysis and of descriptive statistics. The construct
of PBC was altered from one scale into four separate scales. The original draft
containing eighty-nine questions was edited down to seventy-one items in the final
questionnaire (Appendix I).
Table 1
*Factor Analysis Eigenvalues*

<table>
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<tr>
<th>Components</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
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<td>% of Var.</td>
<td>Cum. %</td>
<td>% of Var.</td>
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<td>13.47</td>
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<td>6.39</td>
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<td>6.05</td>
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Table 2  
*Factor Analysis Factor Loadings*

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<th>Components</th>
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<td>MP Unmarried Sex</td>
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<tr>
<td>MP Infidelity</td>
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<td>MP Birth Control</td>
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<td>MP Same Sex</td>
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<td>MP Multiple Part.</td>
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<tr>
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<td>NB Friends</td>
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<tr>
<td>NB Sig. Others</td>
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<tr>
<td>NB Family</td>
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<tr>
<td>PBC Libido Dn.</td>
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Table 2 Continued

*Factor Analysis Factor Loadings*

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<td>0.37</td>
<td>0.16</td>
<td>-0.08</td>
<td>0.10</td>
<td>0.06</td>
<td>0.03</td>
<td>0.24</td>
<td>0.03</td>
</tr>
<tr>
<td>INT Cond. Use</td>
<td>-0.12</td>
<td>-0.24</td>
<td>0.00</td>
<td>-0.07</td>
<td>-0.04</td>
<td>0.02</td>
<td>-0.11</td>
<td>0.77</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.11</td>
</tr>
<tr>
<td>INT Cond. Change</td>
<td>0.03</td>
<td>0.04</td>
<td>-0.01</td>
<td>-0.24</td>
<td>0.04</td>
<td>0.02</td>
<td>0.09</td>
<td>0.67</td>
<td>-0.08</td>
<td>-0.12</td>
<td>-0.26</td>
</tr>
</tbody>
</table>

MP Moral Profile, BB Behavioral Belief, EB Evaluation Belief, NB Normative Belief, MTC Motivation to Comply, PBC Perceived Behavioral Control, INT Behavioral Intention

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 13 iterations.

Final Data Collection

The final data set was collected via a web based survey. Participants were selected randomly from a list of male students, eighteen years or older, enrolled at KSU during the Spring 2007 semester. One thousand Students were contacted via their official KSU E-mail accounts. Two e-mails were sent to prospective participants (see Appendix E & F). Individuals invited to participate in the survey who did not respond to the first e-mail were reminded of the opportunity with the second e-mail. The survey was accessible via a hyperlink which appeared within each of the two e-mails. The e-mails of participants, which were collected for the lottery attached to an incentive, were used to screen out participants for the receipt of the second reminder e-mail. The results of this final phase of the research are presented in the next chapter.

Data Analysis

Multiple regression analysis was used to examine the strength of relationships between the independent and dependent measures proposed in this study. It was the
original intent of the study to examine thirteen independent and two dependent variables through two separate multiple regression analyses in order to test the two hypotheses in this study. The results of the formative research however necessitated the modification of the models. Each model was expanded to sixteen independent variables in order to include the additional variables representing different dimensions of PBC. As the intent of this study was exploratory the independent variables were not presented in a hierarchical order in the survey, nor in the regression analyses.

The first independent variable which appeared in the survey represented sexual behavior as the total number of female sexual partners participants reported having. The second independent variable was a summated scale of four items representing the Moral Profile section of the survey. The third independent variable was a single item: the strength of the desire to father children in the future identified by each participant. The fourth independent variable was Contraceptive Experience, represented by a summated scale of each participant’s self-reported experience with select contraceptive methods. The fifth, sixth, seventh and eighth independent variables to appear in the survey were subjective norms for each of the four normative groups identified through the formative portion of the research. Each of these normative variables was a score representing the product of the strength of the influence of each normative group multiplied by the group’s positive or negative perspective on MHC as perceived by the survey’s participants. Independent variables nine through twelve represented the four behavioral beliefs identified through the elicitation surveys. Similar to the format of the subjective norm variables, the behavioral belief scores were calculated to recognize both the
strength and direction of beliefs survey participants expressed about different characteristics of MHC. The final four independent variables represented PBC through a series of four summated scales. The first scale represented General PBC and was comprised of eight questions about basic action steps associated with acquiring MHC. A second summated scale of the three items represented PBC related to the potential cost associated with MHC use. PBC related to potential side effects of MHC use was represented by five items within the survey. Three questions about possible Methods of Administration for MHC represented the final form of PBC.

The two dependent variables in this study were: Intention to Use MHC and Intention to Use Condoms in Conjunction with MHC. The first dependent variable was represented by a summated scale of three items: the first represented participants’ support for the development of new methods of MBC, the second asked participants about their desire to learn more about MHC, and the final item asked about their own intentions to try MHC, were it available as an FDA approved method of contraception. The second dependent variable was be represented by a two item summated scale. The first item represented each participant’s Intention to use Condoms with MHC. The second item asked participants about the impact they believed the availability of MHC would have on their current condom use.

As the intention of this study is predictive, careful consideration of both statistical and practical significance were critical to the development of the overall research design. As sampling is viewed as one of the most important elements of design under a researcher’s control careful consideration was paid to the impact of sample size and
composition on the internal and external validity of this study (Hair et al, 1998).

Although the nature of the convenience sample employed in this study limits its external validity, the total number of male students successfully solicited to participate in the study was vital to achieving adequate statistical power. The significance level for this study was set at the $\alpha=.05$ level, which is traditional for social and behavioral studies (DeVellis, 2003). To minimize the risk of failing to detect significant relationships between the independent variables and each of the two dependent variables the goal of the study was to reach a power level of at least $1-\beta=.80$ for each regression analysis. Previous research on MHC being limited and lacking theoretical frameworks it was difficult to anticipate the magnitude of relationships that would exist between the variables examined here. As the approval of MHC for public use is not expected to occur for several years, this study employed a very liberal approach when examining variance in the dependent variables. One of the objectives of the study was explain a minimum of ten percent of the variation in each of the dependent variables through the sixteen to independent variables, as represented through the coefficient of determination ($R^2>.10$). Additionally, another one of the study’s objectives was to have approximately two hundred participants complete the final survey in order to achieve the desired level of power. The guideline of a ratio of ten to one, subjects to independent measures, was also considered, but was superseded by the requirement to achieve adequate power (Brace, Kemp, & Snelgar, 2006). In order to achieve this objective a total of one thousand individuals were invited to take the final survey. It was the aim of this study therefore to
have a response rate of twenty percent or better in order to collect completed web-based surveys from a minimum of two hundred males.

Multiple regression analysis was selected to test both of the hypotheses because the intent of this research was to identify the strongest predictors for both of the dependent measures being examined. A stepwise approach was chosen for its flexibility in allowing the addition and removal of variables at each stage of model development, to maximize its predictive ability, and its hierarchical addition of variables to the predictive models. The stepwise approach also allows for the identification of the most parsimonious predictive model. As the goal of this research was to identify the strongest predictors of Intention to Use MHC and Intention to Use Condoms in Conjunction with MHC only the most effective predictor variables were of interest (Hair et al, 1998, Brace et al, 2006).

In order to determine the relative predictive ability of the independent variables standardized beta coefficients were examined. The overall predictive ability of the regression models were measured through the $R^2$ square. Due to the multiple choice nature of the majority of variables involved in the regression analysis there was only one predictive variable with the potential to create considerable influential observations. This variable was the Number of Female Sexual Partners; the reported value of which ranged from zero to one hundred fifty. It is not possible to determine the veracity of any of the values for this category, nor their representativeness regarding the population from which the sample was drawn. The values at the topmost end of the range of values reported for
Number of Female Sexual Partners were therefore not removed from the analysis, although they could be considered outliers.

In summary, this chapter described the research design of this study, including the development of an instrument to test the two hypotheses of this study. Successful development of the instrument required the integration of the constructs of the Theory of Planned Behavior, including Intentions to Try MHC and Intentions regarding Condom Use in Conjunction with MHC, into an anonymous online survey for male students at Kent State University. The results of the survey development phase of this study suggest that an effective instrument to test the hypotheses was produced, which was reliable and consistent with the study’s methodology.
CHAPTER IV
RESULTS
Final Data Collection

On April of 17th, 2007 an invitation to participate in the final survey was sent out
to one thousand KSU main campus e-mail addresses (see Appendix E). A second
reminder invitation was sent to potential participants on April of 29th, 2007 (see
Appendix F). The message was sent from a valid individual KSU e-mail address to avoid
the appearance of SPAM. The invitation included an introduction to the survey, as well
as a description of an incentive, which was being offered to participants. The incentive
consisted of entry into a lottery paying two-hundred dollars or two concert tickets for the
completion of the survey. Twelve e-mails were received listing the message as
undeliverable. To replace the non-functioning addresses an additional twelve e-mail
addresses were randomly selected from the list of remaining e-mail addresses and sent
the invitation message.

A total of two hundred sixty-five individuals logged into the final version of the
online survey; two hundred five of these individuals completed the survey by reaching
the final page. Not all of the two hundred five individuals who finished the survey
responded to all of the items contained in the survey. This represented a response rate of
twenty percent of the one thousand individuals originally invited to complete the survey.
Eighteen individuals selected the quit option and logged out of the survey prior to
reaching the final page; the majority (8 individuals) quit on the seventh page of the eight
page survey. The remaining individuals who logged into the survey exited without selecting the quit option.

An analysis of the surveys reliability produced a Cronbach’s $\alpha = 0.575$ for all eighty-three multiple choice items in the survey and a Cronbach’s $\alpha = 0.844$ for the standardized items. The fifty-four items in the multiple regression analyses produced a Cronbach’s $\alpha = 0.644$ and Cronbach’s $\alpha = 0.888$ for the standardized items. The Cronbach’s $\alpha = 0.644$ for the items in the multiple regression analyses increased to $\alpha = 0.895$ when the survey item referring to the total number of female sexual partners a participants reported having was removed.

The years of birth reported by participants who began the survey ranged from 1950 to 1988. The majority of participants were born in the 1980s; the most (18.2 %) having been born in 1985. Table 3 represents descriptive data on the demographic composition of the individuals who responded to the survey. As seen in Table 3, the majority (73%) of participants were full time undergraduate students. This was lower than the actual 2006 ratio of eighty percent undergraduates to twenty percent graduate students (KSU, 2006). Most individuals who completed the survey reported being unemployed (33%) followed closely by part-time employment in the service industry (28%). The least common forms of employment were in manufacturing jobs, whether part-time (3.8%) or full-time (1%). The majority of survey respondents identified themselves as Caucasian (90%); this was higher than the 2006 percent of eighty-three point seven percent Caucasian enrolled at KSU. Representation of African-American (2.7%), Hispanic/Latino (1.9%), and Asian (2.7%) were all also higher than the 2006
student profile of Kent (KSU, 2006). Fill-in responses for the item on ethnicity included Arab and bi-racial categories; however the “other” category represented a much smaller percentage in this sample than it did in the 2006 profile (KSU, 2006). Catholic (29%) and Christian Non-Catholic (37%) were the most common religions participants identified as their own. The next most common religion they identified was Atheism. Responding to a question about whether or not they considered themselves “non-practicing” or “practicing” with regards to their religion, participants were slightly more likely to be non-practicing (55.7%).
<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Academic Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time undergrad</td>
<td>192</td>
<td>73.00</td>
</tr>
<tr>
<td>Part-time undergrad</td>
<td>17</td>
<td>6.46</td>
</tr>
<tr>
<td>Full-time graduate</td>
<td>38</td>
<td>14.45</td>
</tr>
<tr>
<td>Part-time graduate</td>
<td>16</td>
<td>6.08</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time service</td>
<td>19</td>
<td>7.22</td>
</tr>
<tr>
<td>Part-time service</td>
<td>73</td>
<td>27.76</td>
</tr>
<tr>
<td>Full-time manufacturing</td>
<td>3</td>
<td>1.14</td>
</tr>
<tr>
<td>Part-time manufacturing</td>
<td>10</td>
<td>3.80</td>
</tr>
<tr>
<td>Full-time office/profess.</td>
<td>24</td>
<td>9.13</td>
</tr>
<tr>
<td>Part-time office/profess.</td>
<td>48</td>
<td>18.25</td>
</tr>
<tr>
<td>Not employed</td>
<td>86</td>
<td>32.70</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>7</td>
<td>2.68</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>237</td>
<td>90.80</td>
</tr>
<tr>
<td>Latino</td>
<td>5</td>
<td>1.92</td>
</tr>
<tr>
<td>Asian</td>
<td>7</td>
<td>2.68</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>1.92</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catholic</td>
<td>77</td>
<td>29.39</td>
</tr>
<tr>
<td>Christian Non-Catholic</td>
<td>98</td>
<td>37.40</td>
</tr>
<tr>
<td>Hindu</td>
<td>2</td>
<td>0.76</td>
</tr>
<tr>
<td>Muslim</td>
<td>4</td>
<td>1.53</td>
</tr>
<tr>
<td>Buddhist</td>
<td>7</td>
<td>2.67</td>
</tr>
<tr>
<td>Atheist</td>
<td>29</td>
<td>11.07</td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
<td>9.16</td>
</tr>
<tr>
<td>Judaism</td>
<td>5</td>
<td>1.91</td>
</tr>
<tr>
<td>Agnostic</td>
<td>16</td>
<td>6.11</td>
</tr>
<tr>
<td><strong>Religious Practice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practicing</td>
<td>108</td>
<td>42.35</td>
</tr>
<tr>
<td>Non-Practicing</td>
<td>147</td>
<td>57.65</td>
</tr>
</tbody>
</table>
The majority (61%) of individuals reported that they were making less than ten-thousand dollars a year. Less than five percent of the individuals reported incomes greater than fifty-thousand dollars a year. As shown in Table 4 the majority (42%) of individuals had less than one thousand dollars in savings at the time of the survey; thirty percent reported having greater than ten thousand dollars in debt. Table 4 shows the amount of personal savings participants reported. Half of the individuals reported having less than one thousand dollars in savings. Thirty percent reported greater than one thousand dollars in savings, but less than five thousand.

