

Condom use Self-Efficacy in the Pregnant Adolescent Population

by

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## ABSTRACT OF THE DISSERTATION

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The purpose of this study was to examine condom use self-efficacy, the ability to execute safer sexual behavior, in the pregnant adolescent population. In order to determine what may drive condom use self-efficacy the relationships between a participants prior related behavior in condom use, perceived barriers to condom use, perceived self-efficacy in condom use and how they impact commitment to use condoms were explored in order to gain an understanding of what drives condom use self-efficacy in this population. Since many studies related to risky sexual behavior have already been performed on the non-pregnant adolescent population it is important to compare the study results from both the non-pregnant and pregnant adolescent populations. This knowledge could lead to an understanding of any differences in these two populations; and if so how these differences may drive change in interventions in the future for pregnant adolescents that would decrease their risky sexual behavior.

The relationships described above were hypothesized and measured based on the Health Promotion Model (HPM), a Nursing model, which posits that these relationships could collectively influence health behavior, which in this study would ultimately be condom use. A mediation model was also tested to explore whether perceived self-efficacy in

condom use mediates prior related behavior and commitment to use condoms in the pregnant adolescent population. A descriptive correlational design was used to examine the other hypothesized relationships. This included testing of the commitment to use condoms and how the determinants of prior related behavior with condom use, perceived self-efficacy in condom use, and perceived barriers of action to condom use affected that commitment. A convenience sample of 40 pregnant adolescents of whom were 20 weeks or greater in their pregnancy and were between the ages of 18 and 24 years old were recruited. The PI developed a demographic survey and this survey along with the Condom Use Self-Efficacy Scale (CUSES) was administered to these participants to collect the data for this exploratory study.

Study results indicated that, in opposition to previous studies performed on non-pregnant adolescents, in the pregnant adolescent population there were no significant relationships between; 1) Commitment to use condoms and prior related behavior with condom use; 2) Perceived self-efficacy in condom use; and 3) Perceived barriers of action to condom use. Another important concept found was that contrary to the non-pregnant adolescent population, the pregnant adolescent population rated themselves very highly in condom use self-efficacy but did not use condoms nor plan to use condoms in the future.

Given the STD rates were found to be very high in pregnant adolescents, putting both the mother and fetus at very high risk for a multitude of complications, there are opportunities for improvement in their health care. This study provides very valuable information that indicates the potential need for development and use of alternate education that meets the specific needs of pregnant adolescents. Replication of this study

in a larger group, with multiple geographic settings, possible testing of other related theoretical constructs, and additional demographic information may also provide further insight into the special needs of this vulnerable population and improve generalizeability of these study results.

## Preface

I would like to thank my husband, Scott and my children Brianna, Sydney, and Mia for their endless support during this endeavor. Their love and encouragement have been a source of motivation for me and together they have provided the inspiration I needed to finish this project.

I am also grateful to the members of my committee for their support and expertise. In particular, I would like to thank my chairperson, Dr. Claudia Beckmann for her guidance, knowledge, and patience. She has also been an inspiration and I was blessed to have her as my chair.

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## Chapter 1

### The Problem

Adolescent girls (ages 11-24) in the U.S. have the highest rate of sexually transmitted diseases of any age group and the rates are continuing to increase, especially among African Americans and Latinos (National Center for Health Statistics, 2013, Sales et al., 2012). Although latex male condoms, when used consistently and correctly, are highly effective in preventing transmission of all STDs, studies have shown that only about half of sexually active adolescents report consistent male condom use (AAP Committee on Adolescence, 2011). Condom use self-efficacy, defined as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated performance, has been shown to be one of the most important predictors of intended and actual condom use” (Bandura, 1986). According to Bandura (1977) the greater the perceived efficacy, the more individuals will engage in a given behavior even in the face of barriers and adversity. While failure to use male condoms has been shown to be one of the most common STD/HIV risk-associated behaviors among women of childbearing age the lack of reported condom use continues to rise (National Center for Health Statistics, 2013). The CDC STD Surveillance (2011) has reported that the largest STD rate increases during 2007-2011 were among women aged 15–24 years (from 15.7 to 18.9 cases per 100,000 population) and of those cases, on the average black adolescents were 30 times more likely than white adolescents to have a new STD and 24 times more likely than Hispanic adolescents to have a new STD.

With nearly half of the 19 million new cases of STDs in the United States occurring in the adolescent population, it is imperative that prevention programs targeted at this group are designed to help eliminate unsafe sexual practices (National Center for Health Statistics, 2013). Many studies have been performed to try to determine how to stop this rampant spread of STDs in the non-pregnant adolescent population. Dennis & Faux (1999) performed a meta-analysis on self-efficacy and behavior control and developed instruments to measure self-efficacy and its impact on behavior change. Although self-efficacy has been widely supported to influence behavior change, the interaction of self-efficacy with other predictors of health behaviors that impact risky sexual behavior still needs to be further explored. A few of the most significant studies that have researched methods to prevent risky sexual behavior and lower STD rates in non-pregnant adolescents have been performed by Loretta Sweet Jemmott et al. (1992, 1998, 2000, 2005, 2008, & 2010). In these studies mainly Social Cognitive Theory served as the theoretical foundation and it was repeatedly found that in non-pregnant adolescents, behavioral skill-building educational models have been effective in increasing condom use and preventing STDs, especially in the black and Hispanic populations. Although this preliminary research is an encouraging foundation for the belief that adolescent risky sexual behavior can be changed it has not been tested on the pregnant adolescent population, which has been found to be at even higher risk for STDs (Meade & Ickovics, 2005).

Based on research performed by Koniak-Griffin and Brecht (1995), it has been shown that pregnant adolescents were more likely than their non-pregnant counterparts to

have unprotected sex. A similar study, (Crosby et al, 2002) focused on pregnant African American adolescents, and also supported these findings in that they found, during pregnancy, 31 % of the pregnant adolescents tested positive for at least one of the three most common STDs (Chlamydia, Gonorrhea, or Trichomoniasis). The researchers in this study concluded that, based on the empirical literature, during pregnancy the risk of acquiring an STD may be higher due to the beliefs that condom use is primarily a protective behavior against pregnancy, and therefore unimportant during pregnancy. This is a common misconception that puts adolescents at very high risk for STDs during pregnancy (Crosby et al, 2002). In another related study, with pregnant African American adolescents, findings revealed that pregnant adolescents were roughly 2.4 times more likely than their non-pregnant counterparts to report infrequent condom use and about twice as likely to report unprotected vaginal sex in the past three months (Crosby et al., 2003). A systematic review of sexual risk among pregnant and mothering adolescents in the U.S. revealed that, 78% to 88% engaged in sex without condom use and over one-third of them never used condoms. This review also found that pregnant teens were about five times less likely to use condoms compared to non-pregnant teens. (Meade & Ickovics, 2005)

It is clear that STDs pose a risk to all women based on the above research but pregnant women are at even higher risk; and the risk impacts are even greater given that both the mother and baby can be impacted. In non-pregnant women STDs can cause cervical and other cancers, chronic hepatitis, pelvic inflammatory disease, infertility, and other complications (CDC, 2011). In pregnant woman, STDs can also cause early onset

of labor, premature rupture of the membranes, and uterine infection after delivery. The harmful effects of STDs can also affect the babies including; stillbirth, low birth weight, conjunctivitis, pneumonia, neonatal sepsis, neurologic damage, blindness, deafness, acute hepatitis, meningitis, chronic liver disease, and cirrhosis (CDC, 2011). Some STDs such as Syphilis cross the placenta and infect the baby while it is in the uterus. Other STDs such as Gonorrhea, Chlamydia, Hepatitis B, and Genital Herpes, can be transmitted from the mother to the baby during delivery as the baby passes through the birth canal. HIV, a blood borne pathogen, can be even more dangerous as it can cross the placenta during pregnancy, infect the baby during the birth process, and can infect the baby through breastfeeding (CDC, 2011). Often these STDs are without signs or symptoms meaning the woman and baby could be infected and may not realize it until there is already a complication with the pregnancy.

Risky sexual behavior in pregnant adolescents has lifelong impacts for both the mother and unborn child. Not only are the mothers at heightened risk for STDs the unborn child is also at risk for poor neurological development and preterm delivery leading to lifelong complications (CDC, 2011). With the concurrent potentially long-term consequences of STDs it is imperative to address condom use with these at risk populations of which adolescents both pregnant and non-pregnant are of the largest and most rapidly growing infected groups in the U.S. (CDC, 2011).