Table 4

<table>
<thead>
<tr>
<th>SES Indicators</th>
<th>Variable</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>$10,000 or less</td>
<td>160</td>
<td>61.07</td>
</tr>
<tr>
<td></td>
<td>$10,001 to $20,000</td>
<td>58</td>
<td>22.14</td>
</tr>
<tr>
<td></td>
<td>$20,001 to $30,000</td>
<td>18</td>
<td>6.87</td>
</tr>
<tr>
<td></td>
<td>$30,001 to $40,000</td>
<td>7</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>$40,001 to $50,000</td>
<td>6</td>
<td>2.29</td>
</tr>
<tr>
<td></td>
<td>$50,001 to $100,000</td>
<td>10</td>
<td>3.82</td>
</tr>
<tr>
<td></td>
<td>$100,000 or greater</td>
<td>3</td>
<td>1.15</td>
</tr>
<tr>
<td>Debt</td>
<td>Less than $1,000 in debt</td>
<td>112</td>
<td>42.75</td>
</tr>
<tr>
<td></td>
<td>Less than $5,000, greater than $1,000 in debt</td>
<td>38</td>
<td>14.50</td>
</tr>
<tr>
<td></td>
<td>Less than $10,000, greater than $5,000 in debt</td>
<td>34</td>
<td>12.98</td>
</tr>
<tr>
<td></td>
<td>Greater than $10,000 in debt</td>
<td>78</td>
<td>29.77</td>
</tr>
<tr>
<td>Savings</td>
<td>Less than $1,000 in savings</td>
<td>132</td>
<td>50.19</td>
</tr>
<tr>
<td></td>
<td>Less than $5,000, greater than $1,000 in savings</td>
<td>79</td>
<td>30.04</td>
</tr>
<tr>
<td></td>
<td>Less than $10,000, greater than $5,000 in savings</td>
<td>22</td>
<td>8.37</td>
</tr>
<tr>
<td></td>
<td>Greater than $10,000 in savings</td>
<td>30</td>
<td>11.41</td>
</tr>
</tbody>
</table>

The results of the Moral Profile were examined through descriptive statistics both as individual items and a complete scale. Each individual item reflected values from one to five corresponding to the participants reporting that they found each behavior
“completely unacceptable” (1) to “completely acceptable” (5). As shown in the Table 5, the Moral Profile scale, which had a possible range of four to twenty, had an actual range of four to sixteen, with mean of eleven point one.

Table 5

<table>
<thead>
<tr>
<th>Moral Profile</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morality Score</td>
<td>11.48</td>
<td>3.34</td>
</tr>
<tr>
<td>Moral Stance Premarital Sex</td>
<td>4.19</td>
<td>1.06</td>
</tr>
<tr>
<td>Moral Stance Infidelity</td>
<td>1.63</td>
<td>.75</td>
</tr>
<tr>
<td>Moral Stance Same Sex Relations</td>
<td>3.27</td>
<td>1.61</td>
</tr>
<tr>
<td>Moral Stance Multiple Partners</td>
<td>2.42</td>
<td>1.07</td>
</tr>
</tbody>
</table>

In addition to items about economic, ethnic, religious practice and moral beliefs, individuals completing the survey were asked about their marital and dating status (Table 6). A majority of participants were single and had never been married (82.6%). Approximately half of respondents identified themselves as being in a committed relationship (51.1%). Participants were asked to identify which sexual behaviors they had engaged in from a list of eleven specific behaviors. These responses were used to calculate sexual experience scores. Reported scores ranged from zero to eleven, which reflected the total possible range for the scores. The mean score of the sexual experience score was six point four. Responses to items about the sexual partners with whom respondents reported having any sexual contact were used to create sexual identity labels. Participants who reported engaging in sexual contact with exclusively female partners were labeled heterosexual, exclusively male partners as homosexual, both male and female partners as bisexual, and those who reported no sexual partners were labeled unidentified (Table 6).
Table 6

**Partner Status**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>24</td>
<td>9.72</td>
</tr>
<tr>
<td>Divorced</td>
<td>5</td>
<td>2.02</td>
</tr>
<tr>
<td>Single never married</td>
<td>218</td>
<td>88.26</td>
</tr>
<tr>
<td><strong>Relationship Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relationship with one person to whom I am faithful</td>
<td>135</td>
<td>54.66</td>
</tr>
<tr>
<td>not currently dating</td>
<td>85</td>
<td>34.41</td>
</tr>
<tr>
<td>currently dating, but not committed to one person</td>
<td>27</td>
<td>10.93</td>
</tr>
<tr>
<td><strong>Sexual Identity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>218</td>
<td>82.58</td>
</tr>
<tr>
<td>Homosexual</td>
<td>4</td>
<td>1.52</td>
</tr>
<tr>
<td>Bi</td>
<td>14</td>
<td>5.30</td>
</tr>
<tr>
<td>Unidentified</td>
<td>28</td>
<td>10.61</td>
</tr>
</tbody>
</table>

There were five items which specifically addressed each individual’s history and intention regarding both biological and adoptive children (Table 7). There was one value of fifty-five reported for the desired number of children; the next highest number of desired biological children was five. The final item in this group of questions asked the participants to identify the importance having their own biological children at some point in the future. The majority of responses (62%) stated future childbearing was of “great importance”. Very few individuals were “unsure” regarding (4%) the importance of childbearing and only ten percent of the respondents considered future childbearing to be of “no importance” (Table 8).

Table 7

**Childbearing Profile**

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Number of Biological Children</td>
<td>.12</td>
<td>.55</td>
</tr>
<tr>
<td>Current Number of Adopted or Step Children</td>
<td>.03</td>
<td>.24</td>
</tr>
<tr>
<td>Desired Number of Adopted or Step Children</td>
<td>.29</td>
<td>.63</td>
</tr>
<tr>
<td>Desired Number of Biological Children</td>
<td>2.09</td>
<td>3.66</td>
</tr>
</tbody>
</table>
Table 8
*Importance of Bearing Children*

<table>
<thead>
<tr>
<th>Importance of Bearing Children</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Importance</td>
<td>24</td>
<td>10.26</td>
</tr>
<tr>
<td>Some Importance, Undecided</td>
<td>54</td>
<td>23.08</td>
</tr>
<tr>
<td>Great Importance</td>
<td>145</td>
<td>61.97</td>
</tr>
<tr>
<td>Unsure</td>
<td>11</td>
<td>4.70</td>
</tr>
</tbody>
</table>

In order to establish a hierarchal order for responses to the questions about each participant’s experience with different contraceptive methods the original responses were recoded. This recoding was intended to facilitate the development of a scale reflecting each participant’s overall level of contraceptive experience and to allow direct comparisons across methods. The recoded values ranged from zero to four, with four representing the highest level of contact (“current use”). Table 9 shows the mean scores for each contraceptive method based on the recoded scores. The highest average experience scores for a contraceptive method were reported for male condoms \( M=2.93 \), followed by oral contraceptive pills \( M=2.36 \). Participants responding to the final survey had the least amount of experience with the cervical cap \( M=.05 \). Ninety-eight individuals responded to a fill-in section at the end of the contraceptive use questions allowing them to provide information about contraceptives experience with additional methods. The most common fill-in response was “none”. The method most commonly named in the fill-in section was “spermicide”. A complete list of the responses to the fill-in option is provided in Appendix G. The recoded responses to the eight contraceptive use items were added together to generate an overall Contraceptive Use Score for each individual. This score had a potential range of zero to thirty-two; however the observed
range was zero to eighteen. As shown in Table 9, the mean of the Contraceptive Use Scale was eight point eight.

Table 9
Contraceptive Use Items

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Condom</td>
<td>2.93</td>
<td>1.39</td>
</tr>
<tr>
<td>Cervical Cap</td>
<td>.05</td>
<td>.37</td>
</tr>
<tr>
<td>Oral Contraceptive Pill</td>
<td>2.36</td>
<td>1.71</td>
</tr>
<tr>
<td>Contraceptive Patch</td>
<td>.38</td>
<td>.95</td>
</tr>
<tr>
<td>Nuva Ring</td>
<td>.16</td>
<td>.71</td>
</tr>
<tr>
<td>Periodic Abstinence</td>
<td>.41</td>
<td>1.05</td>
</tr>
<tr>
<td>Abstinence</td>
<td>1.21</td>
<td>1.51</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>1.31</td>
<td>1.59</td>
</tr>
<tr>
<td>Contraceptive Use Scale</td>
<td>8.8</td>
<td>3.86</td>
</tr>
</tbody>
</table>

The first construct of the Theory of Planned Behavior (TPB) which was introduced in the survey was Normative Beliefs. The first four questions pertaining to Normative Beliefs asked participants to identify whether or not they believed each of four normative groups would be supportive of their using MHC. A second set of four questions corresponding to the same normative groups asked participants about their Motivation to Comply with the position of each of these groups, regarding MHC. Higher scores for the Normative Belief items corresponded with greater support for MHC use and higher scores for the Motivation to Comply items indicated a stronger intention to comply with the group’s beliefs about MHC. The responses to the items about Normative Beliefs and the corresponding Motivation to Comply items were multiplied by one another in order to calculate Normative Belief Scores for each of the four normative groups. Table 10 shows the means of the scores calculated for each of the groups. The possible range for each score was one to twenty-five. The observed range for each of the
groups was the same as the theoretical range. The highest average normative belief score was for the normative group representing Partner(s).

Table 10

<table>
<thead>
<tr>
<th>Normative Beliefs</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Professional</td>
<td>14.89</td>
<td>5.15</td>
</tr>
<tr>
<td>Friends</td>
<td>8.13</td>
<td>4.78</td>
</tr>
<tr>
<td>Partner(s)</td>
<td>10.87</td>
<td>6.07</td>
</tr>
<tr>
<td>Family</td>
<td>9.63</td>
<td>5.97</td>
</tr>
</tbody>
</table>

The second construct of the Theory of Planned Behavior (TPB) presented to the participants was Behavioral Beliefs. The first four Behavioral Belief questions asked participants how strongly they agreed with statements regarding select characteristics of MHC. The four characteristics were: the ability to prevent pregnancy, eliminating the need to trust a female partner to truthfully and successfully use contraception, eliminating the need to use condoms to prevent pregnancy, and a lack of protection against sexually transmitted infections. A second set of four questions asked each individual to evaluate whether they agreed that each of those four characteristics was either positive or negative. Higher scores for Behavior Belief items corresponded with greater belief in each characteristic of MHC described. Higher scores for the evaluation of these beliefs indicated increasing agreement that the characteristic was positive in nature, except in the case of Sexually Transmitted Infections. The failure of MHC to protect against STI transmission was identified as “bad” and higher scores for that item indicated increasing agreement that the characteristic was negative in nature. The responses to the items about Behavioral Beliefs and Evaluation Beliefs were multiplied in order to calculate Behavioral Belief Scores for each of the Characteristics of MHC. Table 11 shows the
means of the scores calculated for each of the Behavioral Beliefs. The possible range for each score was one to twenty-five. The actual ranges for each of the characteristics were the same as the theoretical ranges. The highest average was for the Behavioral Belief regarding MHC not protecting against STIs and the lowest related to MHC eliminating the need to rely on Condoms for pregnancy prevention.

Table 11

<table>
<thead>
<tr>
<th>Behavioral Beliefs</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy</td>
<td>16.40</td>
<td>5.98</td>
</tr>
<tr>
<td>Trust</td>
<td>13.30</td>
<td>7.21</td>
</tr>
<tr>
<td>Condoms</td>
<td>15.21</td>
<td>7.82</td>
</tr>
<tr>
<td>STI</td>
<td>18.81</td>
<td>6.96</td>
</tr>
</tbody>
</table>

The construct of Perceived Behavioral Control was measured several ways. Nineteen individual items related to PBC were included in the survey. Four subgroups of these PBC items were used to generate scores that were averaged to represent each of the four dimensions, or types, of PBC. The first group identified simply as General PBC included items which related to action steps and personal characteristics which would be required in order to acquire MHC. The second group, PBC Cost, was comprised of three items which related to how much individuals would be willing to pay for MHC. The third groups, PBC Side Effects, consisted of five items which discussed individuals’ abilities to tolerate potential side effects of MHC use. The Fourth group, PBC Method, included three items which asked participants about their ability to apply the potential methods of administration for MHC. Scores for each item ranged from one to five; higher numbers corresponded with a greater likelihood that the individual would comply with, perform, or tolerate whatever action or effect was described (Table 12). The
highest PBC mean was observed for the item related to the need to acquire a physical examination in order to obtain MHC. This item was the component of the PBC scale, which had the highest mean of all the subgroups, as shown in Table 12.

Table 12
*Perceived Behavioral Control*

<table>
<thead>
<tr>
<th>Perceived Behavioral Control</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBC Information</td>
<td>3.76</td>
<td>1.41</td>
</tr>
<tr>
<td>PBC Clinical Visit</td>
<td>3.35</td>
<td>1.41</td>
</tr>
<tr>
<td>PBC Female Provider</td>
<td>4.11</td>
<td>1.10</td>
</tr>
<tr>
<td>PBC Male Provider</td>
<td>4.13</td>
<td>1.13</td>
</tr>
<tr>
<td>PBC Morality of BC</td>
<td>4.05</td>
<td>1.26</td>
</tr>
<tr>
<td>PBC Physical</td>
<td>4.12</td>
<td>1.20</td>
</tr>
<tr>
<td>PBC Blood Sample</td>
<td>3.94</td>
<td>1.26</td>
</tr>
<tr>
<td>PBC Semen Sample</td>
<td>3.96</td>
<td>1.18</td>
</tr>
<tr>
<td>PBC 10$ month</td>
<td>3.91</td>
<td>1.27</td>
</tr>
<tr>
<td>PBC 25$ month</td>
<td>2.96</td>
<td>1.28</td>
</tr>
<tr>
<td>PBC 50$ month</td>
<td>1.88</td>
<td>1.06</td>
</tr>
<tr>
<td>PBC Mood Swings</td>
<td>2.75</td>
<td>1.19</td>
</tr>
<tr>
<td>PBC Testes</td>
<td>2.43</td>
<td>1.19</td>
</tr>
<tr>
<td>PBC Weight Gain</td>
<td>2.36</td>
<td>1.17</td>
</tr>
<tr>
<td>PBC Libido Up</td>
<td>3.87</td>
<td>1.20</td>
</tr>
<tr>
<td>PBC Libido Down</td>
<td>2.12</td>
<td>1.01</td>
</tr>
<tr>
<td>PBC Injection</td>
<td>2.95</td>
<td>1.45</td>
</tr>
<tr>
<td>PBC Pill</td>
<td>3.63</td>
<td>1.30</td>
</tr>
<tr>
<td>PBC Patch</td>
<td>3.04</td>
<td>1.34</td>
</tr>
<tr>
<td>PBC Average</td>
<td>3.86</td>
<td>.99</td>
</tr>
<tr>
<td>PBC Cost Average</td>
<td>2.92</td>
<td>1.03</td>
</tr>
<tr>
<td>PBC Side Effect Average</td>
<td>2.71</td>
<td>.87</td>
</tr>
<tr>
<td>PBC Methods Average</td>
<td>3.20</td>
<td>1.13</td>
</tr>
</tbody>
</table>

Dependent Measures

The first dependent variable in this study was Intention to Try MHC. A three-item scale was used to develop a score regarding Individuals’ Intentions to Try MHC. An additional item which asked participants to identify the primary reason they would try MHC appeared immediately after this scale. The question asked participants about their
primary motivation for MHC use and included a list of possible reasons, as well as a fill-in option should individuals have reasons other than those provided. The most common reason selected was “I would like to have another method of birth control to use in addition to methods I or my partner(s) are already using” (55%); the least commonly selected reason was “I do not trust my female partner(s) to be honest about whether or not they are using birth control” (2%)(Table 13). Only nine fill-in options were submitted (Appendix G).