When the adolescent attends the prenatal clinic and is most likely being seen in regular intervals during pregnancy, they are potentially more open to improving care of themselves. Therefore this could be an effective time to not only improve their nutrition



and activity levels, but also to encourage care of themselves by teaching them about STD risks and how to protect themselves and their unborn child from STDs.

A significant amount of research across many disciplines has explored risky sexual behavior in adolescents and has attempted to determine what drives risky sexual behaviors in minority populations (Eaton et al., 2011; Jemmott et al., 2000, 2005, 2010; Sales et al., 2012). Although these studies all support behavioral interventions that can reduce risky sexual practices, it is important to be cautious in generalizing from one population to another (Eaton et al., 2011). Virtually no STD/HIV prevention studies have been conducted with pregnant adolescents even though the literature available is clear about the problem and poor outcomes of risky sexual behavior in both groups of adolescents. There is a gap in the literature regarding known studies performed that test what drives risky sexual behavior in the pregnant adolescent population, specifically what drives the commitment to use condoms. Based on theory, it is important to first explore what drives self-efficacy, as it could in turn possibly drive the intention and use of condoms (Bandura, 1986; Pender et al., 2010).

Research has shown that people need to feel confident in their ability to use condoms, or they won't use them (Baele et al., 2001). It has also shown that someone who has high condom use self-efficacy will feel more comfortable buying a condom and carrying it with them for whenever they might need one. They may also be more confident in their ability to ask their partner to use a condom and to say "no" to anyone who refuses to comply (Baele et al., 2001). Self-efficacy, in condom use, has not only the potential to increase peoples' intentions to use a condom, but it also can increase the percentage of

time they actually do use them (Baele et al., 2001). Both of these are important factors in the promotion of safer sex. By providing opportunity for adolescents to build self-efficacy and skills in negotiating condom use with their partners, the inhibition to use condoms can be overcome (Jemmott et al., 2008).

As it is hypothesized that perceived high self-efficacy does improve the commitment to use condoms and the actual behavior of using condoms; the antecedents to self-efficacy must also be explored (Brafford and Beck, 1991). Some of the recognized antecedents to condom use self-efficacy are; self-esteem, self-motivation, personal competence, personal health status, and the individual's definition of health (Pender, 2010). Theorists posit that these antecedents can influence one's perception of benefits and barriers to condom use commitment (Bandura, 1986; Pender et al., 2010). These antecedents are also categorized in the Health Promotion Model as what collectively create the individual's characteristics and experiences and are referred to as prior related behavior, which can be a predictor in condom use self-efficacy and commitment to use condoms (Pender, 2010).

There are many factors involved in risky sexual behavior. For example, Jessor, R. (Ed.) (1998) defines risk-taking as a risk factor in development of teenagers. Longitudinal studies have shown that in older adolescents risk-taking is both statistically normative and psychologically adaptive, thus adolescents are prone to risky behavior due to the developmental stage that they go through during adolescence (Baumrind, 1987; Shedler & Block, 1990). The key is to identify what interventions might change some of the normal risky behavior, minimally to the point that it decreases risky sexual behavior.

In the adolescent population, perceived benefits of safe sex are better predictors of sexual risk behavior than perceptions of the costs of unsafe sex (Parsons et al., 1997).

Perceived benefits are even more important relative to situations of high temptation and/or low self-efficacy (Parsons et al., 1997).

These individual characteristics and experiences can lead to behavior specific cognitions which is why it is important to first begin with testing variables like prior related behavior, which can be important constructs related to self-efficacy and condom use in the adolescent population. Indirect measures of adolescent's attitude, perceived norms, and self-efficacy can be assessed and correlated with their intention to decrease risky sexual behavior. Therefore, prior to carrying out analyses in order to ultimately develop effective interventions one must first understand the population in which they are hoping to effect change. Since all of the above factors that may affect risky sexual behavior cannot be tested at once, this study focuses on prior related behavior, perceived barriers, and self-efficacy as these specific constructs are theoretically linked as leading predictors of risky sexual behavior in the non-pregnant adolescent population.

Research findings clearly state that pregnant adolescents are at high risk for contracting STDs due to lack of condom use. As further research is performed in this population, it is anticipated that in order to develop effective interventions designed to decrease risky sexual behavior, it is vitally important to first gain an understanding of factors that may influence commitment to use condoms in this population.