Table 13

<table>
<thead>
<tr>
<th>Primary Reason to Try MHC</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not trust female partner(s) to use BC properly</td>
<td>6</td>
<td>2.97</td>
</tr>
<tr>
<td>Do not trust female partner(s) to be honest about BC Use</td>
<td>4</td>
<td>1.98</td>
</tr>
<tr>
<td>Would like to have another method of BC to use in addition to current methods</td>
<td>111</td>
<td>54.95</td>
</tr>
<tr>
<td>Would like to share the cost of BC with partner(s)</td>
<td>10</td>
<td>4.95</td>
</tr>
<tr>
<td>Would like partner(s) to stop using BC</td>
<td>18</td>
<td>8.91</td>
</tr>
<tr>
<td>Like to avoid using condoms</td>
<td>44</td>
<td>21.78</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td>4.46</td>
</tr>
</tbody>
</table>

The three items related to Intention to Try MHC which were used to generate a score regarding participants’ Intentions related to MHC included: an item about desire to learn about MHC, an item about the importance of developing new contraception like MHC for men, and an item regarding the participants’ Intention to Try MHC were it available as an FDA approved method of Birth Control. Scores for each item ranged from five to one. Scores of five corresponded with the individual identifying themselves as either strongly agreeing with the need to learn about MHC, the need to develop more MBC, or indicating that they considered themselves very likely to try MHC if it were available. As shown in Table 14 the highest mean was observed for the item asking
about the need to Develop New Forms of Contraception for Men, followed by Learning about MHC and then Intention to Try MHC.

Table 14

<table>
<thead>
<tr>
<th>Intention Regarding MHC</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning About MHC</td>
<td>3.69</td>
<td>1.32</td>
</tr>
<tr>
<td>Developing Male Birth Control</td>
<td>4.32</td>
<td>.88</td>
</tr>
<tr>
<td>Intention to Try MHC</td>
<td>3.59</td>
<td>1.32</td>
</tr>
<tr>
<td>Intention MHC Score Average</td>
<td>3.8676</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The final two questions in the survey represented the second dependent variable in the study and dealt with behavior related to condom use in conjunction with MHC. One question asked subjects directly about their intention to use condoms while using MHC. A second item asked the participants if they believed the availability of MHC would increase or decrease their current pattern of condom use. Each of these two items employed scales of one to five. Five represented an intention to use condoms with MHC or to increase current condom use in response to the availability of MHC. In these two items one represented an intention not to use condoms with MHC and a decrease in current a participant’s current rate of condom use. The average of these two items became a score related to overall Intention to Use Condoms in Conjunction with MHC. As shown in Table 15 the means for the two items and the average of the two item scale were all below three, indicating a tendency toward reduced overall condom use and intentions not use of condoms with MHC.
Table 15
*Intentions Regarding Condom Use with MHC*

<table>
<thead>
<tr>
<th>Intention</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom Use With MHC</td>
<td>2.89</td>
<td>1.44</td>
</tr>
<tr>
<td>Anticipated Change in Condom Behavior</td>
<td>2.27</td>
<td>.831</td>
</tr>
<tr>
<td>Intention Condoms Score Avg.</td>
<td>2.58</td>
<td>.963</td>
</tr>
</tbody>
</table>

Multiple Regression Analyses

Multiple regression analyses were used to test each of the two hypotheses in this study. The first hypothesis examined the relationships between the independent variables and the first dependent variable: Intention to Use MHC. The second hypothesis examined the relationships between the independent variables and the second dependent variable: Intention to Use Condoms in Conjunction with MHC. The original multivariate models included thirteen independent variables. This model was modified in order to accommodate the expansion of the PBC variable into four separate variables (Table 16). The sixteen independent variables entered into each regression analysis were identical for both of the two analyses.
Table 16

**Regression Model Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Items and Calculations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Female Sexual Partners</td>
<td>12b</td>
</tr>
<tr>
<td>Morality Scale</td>
<td>Avg. (13+14+15+16)</td>
</tr>
<tr>
<td>Importance of Bearing Children</td>
<td>21</td>
</tr>
<tr>
<td>Contraceptive Use Scale</td>
<td>Avg. (22+23+24+25+26+27+28+29)</td>
</tr>
<tr>
<td>Normative Score Medical Professionals</td>
<td>31*35</td>
</tr>
<tr>
<td>Normative Score Friends</td>
<td>32*36</td>
</tr>
<tr>
<td>Normative Score Partners</td>
<td>33*37</td>
</tr>
<tr>
<td>Normative Score Family</td>
<td>34*38</td>
</tr>
<tr>
<td>Behavioral Score Pregnancy</td>
<td>39*43</td>
</tr>
<tr>
<td>Behavioral Score Trust</td>
<td>40*44</td>
</tr>
<tr>
<td>Behavioral Score Condoms</td>
<td>41*45</td>
</tr>
<tr>
<td>Behavioral Score STIs</td>
<td>42*46</td>
</tr>
<tr>
<td>Perceived Behavioral Control General</td>
<td>Avg. (47+48+49+50+51+52+53+54)</td>
</tr>
<tr>
<td>Perceived Behavioral Control Cost</td>
<td>Avg. (55+56+57)</td>
</tr>
<tr>
<td>Perceived Behavioral Control Side Effects</td>
<td>Avg. (58+59+60+61+62)</td>
</tr>
<tr>
<td>Perceived Behavioral Control Methods</td>
<td>Avg. (63+64+65)</td>
</tr>
<tr>
<td>Intention to Try MHC</td>
<td>Avg. (66+67+68)</td>
</tr>
<tr>
<td>Intention to Use Condoms in Conjunction with MHC</td>
<td>Avg. (69+70)</td>
</tr>
</tbody>
</table>

One of the highest Pearson’s Correlations existed between two variables representing Normative Beliefs ($r > .500$). In two cases between variables representing:

General PBC and Method PBC correlations were $r > .600$ (Table 17). The highest Pearson’s Correlation score in both models existed between a dependent variable and the independent variable. In addition to the correlations between Independent variables, the relationship between the two dependent variables was examined using Pearson’s correlation. The correlation between Intention to Use MHC and Intention to Use Condoms in Conjunction with MHC was low ($r = -.033$), indicating the hypotheses functioned to test relationships to two discrete constructs (Table 17).

Multicollinearity did not appear to be an issue in either of these two regression analyses. All VIF values were below four; the highest VIF value across all variables in
either regression analysis was $VIF = 2.18$. There were no tolerance values below point two for any variable in either model; the lowest tolerance value in either model was Tolerance = 0.47 for General PBC in the third model of the second regression.
Table 17
Correlation Matrix

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention Condoms</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With MHC</td>
<td>-0.08</td>
<td>-0.05</td>
<td>-0.02</td>
<td>-0.07</td>
<td>0.08</td>
<td>0.11</td>
<td>-0.08</td>
<td>0.06</td>
<td>-0.18</td>
<td>-0.27</td>
<td>-0.67</td>
<td>-0.04</td>
<td>-0.01</td>
<td>0.06</td>
<td>-0.05</td>
<td>-0.01</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.00</td>
<td>-0.09</td>
<td>0.09</td>
<td>0.16</td>
<td>-0.05</td>
<td>-0.07</td>
<td>-0.16</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.03</td>
<td>0.04</td>
<td>0.09</td>
<td>-0.09</td>
<td>-0.10</td>
<td>-0.10</td>
<td>-0.06</td>
<td>-0.09</td>
<td></td>
</tr>
<tr>
<td>Sexual Partners</td>
<td>1.00</td>
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<td>-0.02</td>
<td>0.04</td>
<td>-0.25</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.16</td>
<td>0.01</td>
<td>0.07</td>
<td>-0.06</td>
<td>-0.09</td>
<td>-0.09</td>
<td></td>
</tr>
<tr>
<td>Importance Bearing Children</td>
<td>1.00</td>
<td>0.11</td>
<td>-0.03</td>
<td>-0.05</td>
<td>-0.08</td>
<td>-0.11</td>
<td>0.13</td>
<td>0.00</td>
<td>-0.04</td>
<td>-0.10</td>
<td>0.22</td>
<td>0.14</td>
<td>0.12</td>
<td>0.17</td>
<td>0.12</td>
<td>0.12</td>
<td>-0.09</td>
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<tr>
<td>Moral</td>
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<td>0.54</td>
<td>0.42</td>
<td>0.32</td>
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<td>0.27</td>
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<td>0.30</td>
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<td>Scale</td>
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<td>0.11</td>
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<tr>
<td>Contra. Scale</td>
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</tr>
<tr>
<td>Norm. Med. Prof.</td>
<td>1.00</td>
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<td>0.54</td>
<td>0.42</td>
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<td>0.15</td>
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<td>0.43</td>
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<tr>
<td>Norm. Friends</td>
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<td>0.08</td>
<td>0.18</td>
<td>0.08</td>
<td>0.11</td>
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<td>0.24</td>
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<td>Norm. Partner</td>
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<tr>
<td>Norm. Family</td>
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<tr>
<td>Behavioral Pregnancy</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC General</td>
<td>1.00</td>
<td>-0.05</td>
<td>-0.08</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.05</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC Cost</td>
<td>1.00</td>
<td>1.00</td>
<td>0.59</td>
<td>0.60</td>
<td>0.67</td>
<td>0.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC Side Effect</td>
<td>1.00</td>
<td>0.61</td>
<td>0.60</td>
<td>0.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PBC Methods</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intention To Try MHC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Intention Condoms With MHC: Intention to use condoms with a partner's mother's choice.
Female Sexual Partners: Importance of having female sexual partners.
Importance Bearing Children: Importance of bearing children.
Moral Scale: Moral scale.
Contra. Scale: Contraceptive scale.
Norm. Med. Prof.: Norm of medical professionals.
Norm. Friends: Norm of friends.
Norm. Partner: Norm of partner.
Norm. Family: Norm of family.
Behavioral Pregnancy: Behavioral pregnancy.
Behavioral Trust: Behavioral trust.
Behavioral Condoms: Behavioral condom use.
Behavioral STI: Behavioral STI.
PBC General: PBC general.
PBC Cost: PBC cost.
PBC Side Effect: PBC side effect.
PBC Methods: PBC methods.
Intention To Try MHC: Intention to try MHC.
In the first analysis to test hypothesis one, the criterion variable was the average of the three items representing Intention to Try MHC. A stepwise linear regression produced four models for the first analysis. The $R^2 = 0.509$ for the first step of the regression and $R^2 = 0.628$ for the forth and final step of the regression. All models were significant at the $p < 0.0005$ level ($F_{4,190} = 80.33$). The Adjusted $R$ Square for the first step was $R^2 = 0.507$ and $R^2 = 0.621$ for the final step, the proximity of these values to the unadjusted $R$ Square values indicated the models were stable (Table 18).

As shown in Table 18 below, this model included the variables related to: General Perceived Behavioral Control, Perceived Behavioral Control regarding Methods of Administration, Behavioral Beliefs regarding Pregnancy, and Normative Beliefs regarding Partners. All variables in all models were significant at the $p < 0.05$ level.
The regression equation for the final model was:

\[ Y_{\text{Intention to Try MHC}} = b_{\text{PBC General}}X_{\text{Behavioral Belief Condoms}} + b_{\text{PBC Methods}}X_{\text{PBC Methods}} + b_{\text{Behavioral Belief Pregnancy}}X_{\text{Behavioral Belief Pregnancy}} + b_{\text{Normative Belief Partner(s)}}X_{\text{Normative Belief Partner(s)}} + e \]

\[ Y_{\text{Intention to Try MHC}} = \text{Intention to Try MHC} \]

\[ b_{\text{PBC General}} = \text{Regression Coefficient PBC General} \]

\[ X_{\text{Behavioral Belief Condoms}} = \text{PBC General} \]

\[ b_{\text{PBC Methods}} = \text{Regression Coefficient PBC Perceived Behavioral Control regarding Methods of Administration} \]

\[ X_{\text{PBC Methods}} = \text{PBC Perceived Behavioral Control regarding Methods of Administration} \]

\[ b_{\text{Behavioral Belief Pregnancy}} = \text{Regression Coefficient PBC Behavioral Beliefs regarding Pregnancy} \]

\[ X_{\text{Behavioral Belief Pregnancy}} = \text{Behavioral Beliefs regarding Pregnancy} \]

\[ b_{\text{Normative Belief Partner(s)}} = \text{Regression Coefficient Normative Beliefs Regarding Partners} \]

\[ X_{\text{Normative Belief Partner(s)}} = \text{Normative Beliefs Regarding Partners} \]

\[ e = \text{error} \alpha \]

The strongest predictor in the models was General Perceived Behavioral Control, which alone accounted for approximately fifty percent of the variance in Intention to Try MHC. Examining standardized Beta coefficients (Table 18) General PBC was the strongest predictor variable in all models; however its relative predictive ability was close to that of PBC methods; although it was nearly twice as powerful as Behavioral Beliefs related to pregnancy.
Table 18

First Regression Intention to Try MHC

Summary of Stepwise Regression Analysis for Variables Predicting Intention to Try MHC
(n=195)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>P</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC General</td>
<td>0.73</td>
<td>0.05</td>
<td>0.71</td>
<td>0.00</td>
<td>0.509</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC General</td>
<td>0.50</td>
<td>0.07</td>
<td>0.49</td>
<td>0.00</td>
<td>0.571</td>
</tr>
<tr>
<td>PBC Methods</td>
<td>0.30</td>
<td>0.06</td>
<td>0.33</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC General</td>
<td>0.43</td>
<td>0.07</td>
<td>0.42</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PBC Methods</td>
<td>0.27</td>
<td>0.05</td>
<td>0.31</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Behavioral Belief</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.604</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>0.03</td>
<td>0.01</td>
<td>0.20</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC General</td>
<td>0.36</td>
<td>0.07</td>
<td>0.36</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PBC Methods</td>
<td>0.28</td>
<td>0.05</td>
<td>0.32</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Behavioral Belief</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>0.03</td>
<td>0.01</td>
<td>0.18</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Normative Belief Partner(s)</td>
<td>0.03</td>
<td>0.01</td>
<td>0.17</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.507$ for Step 1, Adjusted $R^2 = 0.566$ for Step 2, Adjusted $R^2 = 0.598$ for Step 3, Adjusted $R^2 = 0.621$ for Step 4

Regression Diagnostics identified one outlier that fell outside three standard deviations of the dependent variable’s (Intention to Try MHC) predicted distribution in the first regression analysis (Table 19). The center leverage values remained well below point two (Table 20) however, suggesting this outlier’s influence on the model was not substantial. The scatterplot of standardized residuals verses predicted values (fig. 1) indicates the errors in the first regression are not completely homoscedastic; there was a trend in the distribution of points to be more widely dispersed among the lower predicted values of the criterion variable than the higher values, although the tendency is slight. The plot indicates the model also tends to overestimate the low predicted scores and underestimate the high predicted scores for Intention to Try MHC.
Table 19
First Multiple Regression Casewise Diagnostics

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Std. Residual</th>
<th>MHC</th>
<th>Predicted Value</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>189</td>
<td>-3.08</td>
<td>2.33</td>
<td>4.25</td>
<td>-1.92</td>
</tr>
</tbody>
</table>

Dependent Variable: Intention to Try MHC

Table 20
Residuals Statistics First Multiple Regression Analysis

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Value</td>
<td>1.54</td>
<td>5.32</td>
<td>3.86</td>
<td>0.79</td>
</tr>
<tr>
<td>Std. Predicted Value</td>
<td>-2.90</td>
<td>1.82</td>
<td>-0.01</td>
<td>0.99</td>
</tr>
<tr>
<td>Standard Error of Predicted Value</td>
<td>0.05</td>
<td>0.19</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Adjusted Predicted Value</td>
<td>1.45</td>
<td>5.33</td>
<td>3.86</td>
<td>0.80</td>
</tr>
<tr>
<td>Residual</td>
<td>-1.92</td>
<td>1.73</td>
<td>0.01</td>
<td>0.61</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-3.08</td>
<td>2.78</td>
<td>0.01</td>
<td>0.98</td>
</tr>
<tr>
<td>Stud. Residual</td>
<td>-3.18</td>
<td>2.84</td>
<td>0.01</td>
<td>1.00</td>
</tr>
<tr>
<td>Deleted Residual</td>
<td>-2.05</td>
<td>1.80</td>
<td>0.01</td>
<td>0.63</td>
</tr>
<tr>
<td>Stud. Deleted Residual</td>
<td>-3.26</td>
<td>2.89</td>
<td>0.01</td>
<td>1.01</td>
</tr>
<tr>
<td>Mahal. Distance</td>
<td>0.34</td>
<td>17.24</td>
<td>3.98</td>
<td>3.26</td>
</tr>
<tr>
<td>Cook's Distance</td>
<td>0.00</td>
<td>0.14</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Centered Leverage Value</td>
<td>0.00</td>
<td>0.09</td>
<td>0.02</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Dependent Variable: Intention to Try MHC
In the second regression analysis, performed to test hypothesis two, the dependent variable was the average of the two items representing Intentions to Use Condoms in Conjunction with MHC. Three models were generated through the stepwise linear regression. The R Square for the third step of the second regression analysis was $R^2 = 0.496$ ($F_{3,191} = 62.535, p < 0.0005$). The Adjusted $R$ Square for this step was $R^2 = 0.488$.

*Figure 1. Scatterplot of Standardized Residuals vs. Standardized Predicted Values for Intention to Try MHC*
The regression equation was:

\[ Y \text{ Intention to Use Condoms with MHC} = b \text{ Behavioral Belief Condoms} X \text{ Behavioral Belief Condoms} + b \text{ Normative Belief Medical Professional} X \text{ Normative Belief Medical Professional} + b \text{ PBC Methods} X \text{ PBC Methods} + e \]

\[ Y \text{ Intention to Use Condoms with MHC} = \text{Intention to Use Condoms in Conjunction with MHC} \]

\[ b \text{ Behavioral Belief Condoms} = \text{Regression Coefficient Behavioral Belief Condoms} \]

\[ X \text{ Behavioral Belief Condoms} = \text{Behavioral Belief Condoms} \]

\[ b \text{ Normative Belief Medical Professional} = \text{Regression Coefficient Normative Belief Medical Professional} \]

\[ X \text{ Normative Belief Medical Professional} = \text{Normative Belief Medical Professional} \]

\[ b \text{ PBC Methods} = \text{Regression Coefficient PBC Methods} \]

\[ X \text{ PBC Methods} = \text{PBC Methods} \]

\[ e = \text{error} \alpha \]

The three variables included in the final model were: Behavioral Belief Scores regarding Condoms, Normative Belief Scores regarding Medical Professionals, and PBC regarding Methods of Administration. The strongest predictor of Intention to Use Condoms in Conjunction with MHC was the Behavioral Belief Score regarding Condoms variable, which accounted for approximately forty-five percent of the variance in the second dependent variable. However, the relationship between Behavioral Belief Scores regarding Condoms and the criterion variable was inverse, as indicated by its negative beta weight. This represented a decreased Intention to Use Condoms in Conjunction with MHC associated with a stronger likelihood to view “Not needing to use condoms to prevent pregnancy by using Male Hormonal Contraception” as positive. This predictor
variable was more than three times as effective as any of the other predictor variables in the final model, as indicated by the beta weight (Table 21).

Table 21
Second Regression Intention to Use Condoms with MHC
Summary of Stepwise Regression Analysis for Variables Predicting Intention to Use Condoms with MHC (n= 195)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>P</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Belief Condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Belief Condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Belief Condoms</td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.67</td>
<td>0.00</td>
<td>0.451</td>
</tr>
<tr>
<td>Behavioral Belief Condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Belief Condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative Belief Medical Professional</td>
<td>0.04</td>
<td>0.01</td>
<td>0.19</td>
<td>0.00</td>
<td>0.485</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Belief Condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative Belief Medical Professional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC Methods</td>
<td>0.09</td>
<td>0.05</td>
<td>0.11</td>
<td>0.05</td>
<td>0.496</td>
</tr>
</tbody>
</table>

Adjusted R² = 0.448 for Step 1, Adjusted R² = 0.479 for Step 2, Adjusted R² = 0.488 for Step 3

Regression diagnostics revealed no outliers beyond the three standard deviation range for the second regression analysis. The maximum value for Cook’s Distance was well below one, indicating no substantial influence by any cases on the regression coefficients (Cook, 1979) (Table 22). The plot of standardized residuals verses predicted values (fig. 2) indicates the regression analysis met the assumption of homoscedasticity for the second regression analysis, as these was no distinct trends in the distribution of points from left to right. Although the plot indicates a tendency of the model to overestimate the high predicted scores and underestimate the low predicted scores for Intention to Use Condoms in Conjunction with MHC.
Table 22

Residuals Statistics Second Multiple Regression Analysis

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Value</td>
<td>1.23</td>
<td>4.02</td>
<td>2.56</td>
<td>0.68</td>
</tr>
<tr>
<td>Std. Predicted Value</td>
<td>-1.97</td>
<td>2.16</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Standard Error of Predicted Value</td>
<td>0.05</td>
<td>0.18</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Adjusted Predicted Value</td>
<td>1.19</td>
<td>4.05</td>
<td>2.56</td>
<td>0.68</td>
</tr>
<tr>
<td>Residual</td>
<td>-1.49</td>
<td>1.90</td>
<td>0.02</td>
<td>0.68</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-2.17</td>
<td>2.76</td>
<td>0.02</td>
<td>0.99</td>
</tr>
<tr>
<td>Stud. Residual</td>
<td>-2.21</td>
<td>2.79</td>
<td>0.02</td>
<td>1.00</td>
</tr>
<tr>
<td>Deleted Residual</td>
<td>-1.55</td>
<td>1.94</td>
<td>0.02</td>
<td>0.70</td>
</tr>
<tr>
<td>Stud. Deleted Residual</td>
<td>-2.23</td>
<td>2.84</td>
<td>0.02</td>
<td>1.01</td>
</tr>
<tr>
<td>Mahal. Distance</td>
<td>0.06</td>
<td>11.92</td>
<td>2.99</td>
<td>2.12</td>
</tr>
<tr>
<td>Cook's Distance</td>
<td>0.00</td>
<td>0.04</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Centered Leverage Value</td>
<td>0.00</td>
<td>0.06</td>
<td>0.02</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Dependent Variable: Intention to Use Condoms in Conjunction with MHC

Figure 2. Scatterplot of Standardized Residuals vs. Standardized Predicted Values for Intention to Use Condoms in Conjunction with MHC
In summary, two linear stepwise multiple regression analyses were conducted in order to identify the best predictors for final survey participants’ Intentions to Use MHC and their Intentions to Use Condoms in Conjunction with MHC respectively. All predictor variables appearing in the regression models were significant at the $p<.0005$ level. The findings of the first regression analysis supported this study’s first hypothesis that the best predictor of Intention to Use MHC is General PBC. The findings of the second regression analysis however, did not support the study’s second hypothesis regarding Intention to Use Condoms in Conjunction with MHC. In this analysis, Behavioral Beliefs regarding condoms, not the Total Number of Female Sexual Partners participants reported, was the best predictor of Intention to Use Condoms in Conjunction with MHC. The Total Number of Female Sexual Partners did not appear in any of the regression models and had a Pearson’s correlation of only ($r = -0.08$) with the second dependent variable: Intention to Use Condoms in Conjunction with MHC.
CHAPTER V
DISCUSSION

This chapter reviews the findings of the study and places them within the context of the existing research literature. Additionally, implications for health promotion practice are discussed, as well as recommendations for future research. Finally, the strengths and limitations of this study are reviewed.

Recent advances in the development of MHC have brought the WHO Task Force on Methods for the Regulation of Male Fertility’s goals regarding the development of new contraceptives for men closer to realization (WHO, 1979; WHO, 1980; WHO, 1990; WHO, 1996; Waites, 2003). The overarching goal of this study was to develop a more profound understanding of how males would react to the availability of this new contraceptive technology through the application of a health behavior model. Included in that goal was the investigation of what factors were the most powerful predictors of individuals’ Intentions to Try MHC, as well as exploring the impact a Male Hormonal Contraceptive (MHC) would have on condom use.

Some forms of MHC have entered phase II and phase III clinical trials; however, to date, no MHC has been approved for public use by the FDA (WHO, 2002, Waites, 2003, Wu, Farley, Peregoudov, & Waites, 1996, WHO, 1996). After the development of female hormonal contraception, and prior to the recent clinical trials, Male Birth Control (MBC) had been studied as a theoretical concept modeled after female contraceptive methods (Balswick, 1972; Gough, 1979; Jaccard et al, 1981; Marsiglio & Menaghan, 1987; Glasier, 2000). The intent of this research was to base the presentation of MHC
within the study on the most current incarnations of MHC being tested in clinical trials. Previous research examining the knowledge, attitude, and beliefs of males related to MBC and MHC has been atheoretical in nature (Balswick, 1972; Gough, 1979; Jaccard et al, 1981; Marsiglio & Menaghan, 1987; Lye et al, 2003; Heinemann et al, 2005; WHO, 1982; Ringheim, 1995; Brooks, 1998; Martin et al, 2000; Meriggiola, 2002; Weston et al, 2002a, Weston et al, 2002b). To address this limitation in MBC literature, this study employed the constructs of the Theory of Planned Behavior (TPB). TPB has previously been used to study condom use and has been found to be an effective predictor of both condom use intentions and condom use behavior (Albarracin et al, 2001; Bennett, & Bozionelos, 2000; Godin et al, 1996; Sheeran & Taylor, 1999; Sutton et al, 1999).

Participants in this study represented a largely homogenous group demographically. The research presented here sampled exclusively from a population of males, eighteen years of age or older, attending a single public university in the state of Ohio. Although contraceptive research has predominantly focused on female subjects (AGI, 2002), this research utilized an exclusively male sample. Owing to the lack of model based research tools regarding the most recent forms of MHC the first two phases of this research focused on the development and validation of a survey about MHC.

In early research on MHC, demographic characteristics were the variables most commonly examined for their correlation with attitudes toward MBC and MHC. Balswick (1972) found that among lower middle class males, younger men with fewer children were more receptive toward a fictional MBC pill. Permissive attitudes toward abortion and vasectomy had the strongest significant correlations ($r = 0.28$ and $r = 0.25$)
respectively) with a reported willingness to use a MBC pill in a 1979 study of a MBCP (Gough). In a study which included both males and females attending a private university, views about the health risks and the effectiveness of MBC had the two strongest associations with receptivity to a MBCP (Jaccard et al, 1981). Among forty-seven married couples in Ohio, for both males and females, beliefs in more egalitarian sex-roles had the only significant association with greater likelihood of male pill usage (Marsiglio & Menaghan, 1987). In 2000, Martin et al, found that attitudes toward a MHC varied greatly by the location of the study’s participants (Edinburgh, Shanghai, Cape Town, and Hong Kong), familiarity with similar female contraceptive methods, and the mode of administration described for the MBC. Pills were the most widely preferred method for MBC in that study. A large survey involving nine thousand males from nine countries also showed that the acceptability of MHC varied greatly across cultural groups and the modes of administration for a theoretical Male Fertility Control method (Heinemann et. al., 2005). Experience with existing contraceptive methods was assessed in both of these studies and was shown to have significant relationships with the acceptability of theoretical MBC across the groups studied. Similarly, an Australian study found MHC to be most acceptable in the form of an oral pill, followed by a three monthly injection, then a twice-yearly injection. There was also a statistically significant relationship between the participants’ reported acceptability of vasectomy and acceptability of MHC (Weston et al, 2002a). In a similar study Weston et al found significant differences between native Australians and migrants regarding their attitudes toward MHC and preferred mode of administration for MHC. Migrants were far less
likely to indicate that they would try MHC and preferred a two yearly injection to a daily oral pill as a mode of administration for MHC (Weston et al, 2002b).

The most powerful predictor of Individuals’ Intentions to Use MHC in the study presented here was PBC, whereas Behavioral Beliefs related to Condoms Use were the most powerful predictors of Intention to Use Condoms in Conjunction with MHC. The strongest correlation with Intention to Try MHC and the Method of Administration for MHC was for a pill form ($r = 0.625$) of MHC followed by MHC in the form of a transdermal patch ($r = 0.541$); all correlations were significant at $p$-levels of 0.05 or lower.

Although other studies have not employed the TPB, a survey based study of MHC (Martin et al, 2000) found that the percentage of participants who stated they would definitely or probably use a male contraceptive pill ranged from forty-four to eighty-three percent. Those who would definitely or probably use a male contraceptive injection ranged from thirty-two to sixty-two percent across different populations. In another study that presented participants with a more general form of male fertility control, twenty-eight point five to seventy-one point four percent of various subject populations declared themselves “Willing” to use the new form of contraception (Heinemann et al, 2005). Another study found a range of forty-one to seventy-four percent of subjects who stated they would be willing to use a pill or injectable form of MBC (WHO, 1982). In his survey of Australian men Weston et al (2002a) found nineteen point five percent responded “Definitely” and twenty-eight percent responded “Probably” when asked if they would try MHC.
This study found that thirty-two point four percent of respondents considered themselves “very likely” to try MHC, twenty-five point five percent reported they would be “somewhat likely” to try MHC were it available as an FDA approved form of contraception. Only fifteen point seven percent of respondents reported that they were “very likely” to use condoms in conjunction with MHC; twenty-four point five percent reported they would be “somewhat likely” to use condoms in conjunction with MHC.

Implications of the Study

Without the availability of MHC in a commercial market it is not possible to test the predictive quality of any of the independent variables in this study regarding actual MHC use. Intentions to perform a behavior however cannot be assumed to predict actual behaviors (Sutton et al, 1999; Sutton, 1998; Glanz, Rimer, & Lewis, 2002). Prior to the introduction of MHC to the public, research on beliefs and attitudes regarding MHC can be used to inform the preparation of the development and introduction of methods of MHC. The results of this study are intended to inform future research on whatever methods of MHC approach and/or reach the commercial market. In conjunction with other studies on MHC the results discussed here may be used to help to inform the development of marketing campaigns related to the launch of MHC methods, best practice models for clinicians, and the development of educational materials for potential users. The strong relationship between General PBC and MHC suggests the action steps necessary to obtain MHC may represent areas where concerted efforts to educate about MHC and to facilitate access to MHC may increase the number of individuals who successfully obtain MHC.
Recommendations for Future Studies

The future of MHC is not entirely certain (WHO, 1996; Merrigola et. al., 2002). As clinical research on the effects of different forms of MHC continues, research must begin on what social factors might impact the success or failure of MHC as a new form of contraception, as well as the level of success an individual experiences with the method or methods. The difference between theoretical (perfect) and actual (typical) efficacy rates for any contraceptive methods speaks to the myriad of variables outside of controlled trials which impact how the method functions as a part of daily life (Hatcher et al, 2004).

The sample in this study was small and homogenous in nature. Future studies of MHC should seek to examine larger groups of individuals representing more diverse demographic characteristics. Additionally, this study examines MHC exclusively from the perspective of males as potential users. Future research could include females, as well as male subjects, in order to explore potential influences females may have on successful MHC use. Also, potential users are not the only possible subjects for MHC research. Future studies could assess the attitudes, beliefs, and behaviors of other groups as they relate to MHC. For example, studies may be used to generate a greater understanding of how the various professionals who are likely to be involved in the delivery of MHC to the public will react to the new forms of contraception. Groups who might influence the opinions potential users hold toward MHC, such as spiritual leaders, might also provide data valuable to the successful introductions and development of MHC.
The results of the elicitation survey phase of this research included responses from 37 individuals sampled exclusively from social fraternity at the KSU main campus. These results however included an extremely diverse set of answers. Responses ranged from full sentences to one word answers. Some answers were discordant with the nature of the questions presented, suggesting some respondents did not understand the questions and/or did not read the survey fully before responding. Although the majority of responses focused on how MHC would impact the individual user, some respondents touched on larger concepts including the possible impact of MHC on abortion rates and population growth. In addition to the four Normative Groups and four Behavioral Beliefs incorporated into the online surveys, factors that participants believed would motivate them to try MHC became part of the larger survey used to test both hypotheses in this study. Further qualitative research on MHC involving larger and more diverse subject populations, as well as additional open ended questions, could provide valuable insight into knowledge, attitudes, and beliefs about MHC. The purpose of this qualitative research could be two fold: to enhance the knowledge base related to MHC and to develop quantitative research designs and tools.

The constructs of the Theory of Planned Behavior were the basis for the overall framework of the study. However, the TPB is only one health behavior model among many. The TPB focuses on behavior from the individual perspective. Not only could additional models, which examine the health behaviors of individuals be applied to the study of MHC, but additionally, community or social models could be applied to this area
of study in order to develop an understanding of MHC which reflects a greater diversity of theoretical approaches.

The survey used to test the hypotheses of this study was developed exclusively for this research. One of the most common reasons provided for not completing the survey was that it was too lengthy and not interesting enough to hold the participant’s interest. Future studies on MHC which employ a survey based approach should continue to develop, refine, and test instruments for the study of MHC and other forms of contraception in order to increase response rates, reliability and validity across all possible subjects.

This study did not identify an effective predictor of Intention to Use Condoms in Conjunction with MHC, which did not already relate to participants’ views about condoms and MHC. Due to the vital role condoms can play in the prevention of STI transmission, it is critical that any possible impact MHC may have on the use of male latex or polyurethane condoms be investigated thoroughly before MHC is made available to the general public. The negative impact STIs such as HIV, Syphilis, Herpes, HPV, and others have on public health is devastating and includes both sickness and the loss of human life. Slightly more than one in four (26.5%) of the participants in this study reported it was “very unlikely” they would use condoms while using MHC; fourteen point two percent reported it was “somewhat unlikely”. Approximately twenty-one percent of participants reported, “The availability of Male Hormonal Contraception would definitely decrease the number of times I used a condom during sexual intercourse”; thirty-five point three percent reported, “The availability of Male Hormonal
Contraception would probably decrease the number of times I used a condom during sexual intercourse”. Although forty-one percent of respondents stated the availability of MHC would have “no effect” on their condom use, the responses to this item suggest the introduction of MHC may have a considerable impact on male condom use. The importance of condom use in the prevention of STIs is such that the relationships between MHC and condom use must be studied more extensively and well in advance of the introduction of MHC in order to minimize any negative impact it may have.

Ultimately MHC research will need to assess MHC related behavior directly. Although MHC use among clinical trial participants can be studied now, MHC use patterns among members of the general population cannot be examined until its release for commercial use, nor can the impact widespread availability of MHC would have on condom use. If and when MHC becomes available for public use, research can directly measure the MHC related behaviors and their relationships to other factors, including: Intention to Use MHC and Intention to Use Condoms in Conjunction with MHC.

Limitations of the Study

The primary limitation of this study is its generalizability. The sample was relatively small and the participants were demographically homogenous. The study’s response rate was also low and failed to gather data, not only from individuals who did not access the survey, but also those individuals who either did not complete the survey or who opted out of items within the survey. It is possible the beliefs and sentiments of the individuals who did not complete surveys or portions of the survey differed radically from those individuals who completed the questionnaire in its entirety. The results of this
study cannot be extrapolated beyond male students, eighteen years of age or older, attending the KSU main campus in Kent, OH.

The newness of the survey itself might also have impacted this study’s efficacy. Although the survey was tested once in its draft form, the intent of this analysis was to reduce data, as well as test reliability. The draft was not re-examined in its final form prior to the final data collection.

Like all analytical methods the stepwise regression employed in this study provides information about the variables, which is limited in scope. Although stepwise regression allows for the addition and/or subtraction of variables as predictive models are identified, it does not examine possible relationships among predictor variables, nor how those interactions might impact their relationships with the criterion variable. Future studies should consider diverse analytical techniques, as well as different methodological approaches.

One issue this study encountered was how to incorporate the perspectives of participants who identified themselves as Homosexual. No individuals were intentionally screened out of the study based on sexual orientation; however the nature of a contraceptive method with no benefits regarding the prevention of STI transmission may be perceived as having limited or no relevance to gay males. Some homosexual individuals contacted about participation may have opted out of the survey based on either the subject heading on the invitation e-mail or the description of the study provided on the consent page of the survey. One individual who quit the survey provided the response, “a lot of the questions didn't pertain to my sexual orientation so basically it was
waste of time for both of us...". In lieu of asking participants to identify their sexual orientation the study asked individuals to identify the number of male and female partners with which each subject had had sexual experiences. Only one point seven percent of respondents reported contact with exclusively male sexual partners; five point nine percent reported contact with both male and female partners. The percentage of individuals who are homosexual or who engage in homosexual behavior in any given population is both difficult to determine and controversial (Diamond, 1993), so it is difficult to assess how closely the composition of sexual orientations in this sample matches that of the population from which it was drawn.

As both the draft survey and the final survey were presented in the form of an online survey, a certain level of technological ability related to computer use was needed for successful participation. Participants were contacted via e-mail messages sent to their official KSU e-mail accounts. This manner of delivery necessitated that the individuals: had access to the Internet, checked the e-mail messages in their KSU accounts on, or shortly after, the invitation was delivered to their account, and that their account was functioning properly. Several invitation messages were received at the sender’s account, which indicated messages containing invitations to take the survey had not been delivered. KSU e-mail accounts have storage limitations which do not allow accounts which have exceeded a particular memory quota to receive or store messages. KSU also reserves the right to suspend university e-mail accounts for a number of reasons. In addition to problems with undeliverable messages, there was no way to confirm whether or not individuals who received invitations had opened or read them. The invitations
were sent from a KSU e-mail account to avoid the appearance of Junk e-mail (AKA SPAM). It is possible however that the e-mail messages were summarily deleted because they were not sent from a personal acquaintance and therefore could have been perceived as containing dangerous information such as computer viruses or Internet based scams.

In addition to access and use of a functioning e-mail account the use of the survey required a basic understanding of Internet navigation. Access to the survey functioned via a website address included within the body of the invitation e-mail as a hyperlink. If the hyperlink failed to direct the participant to the surveys webpage the individual would need to paste the address into the address bar of their web browser in order to reach the opening page of the survey. Once an individual reached the survey they also needed to enter their KSU e-mail address in order to begin the survey. This function was added to the survey in order to confirm that the individual was indeed invited to take the survey and, in the case of the second survey, to confirm their entry into the lottery for the incentive, which was offered to encourage a greater response rate.

Participants could opt not to answer any item in the survey to which they did not wish to respond; however any navigation backward through the survey erased answers they had already entered on subsequent pages. In order to facilitate the completion of the survey small squares at the top of the survey changed colors to reflect progress through the pages of the survey.

In addition to technical ability participants needed to have a certain comfort level in order to participate in this study. The anonymous nature of participation was reinforced in both the invitation e-mails and the first page of the survey; however there is
no way to be certain that the individuals asked to participate had adequate faith in their anonymity to participate or to be completely honest with their responses. The fact that the survey asked subjects to discuss their own sexual behavior may have created problems with both participation and accuracy. Discomfort with topics such as sex and contraception may have led some individuals to choose not to participate. Other participants may have provided dishonest answers to questions containing content with which they were not comfortable.

As well as inaccuracy due to discomfort with the subject matter, it was also possible that some erroneous answers were the result of faulty memory or misinterpretation of some of the questions. As the instrument was new it is also possible the operationalization of certain variables was not effective. Many of the items within the survey relied upon the participants’ understanding of information about MHC provided on the first page of the survey. Failure of individuals to read and comprehend the description of MHC provided in its entirety may have limited their ability to accurately answer the questions.

One of the greatest limitations of this study was that it was not able to assess behavior directly, due to the unavailability of MHC to the general public. Intentions do not necessarily predict behavior with complete accuracy (Sutton, 1998). It is therefore not possible to determine the relationship between Intention to Try MHC as it was operationalized in this study, and the actual use of MHC prior to the public having access to MHC. Deception regarding the availability of MHC was not incorporated into this study because of two main concerns. The first concern was that insuring all participants
were debriefed would have been extremely difficult using the study’s anonymous online format. There was no way to track which individuals were accessing all portions of the invitations and surveys, nor how thoroughly any participant was reviewing the information presented to them. Likewise it would not have been possible to confirm if and when any subject had received debriefing on deception, while maintaining the online and anonymous format of the survey. The second concern was that prior to debriefing participants might have either spread the assumption that MHC was available to individuals who could not be debriefed or that they might seek to procure MHC for themselves prior to debriefing.

Conclusions

First Hypothesis

The first hypothesis, Perceived Behavioral Control will be the best predictor of males’ Intentions to Try Male Hormonal Contraception, in this study was supported by the results. The models generated through a multiple regression showed the strongest predictor of Intention to Try MHC was general PBC.

Condom Use, Like MHC, involves behavior that necessitates male involvement. Also, like MHC, there are many obstacles to direct measures of condom behavior. Previous studies employing TPB have not shown consistently strong associations between PBC and condom use Behavior. However, weak association between Behavioral Intentions and Behavior Examining produced a wide range of results regarding relationships between PBC and Intentions Condom Use (Bennett & Bozionelos, 2000). In one study of condom use involving 949 male and female subjects
in the UK; the expansion of the TRA, in keeping with the development of the TPB, to include PBC did not significantly increase the predictive power of the model (Sutton et al, 1999). One of the primary problems with examining the role PBC plays in predicting contraceptive intentions and behavior has been the inconsistent manner in which PBC has been operationalized in condom behavior studies, as well as the instability of contraceptive attitudes and behaviors. Through meta-analysis Albarracin et al, (2001) demonstrated that the temporal relationship between reported condom use and PBC could affect their association; with individuals who report condom use retroactively reporting greater PBC on average than those who reported less past personal experience with condoms.

In the study discussed here PBC Independently accounted for approximately half the variation in the reported Intention to Try MHC. A model including three additional variables increased the variability predicted by only an additional fourteen percent. The operationalization of the TPB construct of PBC has been a source of ongoing debate (Sutton et al, 1999; Glanz, Rimer, & Lewis, 2002). After a factor analysis of pilot data this study operationalized PBC as four distinct areas representing: General PBC, Cost associated with MHC, Methods of Administration for MHC, and Side Effects of MHC. In addition to the fact that General PBC was the strongest predictor of Intention to Try MHC, PBC for Methods of Administration was the second strongest predictor of the dependent variable.

Specifically, the General PBC variable asked participants how likely they believed they would be to: seek information on MHC, visit a clinical setting, interact with
a male clinician, interact with a female clinician, coordinating personal moral beliefs and MHC use, have a physical exam, provide a semen sample, an provide a blood sample. General PBC as an effective predictor of Intention to Try MHC suggests that, given the limitations of this sample, the relationship between an individual’s own perception of their ability to engage in the actions required to acquire MHC and their Intention to Try MHC is a critical one in determining who will and who will not successfully try MHC. As the introduction of MHC is planned individuals involved in marketing, education, and clinical services related to MHC distribution should be conscious of the need to prepare the public for the action steps required to obtain MHC and to facilitate or eliminate barriers to acquiring MHC where possible.

Second Hypothesis

The second hypothesis (The Total Number of Female Sexual Partners a male has had will be the best predictor of their Intention to Use Condoms in Conjunction with Male Hormonal Contraception) in this study was not supported by the results. The independent variable representing participants’ number of female sexual partners did not appear in any of the three models generated by the regression analysis. The strongest predictor of Intention to Use Condoms in Conjunction with MHC was in fact Behavioral Beliefs about Condoms and MHC, which alone accounted for approximately forty-five percent of the variance in the second dependent variable. The behavioral belief data was the product of a score representing the strength of an individual’s agreement or disagreement with the statement: “By using Male Hormonal Contraception I would not need to use condoms to prevent pregnancy” and a score representing their evaluation of that belief.
expressed by their agreement or disagreement with the following statement: “Not needing
to use condoms to prevent pregnancy by using Male Hormonal Contraception would be a
good thing”. Adding two variables (Normative Beliefs Medical Professionals, PBC
Methods of MHC Administration) increased the predictability to slightly less than 49
percent. As the second dependent variable and the Behavioral Beliefs about Condoms
and MHC variable both asked participants about condom related behavior it is not
surprising the correlation between the two variables was high ($r=-0.671$). As there were
no other variables in this study which could predict a significant portion of the variance
in the dependent variable, it is important that future studies of MHC continue to examine
the impact of MHC on condom use and any factors which may influence that impact. It
is also critical that such research investigate what factors influence and/or effectively
predict behavior related to the use or disuse of condoms in conjunction with MHC.
APPENDIX A

FIRST DRAFT OF THE ONLINE SURVEY
SCREEN 1
Survey of Males About Male Hormonal Contraception

This survey contains questions related to a new form of birth control being developed for use by males. This study is being conducted in order to learn more about how men will react to having a new form of birth control made available to them. Some of the questions in this survey will deal with your sexual behavior and your personal beliefs. You are free to stop taking the survey at any point in time. You must be at least eighteen years old in order to participate in this study. Your participation is completely voluntary and anonymous.
If you have any questions about this study please contact:

Dr. R Scott Olds, HSD
ACHVE Program
316 White Hall
Kent State University
(330) 672-7977

If you wish to learn more about research being conducted at Kent State University please contact:
Dr. Peter Tandy
Vice President and Dean
Division of Research and Graduate Studies
(330) 672-2851

Please enter your email address below and click the Continue button to start the survey. Your email address will only be used to verify that you were invited to take this survey and to enter you in the lottery for the two concert tickets. Your e-mail will in no way be linked to your survey answers. Your participation will still be completely anonymous.

Email Address: [ ]

SCREEN 2
Survey of Males About Male Hormonal Contraception

This survey will ask you questions about new forms of birth control being developed for use by men called Male Hormonal Contraception. This is a brief description of what Male Hormonal Contraception may be like when it is approved for use by the general public by the FDA. Please base your answers to the following questions on this description of what this birth control method will like.
This new type of male birth control would use hormones to prevent men using it from being able to get any female pregnant. Male Hormonal Contraception would only work for a man as long as he kept taking it. It would not protect a man using it from any sexually transmitted diseases (like Herpes, HIV, Syphilis…). Any man wishing to use Male Hormonal Contraception would first need to visit a doctor, nurse, or physician’s assistant in order to get a prescription for the birth control. Taking Male Hormonal Contraception might involve getting an injection (shot), taking pills, wearing a patch on your skin, or some combination of these three methods. Taking Male Hormonal
Contraception might also require providing one or two samples of semen (sperm) in order to make sure that it is working properly. Finally, a small percentage of men using the Male Hormonal Contraception would be expected to experience some side effects. These side effects might include some the following: changes in mood, weight gain, increased interest in sex, decreased interest in sex, change in the size of the testicles, acne, and headaches.

SCREEN 3
Survey of Males About Male Hormonal Contraception

Demographic Data
1. What year were you born? 

2. Which of the following best describes your Educational Status?
   - Full Time Student undergraduate
   - Part-time Student undergraduate
   - Full Time Student graduate
   - Part-time Student graduate
   - Not Currently a Student

3. Occupation
   - Employed Full Time Service Industry
   - Employed Part Time Service Industry
   - Employed Full Time Manufacturing
   - Employed Part Time Manufacturing
   - Employed Full Time Office/Professional
   - Employed Part Time Office/Professional

4. Ethnicity
   - African American
   - Caucasian
   - Latino
   - Native American
   - Asian
   - Other: Fill-in

5a. Religion
   - Catholic
   - Christian Non-Catholic
   - Hindu
   - Muslim
   - Buddhist
   - Atheist
5b.
- Practicing
- Non-Practicing

6. Annual Income
- $10,000 or less
- $11,000 to 20,000
- $21,000 to 30,000
- $31,000 to 40,000
- $41,000 to 50,000
- $51,000 to 100,000
- $100,000 or greater

7. Which of the following best describes your current financial situation:
- I am in debt for $5,000 or less
- I have greater than $5,000 in debt
- I have no outstanding debt greater than $1,000, but no savings greater than $1,000
- I have total savings greater than $1,000, but less than $5,000
- I have total savings greater than $5,000

8. Which of the following best describes you:
- I am married
- I am divorced
- I am single never married

9. Which of the following best describes you:
- I am in a relationship with one person to whom I am faithful
- I am not currently dating anyone
- I am currently dating, but have not committed to a relationship with one person

SCREEN 4
Survey of Males About Male Hormonal Contraception

Sexual Profile
10. How many sexual partners have you had sex with to date (please count only individuals you have had either vaginal or anal intercourse with): 

11. From the list below please check off any of the sexual behaviors you have engaged in:
- Kissing with a closed mouth
- Kissing with an open mouth
Having your genitals stimulated by the hand of a partner
Stimulating the genitals of a female partner with your hand
Stimulating the genitals of a male partner with your hand
Receiving oral sex
Performing oral sex on a female
Performing oral sex on a male
Engaging in vaginal intercourse
Engaging in anal intercourse in the Penetrative Role
Engaging in anal intercourse in the Receptive Role

12. Please identify the number of partners you have had any sexual experience with for each category below
   a.) Female
   b.) Male

SCREEN 5
Survey of Males About Male Hormonal Contraception

Moral Profile

Please select the phrase that most closely represents how you feel about the behavior described for each item.

13. Two individuals who are not married having sex with one another.
   o I believe this behavior is completely unacceptable
   o I believe this behavior is wrong in most cases
   o I am uncertain how I feel about this behavior
   o I believe this behavior is right in most cases
   o I believe this behavior is completely acceptable

14. An individual who is married or in a committed relationship having sex with someone who is not their spouse or partner.
   o I believe this behavior is completely unacceptable
   o I believe this behavior is wrong in most cases
   o I am uncertain how I feel about this behavior
   o I believe this behavior is right in most cases
   o I believe this behavior is completely acceptable

15. Using birth control in order to prevent a pregnancy.
   o I believe this behavior is completely unacceptable
   o I believe this behavior is wrong in most cases
   o I am uncertain how I feel about this behavior
   o I believe this behavior is right in most cases
16. Two people who are the same sex having sex with each other.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

17. One person maintaining sexual relationships with two or more people during an overlapping period of time.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

18. A woman engaging in behavior traditionally identified as male, such as: hunting, serving in military combat, playing professional sports like football and hockey.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

SCREEN 6
Survey of Males About Male Hormonal Contraception

Reproductive Intentions

19. How many biological children do you currently have?

20. How many adopted or stepchildren do you currently have:

21. How many own children would you like to adopt in the future:

22. How many of your own biological children would you like father in the future?
23. How important is it to you that you father a child or children at some point in your life?
   - No importance, I am certain I do not want children
   - Some importance, I have not decided whether or not I want to have children
   - Great Importance, I am certain I want to have children
   - Unsure

SCREEN 7
Survey of Males About Male Hormonal Contraception

Contraceptive History

For each type of birth control listed below, please indicate the level of experience you have had with that particular method.

24. Male Condom
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

25. Female Condom
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

26. Diaphragm
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method
27. Lea’s Shield
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

28. Cervical Cap
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

29. Spermicide (foams, gels, films, creams, etc… used to destroy sperm cells)
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

30. Sponge
    - I or my Partner(s) Have Never Used this method
    - I or my Partner(s) Currently Use this method
    - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
    - I or my Partner(s) Have used this method in the past, but do not plan to use it again
    - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
    - I am unsure about my history with this method

31. Oral Contraceptive Pill (Combined, Estrogen & Progestin)
    - I or my Partner(s) Have Never Used this method
    - I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

32. Oral Contraceptive Pill (Mini, Progestin Only)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

33. Oral Contraceptive Pill (Seasonale, 91 Day Regimen)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

34. Contraceptive Patch (Ortho Evra)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

35. Vaginal Contraceptive Ring (Nuva Ring)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

36. Post-Coital Emergency Contraceptive (Plan B, Preven)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

SCREEN 8
Survey of Males About Male Hormonal Contraception

Contraceptive History (Cont.)
37. Injection Contraception (Depo-Provera, 1X/ 3 months)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

38. Injection (Lunelle, 1X/ 1 month)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
I am unsure about my history with this method

39. Contraceptive Implant (Norplant, 5 rods)
I or my Partner(s) Have Never Used this method
I or my Partner(s) Currently Use this method
I or my Partner(s) Expect to Use this method in the future, but have not yet used it
I or my Partner(s) Have used this method in the past, but do not plan to use it again
- I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
- I am unsure about my history with this method

40. IUD Intrauterine Device
- I or my Partner(s) Have Never Used this method
- I or my Partner(s) Currently Use this method
- I or my Partner(s) Expect to Use this method in the future, but have not yet used it
- I or my Partner(s) Have used this method in the past, but do not plan to use it again
- I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
- I am unsure about my history with this method

41. Period Abstinence (Sympto-Thermal)
- I or my Partner(s) Have Never Used this method
- I or my Partner(s) Currently Use this method
- I or my Partner(s) Expect to Use this method in the future, but have not yet used it
- I or my Partner(s) Have used this method in the past, but do not plan to use it again
- I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
- I am unsure about my history with this method

42. Period Abstinence (Rhythm)
- I or my Partner(s) Have Never Used this method
- I or my Partner(s) Currently Use this method
- I or my Partner(s) Expect to Use this method in the future, but have not yet used it
- I or my Partner(s) Have used this method in the past, but do not plan to use it again
- I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
- I am unsure about my history with this method

43. Female Sterilization (Tubal Ligation)
- I or my Partner(s) Have Never Used this method
- I or my Partner(s) Currently Use this method
- I or my Partner(s) Expect to Use this method in the future, but have not yet used it
- I or my Partner(s) Have used this method in the past, but do not plan to use it again
- I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
- I am unsure about my history with this method
44. Female Sterilization (Implant, Essure)
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

45. Male Surgical Sterilization (Vasectomy)
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

46. Withdrawal
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

47. Douching
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

51. My significant other (girlfriend, wife, sexual partners) would think
   - I should definitely try using Male Hormonal Contraception
   - I should probably try using Male Hormonal Contraception
   - Would not care whether or not I used Male Hormonal Contraception
I should probably not try using
I should never try use Male Hormonal Contraception

52. My family members (parents, siblings, etc…) would think
I should definitely try using Male Hormonal Contraception
I should probably try using Male Hormonal Contraception
Would not care whether or not I used Male Hormonal Contraception
I should probably not try using
I should never try use Male Hormonal Contraception

SCREEN 10
Survey of Males About Male Hormonal Contraception

Motivation to Comply
53. If medical professional I go to (doctors, nurses, physicians assistants) believed I should try Male Hormonal Contraception it is
Very likely I would try using Male Hormonal Contraception
Somewhat likely I would try using Male Hormonal Contraception
Uncertain how likely I would try using Male Hormonal Contraception
Unlikely I would try using Male Hormonal Contraception
Very unlikely I would try using Male Hormonal Contraception

54. If my family members (parents, siblings, etc…) believed I should try Male Hormonal Contraception it is
Very likely I would try using Male Hormonal Contraception
Somewhat likely I would try using Male Hormonal Contraception
Uncertain how likely I would try using Male Hormonal Contraception
Unlikely I would try using Male Hormonal Contraception
Very unlikely I would try using Male Hormonal Contraception

55. If my significant other (girlfriend, wife, sexual partners) believed I should try Male Hormonal Contraception it is
Very likely I would try using Male Hormonal Contraception
Somewhat likely I would try using Male Hormonal Contraception
Uncertain how likely I would try using Male Hormonal Contraception
Unlikely I would try using Male Hormonal Contraception
Very unlikely I would try using Male Hormonal Contraception

56. If My family members (parents, siblings, etc…) believed I should try Male Hormonal Contraception it is
Very likely I would try using Male Hormonal Contraception
Somewhat likely I would try using Male Hormonal Contraception
Uncertain how likely I would try using Male Hormonal Contraception
Unlikely I would try using Male Hormonal Contraception
SCREEN 11
Survey of Males About Male Hormonal Contraception

Behavioral Beliefs

57. By using Male Hormonal Contraception I would not have to deal with a pregnancy or child.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

58. By using Male Hormonal Contraception I would not need to trust my female partners to be honest about their birth control use or rely on them to use their birth control correctly.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

59. By using Male Hormonal Contraception I would use condoms less often to prevent pregnancy.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

60. By using Male Hormonal Contraception I would not be protected against Sexually Transmitted Infections.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

61. Being able to prevent pregnancy by using Male Hormonal Contraception would be a good thing.
   - Agree strongly
   - Agree somewhat
   - Unsure
62. Not needing to trust or rely on a female partner to correctly use birth control by using Male Hormonal Contraception would be a good thing.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

63. Not needing to use condoms to prevent pregnancy by using Male Hormonal Contraception would be a good thing.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

64. Not being protected against Sexually Transmitted Infections by Male Hormonal Contraception would be a good thing
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

SCREEN 12
Survey of Males About Male Hormonal Contraception

Perceived Behavioral Control

Assuming Male Hormonal Contraception was approved by the FDA and available to the general public please select the option for each statement that best describes you.

65. I would seek out information about how male hormonal contraception works and what the risks and benefits of taking it are.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely
66. I would be willing to visit a hospital or clinic in order to obtain Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

67. I would be comfortable having a female doctor or nurse discuss and prescribe male hormonal contraception for me.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

68. I would be comfortable having a male doctor or nurse discuss and prescribe male hormonal contraception for me.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

69. Taking Male Hormonal Contraception to prevent me from causing a pregnancy would be compatible with my personal beliefs about what is right and wrong.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

70. I would be fine with getting a complete physical exam in order to get a prescription for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

71. I would be fine with providing samples of my blood in order to get a prescription for Male Hormonal Contraception.
   - Very likely
72. I would be fine with providing a sample of my semen (sperm) in order to make sure the Male Hormonal Contraception I was taking was working properly.
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

73. I would be willing to pay five dollars a month for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

74. I would be willing to pay ten dollars a month for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

75. I would be willing to pay twenty-five dollars a month for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

76. I would be willing to pay fifty dollars a month for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

77. I would take Male Hormonal Contraception even if there was a chance it would periodically affect my Mood.
78. I would take Male Hormonal Contraception even if there was a chance it would change the size or texture of my testicles (balls).
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

79. I would take Male Hormonal Contraception even if there was a chance it would cause me to gain some weight.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

80. I would take Male Hormonal Contraception even if there was a chance it would cause an increase in my libido (sex drive).
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

81. I would take Male Hormonal Contraception even if there was a chance it would cause a decrease in my libido (sex drive).
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

82. I would take Male Hormonal Contraception if it involved getting an injection (shot) once a month.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
83. I would take Male Hormonal Contraception if it involved taking a pill once a day, every day.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

86. I would try Male Hormonal Contraception if it were readily available as an FDA approved form of birth control.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

87. If you were going to try using Male Hormonal Contraception, what would be the most important reason you would do so?
   - I do not trust my female partner(s) to use birth control properly
   - I do not trust my female partner(s) to be honest about whether they are using birth control or not
   - I would like to have an additional method of birth control to use methods I or my partner(s) are already using
   - I would like to share the cost for birth control with my partner(s)
   - I would like my partner(s) to be able to stop using their birth control method
   - I would like to avoid having to use condoms
   - Other Fill-in: [ ]
89. How do you believe Male Hormonal Contraception would change your current pattern of condom use?
   o The availability of Male Hormonal Contraception would definitely increase the number of times I used a condom during sexual intercourse
   o The availability of Male Hormonal Contraception would probably increase the number of times I used a condom during sexual intercourse
   o The availability of Male Hormonal Contraception would have no effect on how often I use condoms
   o The availability of Male Hormonal Contraception would probably decrease the number of times I used a condom during sexual intercourse
   o The availability of Male Hormonal Contraception would definitely decrease the number of times I used a condom during sexual intercourse

SCREEN 15

Thank you for completing the survey.
Your answers have been recorded automatically.
You can now close your browser window.
APPENDIX B
APRIL 4TH E-MAIL INVITATION
Subject: KSU Survey About Male Birth Control

Greetings:

You have been selected to participate in a study about a new form of birth control being developed for men. It is very important that this study includes a wide range of opinions. Regardless of what your views about sexuality and birth control are, please consider completing this survey so that your ideas and opinions (and the ideas and opinions of men like you) are reflected in the study’s final results.

To begin the survey click on the link below or paste the address into your browser:

http://newmedia.kent.edu/Contraception/

A few things you should know about the survey:

• You must be a male, 18 years or older, to take the survey
• Participation is voluntary and anonymous
• The survey is web-based and multiple choice
• The survey takes approximately ten minutes to complete
• You can skip questions or exit the survey at any time
• Some of the questions address sexual behavior and contraception
• You will be asked to enter your e-mail address at the beginning of the survey to confirm that you were invited to participate in this study

To begin the survey click on the link below or paste the address into your browser:

http://newmedia.kent.edu/Contraception/
APPENDIX C
SECOND E-MAIL INVITATION SENT APRIL 10TH
Subject: KSU Survey About Male Birth Control

Hello Again:

This e-mail is a reminder that you have been selected to participate in a study about a new form of birth control being developed for men. It is very important that this study reflects a wide range of opinions. Regardless of what your views about sexuality and birth control are, please consider completing this survey, so that your ideas and opinions (and the ideas and opinions of men like you) are included in the study’s final results.

To begin the survey click on the link below or paste the address into your browser:

http://newmedia.kent.edu/Contraception/

A few facts about the survey:

• You must be a male, 18 years or older, to take the survey
• Participation is voluntary and anonymous
• The survey is web-based and multiple choice
• There is a description of the birth control at the beginning of the survey
• The survey takes approximately ten minutes to complete
• You can skip questions or exit the survey at any time
• Some of the questions address sexual behavior and contraception
• You will be asked to enter your e-mail address at the beginning of the survey to confirm that you were invited to participate in this study

To begin the survey click on the link below or paste the address into your browser:

http://newmedia.kent.edu/Contraception/

Melissa “Mel” Marie Thompson
Doctoral Candidate
ACHVE Program
College of Education, Health, and Human Services
Kent State University
APPENDIX D
LIST OF REASONS FOR EXITING THE SURVEY
<table>
<thead>
<tr>
<th>Draft Survey</th>
<th>Final Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reason for Quitting</strong></td>
<td><strong>Quit Page</strong></td>
</tr>
<tr>
<td>I have to go to Class</td>
<td>08</td>
</tr>
<tr>
<td>I couldn't finish it, ran out of time - I would return later if possible</td>
<td>04</td>
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<tr>
<td>too long</td>
<td>08</td>
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<tr>
<td>itz too long and you give no background of the contraception</td>
<td>12</td>
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<tr>
<td>too long</td>
<td>04</td>
</tr>
<tr>
<td>too tired to complete .... boring.</td>
<td>09</td>
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<tr>
<td>Didn’t like it</td>
<td>13</td>
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<tr>
<td>a lot of the questions didn't pertain to my sexual orientation so basically it was waste of time for both of us.....</td>
<td>11</td>
</tr>
<tr>
<td>comfort, and ability to relate</td>
<td>08</td>
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<tr>
<td>none of your business</td>
<td>10</td>
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<tr>
<td>have to leave my computer</td>
<td>03</td>
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<tr>
<td>Its boring</td>
<td>08</td>
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<td>the repetitious questioning of an uninteresting subject grew weary</td>
<td>10</td>
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APPENDIX E
APRIL OF 17TH E-MAIL INVITATION
Subject: KSU Survey About Male Birth Control

Greetings:

You are one of 1,000 male students at Kent State University we are asking to complete our survey about a new form of birth control being developed for use by men. The purpose of the study is to learn more about why men will, or will not, use this new form of contraception when it becomes available. It is very important that this study reflects a wide range of opinions. Regardless of what your views about sexuality and birth control are, please consider completing this survey, so that your ideas and opinions (and the ideas and opinions of men like you) are included in the study’s final results.

As a special incentive any man who completes a survey will be automatically entered into a drawing to win one free pair of tickets for the concert of their choice taking place in Ohio this year (maximum value $200). Only individuals who have completed this survey will be entered into the lottery. There will be only one winner, who will be contacted about how to claim their prize once the survey is complete.

To begin the survey click on the link below or paste the address into your browser:

http://newmedia.kent.edu/contraception/

A few facts about the survey:
• You must be a male, 18 years or older, to take the survey
• Participation is voluntary and anonymous
• The survey is web-based and multiple choice
• There is a description of the birth control at the beginning of the survey
• The survey takes approximately ten minutes to complete
• You can skip questions or exit the survey at any time
• Some of the questions address sexual behavior and contraception
• You will be asked to enter your e-mail address at the beginning of the survey to confirm that you were invited to participate in this study
• If you exit the survey before completing it, you will be able to return and begin the survey again from the beginning.

To begin the survey click on the link below or paste the address into your browser:

http://newmedia.kent.edu/contraception/

Melissa “Mel” Marie Thompson
Doctoral Candidate
ACHVE Program
College of Education, Health, and Human Services
Kent State University
APPENDIX F
APRIL 29TH  SECOND E-MAIL INVITATION
Subject: KSU Male Birth Control Survey ~ CHANCE TO WIN CONCERT TICKETS OR CASH

Please consider completing our survey about new forms of birth control being developed for use by men. Your answers will help enhance our understanding of how men like yourself will react to these new forms of contraception. Your ideas and opinions are very important to the success of this research.

To begin the survey (it takes about 10 min.) click on the link below or paste the address into your browser:

http://newmedia.kent.edu/contraception/

We recognize your time is precious and that answering questions about sexuality and birth control can be difficult. As an incentive, individuals who complete this survey will automatically be entered into a drawing to win one free pair of tickets for the concert of their choice taking place in Ohio this year (maximum value $200). If the winner’s concert of choice is sold out, or if they prefer a cash prize, they will be given the option of taking the maximum cash value of the tickets ($200 in the form of a money order) in lieu of the two tickets.

There will be one winner. The winner will be contacted on or before May 15th, 2007 about how to claim their prize.

Here Are A Few More Facts About The Survey:

- Your answers will be completely anonymous
- Your participation is greatly appreciated
- The survey is multiple choice
- There is a description of the new birth control at the beginning of the survey
- The survey takes approximately ten minutes to complete
- You can skip questions or exit the survey at any time
- If you exit the survey before completing it, you will be able to return and begin the survey again from the beginning
- You will be asked to enter your e-mail address at the beginning of the survey to confirm that you were invited to participate in this study and to enter you in the drawing

Melissa “Mel” Marie Thompson
Doctoral Candidate
ACHVE Program
College of Education, Health, and Human Services
Kent State University
APPENDIX G
LIST OF FILL-IN OPTIONS
<table>
<thead>
<tr>
<th>Contraceptive</th>
<th>Fill-in Options</th>
<th>Reason for Trying MHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a combination of spermicidal condoms and withdrawal</td>
<td>Arab agnostic</td>
<td>Additional birth control and no condoms</td>
</tr>
<tr>
<td>Animal (Lamb) Skin</td>
<td>Arabic agnostic</td>
<td>definitely options 3 AND 6</td>
</tr>
<tr>
<td>Condoms</td>
<td>Caucasian agnostic</td>
<td>I am a male homosexual; pregnancy is impossible.</td>
</tr>
<tr>
<td>Animal skin condoms</td>
<td>bi-racial Agnostic</td>
<td>If it were cheaper than my wife's current bc pills</td>
</tr>
<tr>
<td>Animal Skin Condoms</td>
<td>German Agnostic</td>
<td>More than one method between partners, no condoms.</td>
</tr>
<tr>
<td>Being generally unattractive</td>
<td>German agnostic</td>
<td>None</td>
</tr>
<tr>
<td>Depo-Provera</td>
<td>Italian Agnostic</td>
<td>only if it protected against stds</td>
</tr>
<tr>
<td>Depo-Provera (Primary method with all partners)</td>
<td>agnostic</td>
<td>share the cost and share the responsibility</td>
</tr>
<tr>
<td>Depro, Plan B</td>
<td>agnostic</td>
<td>would not try</td>
</tr>
<tr>
<td>Female Sterilization</td>
<td>Agnostic</td>
<td></td>
</tr>
<tr>
<td>Female Sterilization (Tubal Ligation)</td>
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<td></td>
</tr>
<tr>
<td>foam, Depo-Provera</td>
<td>Agnostic</td>
<td></td>
</tr>
<tr>
<td>IUD, Diaphragm</td>
<td>agnostic</td>
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</tr>
<tr>
<td>I've had a Vasectomy</td>
<td>Agnostic atheist</td>
<td></td>
</tr>
<tr>
<td>lamb skin condoms</td>
<td>Agnostic Deist</td>
<td></td>
</tr>
<tr>
<td>Lamb Skin Condoms, Plan B</td>
<td>baptist</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>baptist</td>
<td></td>
</tr>
<tr>
<td>latex condom</td>
<td>believ in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>something</td>
<td></td>
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<tr>
<td></td>
<td>greater than</td>
<td></td>
</tr>
<tr>
<td>latex condom</td>
<td>Faithless</td>
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</tr>
<tr>
<td>Latex Condom, Oral Contraceptive, Plan B</td>
<td>Free standing</td>
<td></td>
</tr>
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<td>Male condom with spermacide</td>
<td>Jewish</td>
<td></td>
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<tr>
<td>morning after pill</td>
<td>Jewish</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>Jewish</td>
<td></td>
</tr>
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<tr>
<td>n/a</td>
<td>Latter Day Saints</td>
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</tr>
<tr>
<td>na</td>
<td>Methodist</td>
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</tr>
<tr>
<td>no</td>
<td>Methodist</td>
<td></td>
</tr>
<tr>
<td>non3</td>
<td>N/A</td>
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<tr>
<td>none</td>
<td>no domination</td>
<td></td>
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<tr>
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<tr>
<td>None</td>
<td>humanist</td>
<td></td>
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<tr>
<td>none</td>
<td>southern baptist</td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>Spiritual</td>
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</tbody>
</table>
None
NONE
nothing
nothing
Partner used injection
plan b
Plan B
Plan B, and Male condom
Post-Coital Emergency
Contraceptive
Post-Coital Emergency
Contraceptive (Plan B,
Preven, morning after pill)
Preven
pull out
pulling out
she swallows
Spermicidal Lubricant
Spermicide
Spermicide
spermicide
spermicide
spermicide
Spermicide
Spermicide
Spermicide
Spermicide
spermicide
spermicide being smart
using common sense
Spermicide films
spermicide gel
Spermicide, depo
The pull out, aslo -Whiskey
unsure
Vasectomy),

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APPENDIX H
ELICITATION SURVEY
Elicitation Questionnaire

Introduction to Male Contraception

This survey will ask you questions about new forms of birth control being developed for use by men. This is a brief description of what a male birth control method may be like when it is approved for use by the general public by the FDA. Please base your answers to the questions below on this description of what the birth control could be like.

This new type of male birth control would use hormones to prevent men from being able to get any female pregnant. The male birth control would only work for a man as long as he kept taking it. Hormonal male birth control would not protect a man using it from any sexually transmitted diseases (like Herpes, HIV, Syphilis…). Any man wishing to use the birth control would first need to visit a doctor, nurse, or physician’s assistant in order to get a prescription for the birth control. Taking this male birth control might involve getting an injection (shot), taking pills, wearing a patch on your skin, or some combination of these three methods. Taking the birth control might also require providing one or two samples of semen (sperm) in order to make sure that it is working properly. Finally, a small percentage of men using the male birth control would be expected to experience some side effects. These side effects might include some of the following: changes in mood, weight gain, increased interest in sex, decreased interest in sex, change in the size of the testicles, acne, and headaches.

Question One
When you are trying to learn about different types of birth control or you are trying to make decisions about whether or not to use birth control, whose opinions are most important to you?

Question Two
What do you think would be the best things about having a new form of birth control for males similar to the one described above?

Question Three
What do you believe would be the worst things about having a new form of birth control for males similar to the one described above?

Question Four
If you were going to try a new form of birth control for men, what would be the most important reason or reasons for you to do so?
APPENDIX I
FINAL DRAFT OF ONLINE SURVEY
SCREEN 1
Survey of Males About Male Hormonal Contraception

This survey contains questions related to a new form of birth control being developed for use by males. This study is being conducted in order to learn more about how men will react to having a new form of birth control made available to them. Some of the questions in this survey will deal with your sexual behavior and your personal beliefs. You are free to stop taking the survey at any point in time. You must be at least eighteen years old in order to participate in this study. Your participation is completely voluntary and anonymous.

If you have any questions about this study please contact:

Dr. R Scott Olds, HSD
ACHVE Program
316 White Hall
Kent State University
(330) 672-7977

If you wish to learn more about research being conducted at Kent State University please contact:
Dr. Peter Tandy
Vice President and Dean
Division of Research and Graduate Studies
(330) 672-2851

Please enter your email address below and click the Continue button to start the survey. Your email address will only be used to verify that you were invited to take this survey and to enter you in the lottery for the two concert tickets. **Your e-mail will in no way be linked to your survey answers.** Your participation will still be completely anonymous.

Email Address: 

SCREEN 2
Survey of Males About Male Hormonal Contraception

This survey will ask you questions about new forms of birth control, called Male Hormonal Contraception, being developed for use by men. This is a brief description of what Male Hormonal Contraception may be like when it is approved by the Food and Drug Administration for use by the general public. Please base your answers to the survey questions on this description.

**Male Hormonal Contraception:**

- Would use hormones to prevent men using it from being able to get any female pregnant.

- Would only work for a man as long as he kept taking it.
• Would **NOT** protect a man using it from any sexually transmitted diseases (like Herpes, HIV, Syphilis, etc…).

• Would require a visit to a doctor, nurse, or physician’s assistant in order to get a prescription for the birth control.

• Would involve: getting an injection (shot) **or** taking pills **or** wearing a patch on your skin **or** some combination of these three methods.

• Might require providing one or two samples of semen (sperm) in order to make sure that it is working properly.

• A small percentage of men using the Male Hormonal Contraception would be expected to experience some side effects.

• Side effects might include some the following: changes in mood, weight gain, increased interest in sex, decreased interest in sex, change in the size of the testicles, acne, and headaches.

**SCREEN 3**
Survey of Males About Male Hormonal Contraception

**Demographic Data**

1. **What year were you born?**

2. **Which of the following best describes your Educational Status?**
   - Full Time Student undergraduate
   - Part-time Student undergraduate
   - Full Time Student graduate
   - Part-time Student graduate
   - Not Currently a Student

3. **Occupation**
   - Employed Full Time Service Industry
   - Employed Part Time Service Industry
   - Employed Full Time Manufacturing
   - Employed Part Time Manufacturing
   - Employed Full Time Office/Professional
   - Employed Part Time Office/Professional
   - Not Currently Employed

4. **Ethnicity**
   - African American
   - Caucasian/White
   - Latino
o Native American
o Asian

o Other: Fill-in

5a. Religion
   o Catholic
   o Christian Non-Catholic
   o Hindu
   o Muslim
   o Buddhist
   o Atheist
   o Other: Fill-in

5b.
   o Practicing
   o Non-Practicing

6. Annual Income
   o $10,000 or less
   o $10,001 to 20,000
   o $20,001 to 30,000
   o $30,001 to 40,000
   o $40,001 to 50,000
   o $50,001 to 100,000
   o $100,001 or greater

7. a.) Which of the following best describes your current financial situation:
   o I have less than $1,000 in debt
   o I have less than $5,000 in debt, but greater than $1,000
   o I have greater than $5,000 in debt, but less that $10,000
   o I have greater than $10,000 in debt

   b.) Which of the following best describes your current financial situation:
   o I have a total savings less than $1,000
   o I have total savings greater that $1,000, but less than $5,000
   o I have total savings greater than $5,000, but less than $10,000
   o I have total savings greater than $10,000

SCREEN 4
Survey of Males About Male Hormonal Contraception

Sexual/Relationship Profile
8. Which of the following best describes you:
   - I am married
   - I am divorced
   - I am single never married
   - I am widowed

9. Which of the following best describes you:
   - I am in a relationship with one person to whom I am faithful
   - I am not currently dating anyone
   - I am currently dating, but have not committed to a relationship with one person

10. How many sexual partners have you had sex with to date (please count only individuals you have had either vaginal or anal intercourse with):

11. From the list below please check off any of the sexual behaviors you have engaged in:
   - Kissing with a closed mouth
   - Kissing with an open mouth
   - Having your genitals stimulated by the hand of a partner
   - Stimulating the genitals of a female partner with your hand
   - Stimulating the genitals of a male partner with your hand
   - Receiving oral sex
   - Performing oral sex on a female
   - Performing oral sex on a male
   - Engaging in vaginal intercourse
   - Engaging in anal intercourse in the Penetrative Role
   - Engaging in anal intercourse in the Receptive Role

12. Please identify the number of partners you have had any sexual experience with for each category below
   a.) Female
   b.) Male

SCREEN 5
Survey of Males About Male Hormonal Contraception

Moral Profile

Please select the phrase that most closely represents how you feel about the behavior described for each item.
13. Two individuals who are not married having sex with one another.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

14. An individual who is married or in a committed relationship having sex with someone who is not their spouse or partner.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

15. Two people who are the same sex having sex with each other.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

16. One person maintaining sexual relationships with two or more people during an overlapping period of time.
   - I believe this behavior is completely unacceptable
   - I believe this behavior is wrong in most cases
   - I am uncertain how I feel about this behavior
   - I believe this behavior is right in most cases
   - I believe this behavior is completely acceptable

SCREEN 6
Survey of Males About Male Hormonal Contraception

Reproductive Intentions
17. How many biological children do you currently have

   [ ]

18. How many adopted or stepchildren do you currently have:

   [ ]

19. How many children would you like to adopt in the future:

   [ ]
20. How many of your own biological children would you like to father in the future?

21. How important is it to you that you father a child or children at some point in your life?
   - No importance, I am certain I do not want children
   - Some importance, I have not decided whether or not I want to have children
   - Great Importance, I am certain I want to have children
   - Unsure

SCREEN 7
Survey of Males About Male Hormonal Contraception

Contraceptive History

For each type of birth control listed below, please indicate the level of experience you have had with that particular method.

22. Male Condom (Latex or Polyurethane)
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

23. Cervical Cap
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
   - I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   - I or my Partner(s) Have used this method in the past, but do not plan to use it again
   - I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   - I am unsure about my history with this method

24. Oral Contraceptive Pill (Birth Control)
   - I or my Partner(s) Have Never Used this method
   - I or my Partner(s) Currently Use this method
25. Contraceptive Patch (Ortho Evra)
   o I or my Partner(s) Have Never Used this method
   o I or my Partner(s) Currently Use this method
   o I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   o I or my Partner(s) Have used this method in the past, but do not plan to use it again
   o I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   o I am unsure about my history with this method

26. Vaginal Contraceptive Ring (Nuva Ring)
   o I or my Partner(s) Have Never Used this method
   o I or my Partner(s) Currently Use this method
   o I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   o I or my Partner(s) Have used this method in the past, but do not plan to use it again
   o I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   o I am unsure about my history with this method

27. Period Abstinence (Rhythm, Sympto-Thermal)
   o I or my Partner(s) Have Never Used this method
   o I or my Partner(s) Currently Use this method
   o I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   o I or my Partner(s) Have used this method in the past, but do not plan to use it again
   o I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   o I am unsure about my history with this method

28. Abstinence (Celibacy)
   o I or my Partner(s) Have Never Used this method
29. Withdrawal
   o I or my Partner(s) Have Never Used this method
   o I or my Partner(s) Currently Use this method
   o I or my Partner(s) Expect to Use this method in the future, but have not yet used it
   o I or my Partner(s) Have used this method in the past, but do not plan to use it again
   o I or my Partner(s) Have used this method in the past and might use it again in the future, though not currently using it
   o I am unsure about my history with this method

30. Please list any other contraceptive methods you have used:
    [Female Condom, Animal (Lamb) Skin Condoms, Diaphragm, Lea’s Shield, Spermicide (foams, gels, films, creams, etc… used to destroy sperm cells), Contraceptive Sponge, Post-Coital Emergency Contraceptive (Plan B, Preven, morning after pill), Injection Contraception (Depo-Provera, 1X/3 months), Injection (Lunelle, 1X/1 month), Contraceptive Implant (Norplant, 5 rods), IUD Intrauterine Device, Female Sterilization (Tubal Ligation), Female Sterilization (Implant, Essure), Male Surgical Sterilization (Vasectomy), Douching]

SCREEN 8
Survey of Males About Male Hormonal Contraception

31. Medical professionals I go to (doctors, nurses, physicians assistants) would think
    o I should definitely try using Male Hormonal Contraception
    o I should probably try using Male Hormonal Contraception
    o Would not care whether or not I used Male Hormonal Contraception
    o I should probably not try using Male Hormonal Contraception
    o I should never try using Male Hormonal Contraception

32. My friends would think
    o I should definitely try using Male Hormonal Contraception
    o I should probably try using Male Hormonal Contraception
    o Would not care whether or not I used Male Hormonal Contraception
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>33. My significant other (girlfriend, wife, sexual partners) would think</td>
<td></td>
</tr>
<tr>
<td>- I should definitely try using Male Hormonal Contraception</td>
<td></td>
</tr>
<tr>
<td>- I should probably try using Male Hormonal Contraception</td>
<td></td>
</tr>
<tr>
<td>- Would not care whether or not I used Male Hormonal Contraception</td>
<td></td>
</tr>
<tr>
<td>- I should probably not try using Male Hormonal Contraception</td>
<td></td>
</tr>
<tr>
<td>- I should never try using Male Hormonal Contraception</td>
<td></td>
</tr>
</tbody>
</table>

34. My family members (parents, siblings, etc…) would think

- I should definitely try using Male Hormonal Contraception
- I should probably try using Male Hormonal Contraception
- Would not care whether or not I used Male Hormonal Contraception
- I should probably not try using Male Hormonal Contraception
- I should never try using Male Hormonal Contraception

**SCREEN 9**

Survey of Males About Male Hormonal Contraception

35. How medical professionals I go to (doctors, nurses, physicians assistants) feel about me using Male Hormonal Contraception is

- Very important to me
- Somewhat important to me
- Uncertain how I feel about their opinion
- Unimportant to me
- Very unimportant to me

36. How my friends feel about me using Male Hormonal Contraception is

- Very important to me
- Somewhat important to me
- Uncertain how I feel about their opinion
- Unimportant to me
- Very unimportant to me

37. How my significant other (girlfriend, wife, sexual partners) feels about me using Male Hormonal Contraception is

- Very important to me
- Somewhat important to me
- Uncertain how I feel about their opinion
- Unimportant to me
- Very unimportant to me
38. How my family members (parents, siblings, etc…) feel about me using Male Hormonal Contraception is
   o Very important to me
   o Somewhat important to me
   o Uncertain how I feel about their opinion
   o Unimportant to me
   o Very unimportant to me

SCREEN 10
Survey of Males About Male Hormonal Contraception

39. By using Male Hormonal Contraception I would not have to deal with a pregnancy or child.
   o Agree strongly
   o Agree somewhat
   o Unsure
   o Disagree somewhat
   o Disagree strongly

40. By using Male Hormonal Contraception I would not need to trust my female partners to be honest about their birth control use or rely on them to use their birth control correctly.
   o Agree strongly
   o Agree somewhat
   o Unsure
   o Disagree somewhat
   o Disagree strongly

Disagree

41. By using Male Hormonal Contraception I would use condoms less often to prevent pregnancy.
   o Agree strongly
   o Agree somewhat
   o Unsure
   o Disagree somewhat
   o Disagree

42. By using Male Hormonal Contraception I would not be protected against Sexually Transmitted Infections.
   o Agree strongly
   o Agree somewhat
   o Unsure
   o Disagree somewhat
   o Disagree

SCREEN 11
Survey of Males About Male Hormonal Contraception

43. Being able to prevent pregnancy by using Male Hormonal Contraception would be a good thing.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree

44. Not needing to trust or rely on a female partner to correctly use birth control by using Male Hormonal Contraception would be a good thing.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree

45. Not needing to use condoms to prevent pregnancy by using Male Hormonal Contraception would be a good thing.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree

46. Not being protected against Sexually Transmitted Infections by Male Hormonal Contraception would be a bad thing
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree

SCREEN 12
Survey of Males About Male Hormonal Contraception

Assuming Male Hormonal Contraception was approved by the FDA and available to the general public please select the option for each statement that best describes you.

47. I would seek out information about how male hormonal contraception works and what the risks and benefits of taking it are.
   - Very likely
48. I would be willing to visit a doctor's office, hospital, or clinic in order to obtain Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

49. I would be comfortable having a female doctor or nurse discuss and prescribe male hormonal contraception for me.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

50. I would be comfortable having a male doctor or nurse discuss and prescribe male hormonal contraception for me.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

51. Taking Male Hormonal Contraception to prevent me from causing a pregnancy would be compatible with my personal beliefs about what is right and wrong.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

52. I would be fine with getting a complete physical exam in order to get a prescription for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
53. I would be fine with providing samples of my blood in order to get a prescription for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

54. I would be fine with providing a sample of my semen (sperm) in order to make sure the Male Hormonal Contraception I was taking was working properly.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

SCREEN 13
Survey of Males About Male Hormonal Contraception

Assuming Male Hormonal Contraception was approved by the FDA and available to the general public please select the option for each statement that best describes you.

55. I would be willing to pay ten dollars a month for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

56. I would be willing to pay twenty-five dollars a month for Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

57. I would be willing to pay fifty dollars a month for Male Hormonal Contraception.
58. I would take Male Hormonal Contraception even if there was a chance it would periodically affect my Mood.
   o Very likely
   o Somewhat likely
   o Uncertain
   o Somewhat unlikely
   o Very unlikely

59. I would take Male Hormonal Contraception even if there was a chance it would change the size or texture of my testicles (balls).
   o Very likely
   o Somewhat likely
   o Uncertain
   o Somewhat unlikely
   o Very unlikely

60. I would take Male Hormonal Contraception even if there was a chance it would cause me to gain some weight.
   o Very likely
   o Somewhat likely
   o Uncertain
   o Somewhat unlikely
   o Very unlikely

61. I would take Male Hormonal Contraception even if there was a chance it would cause an increase in my libido (sex drive).
   o Very likely
   o Somewhat likely
   o Uncertain
   o Somewhat unlikely
   o Very unlikely

62. I would take Male Hormonal Contraception even if there was a chance it would cause a decrease in my libido (sex drive).
   o Very likely
   o Somewhat likely
   o Uncertain
   o Somewhat unlikely
63. I would take Male Hormonal Contraception if it involved getting an injection (shot) once a month.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

64. I would take Male Hormonal Contraception if it involved taking a pill once a day, every day.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

65. I would take Male Hormonal Contraception if it involved wearing a transdermal patch (similar to a nicotine patch) for as long as I wanted to continue using Male Hormonal Contraception
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

SCREEN 14
Survey of Males About Male Hormonal Contraception

66. I would like to learn more about Male Hormonal Contraception.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly

67. I believe it is very important to develop more methods of Birth Control that men can use without a partners help.
   - Agree strongly
   - Agree somewhat
   - Unsure
   - Disagree somewhat
   - Disagree strongly
68. I would try Male Hormonal Contraception if it were readily available as an FDA approved form of birth control.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

69. If you were going to try using Male Hormonal Contraception, what would be the most important reason you would do so?
   - I do not trust my female partner(s) to use birth control properly
   - I do not trust my female partner(s) to be honest about whether or not they are using birth control
   - I would like to have another method of birth control to use in addition to methods I or my partner(s) are already using
   - I would like to share the cost for birth control with my partner(s)
   - I would like my partner(s) to be able to stop using their birth control method
   - I would like to avoid having to use condoms
   - Other, Describe

SCREEN 15
Survey of Males About Male Hormonal Contraception
70. I would use condoms while I was using Male Hormonal Contraception.
   - Very likely
   - Somewhat likely
   - Uncertain
   - Somewhat unlikely
   - Very unlikely

71. How do you believe Male Hormonal Contraception would change your current pattern of condom use?
   - The availability of Male Hormonal Contraception would definitely increase the number of times I used a condom during sexual intercourse
   - The availability of Male Hormonal Contraception would probably increase the number of times I used a condom during sexual intercourse
   - The availability of Male Hormonal Contraception would have no effect on how often I use condoms
   - The availability of Male Hormonal Contraception would probably decrease the number of times I used a condom during sexual intercourse
The availability of Male Hormonal Contraception would definitely decrease the number of times I used a condom during sexual intercourse.

SCREEN 16
Survey of Males About Male Hormonal Contraception

Thank you for completing the survey.

Your answers have been recorded automatically.
You can now close your browser window.
February 26, 2007

Melissa Marie Thompson
ACHVE
Kent State University

Re: 07-217 – “Survey of Males About Male Hormonal Contraception”

Dear Ms. Thompson:

I am pleased to inform you that the Kent State University Institutional Review Board approved your Application for Approval to Use Human Research Participants as Level I. This application was approved on November 30, 2006 and is good for one year.

HHS regulations and Kent State University Institutional Review Board guidelines require that any changes in research methodology, protocol design or principal investigator have the prior approval of the IRB before implementation and continuation of the protocol. The IRB further requests an annual report and a final report at the conclusion of the study.

A periodic review form will be sent following the marked end date of your protocol or within a year of the original date of approval of the application. Please complete the form and return it. If the project is expected to extend beyond the marked end date, please insert the new expected end date on the periodic review form. If the project is complete and all data analysis has concluded, please mark the appropriate box on the form. If data analysis is continuing, research is considered to be continuing.

If you have any questions, please contact me at 330.672.2704. (klight@kent.edu)

Sincerely,

Katherine Light
IRB Administrator

cc: R. Scott Olds
REFERENCES


Ringheim, K. (2002). When the client is male: Client-provider interaction from a gender perspective *Studies in Family Planning*, 24(2) 87-99.