### Statement of the Problem

This research explored the relationships among prior related behavior with condom use, perceived self-efficacy in condom use, perceived barriers of action to condom use, and commitment to use condoms in the pregnant adolescent population.

### Sub-Problems

- 1) Is there a relationship between prior related behavior with condom use and commitment to use condoms in the pregnant adolescent population?
- 2) Is there a relationship between perceived self-efficacy in condom use and commitment to use condoms in the pregnant adolescent population?
- 3) Is there a relationship between perceived barriers of action to condom use and commitment to use condoms in the pregnant adolescent population?
- 4) Does perceived self-efficacy mediate prior related behavior with condom use and commitment to use condoms in the pregnant adolescent population?

### Definition of Terms

Prior related behavior is theoretically defined as any past experiences with the intention to use condoms (Pender et al., 2010). Prior related behavior is operationally defined as the subject's score on the Condom Use Self-Efficacy Scale (CUSES). This

instrument uses the Likert Scale with 1= Strongly Agree (Always) to 5= Disagree (Never). CUSES was broken down into three subscales with Subscale 1 (Questions # 1, 2, 3, and 14) being utilized for this antecedent (Barkley & Burns (2000); Brafford & Beck, 1991).

Perceived self-efficacy is theoretically defined as the judgment of the personal ability to organize and execute a health promoting behavior. It also influences perceived barriers to action, therefore higher self-efficacy is proposed to result in decreased perceptions of barriers to the performance of condom use (Pender et al., 2010). Perceived self-efficacy is operationally defined as the subject's score on the CUSES Subscale 2 (Questions # 4-8, 11-14, and 19-28) (Barkley & Burns (2000); Brafford & Beck, 1991).

Perceived barriers of action are theoretically defined as anticipated, imagined, or real deterrence's that can cause personal costs and decreased performance of a given behavior (Pender et al., 2010). Perceived barriers of action are operationally defined as the subject's score on the CUSES Subscale 3 (Questions # 9, 10, and 15) (Barkley & Burns (2000), Brafford & Beck, 1991).

Commitment to use condoms is theoretically defined as the concept of intention and identification of a planned strategy that leads to the implementation of condom use during intercourse (Pender et al., 2010). Commitment to use condoms is operationally defined as the subject's self-reported condom use on the demographic survey Likert Scale (Over past month) and plans for condom use in future sexual relations (In the following

month) also based on the demographic survey Likert Scale, both with 1= Strongly Agree (Always) to 5= Disagree (Never). (See Appendix A – v Demographic survey)

In this study the pregnant adolescent population is defined as individuals whom are at the end of the period between puberty and the completion of physical growth, which is defined as 18 to 24 years of age and are greater than 20 weeks pregnant.

### Delimitations

The sample in this study included adolescents age 18-24 that were greater than 20 weeks pregnant. They were also required to be able to read, write, speak, and understand English.

### Significance of the Problem

While the research on risky sexual behavior in pregnant adolescents is still in the very early stages, it is clear that improving pregnant adolescents' commitment to condom use may decrease risky sexual behavior, which would ultimately decrease the STD rate in this population.

With the clear statistics that nearly one-third of pregnant adolescents are infected with at least one STD, and a significant proportion of them are being re-infected during pregnancy, (Meade & Ickovics, 2005) it is of utmost importance to understand what exactly is driving their commitment or in this case non-commitment to use condoms. This information can then be utilized to develop interventions that can be tailored to specifically meet the needs of the pregnant adolescent population and to

ultimately decrease their risky sexual behavior. Since based on theory self-efficacy may be a strong predictor of condom use, it makes sense to first determine what drives self-efficacy in condom use in this population. While studying self-efficacy, prior related behavior and perceived barriers of action, must also be examined, as they are also constructs related to self-efficacy. These relationships then can be evaluated as to how they are related to commitment to use condoms in this population. It is the exploration of these theoretical relationships that may provide an increased understanding of what drives the commitment to use condoms in the pregnant adolescent population.

## Chapter 2

### Review of the Literature

This chapter will present the theoretical and empirical literature as it related to determinants of risky sexual behavior in the pregnant adolescent population. Specific determinants consist of constructs from the Health Belief Model/Health Promotion model (HBM/HPM) and include prior related behavior, perceived self-efficacy, perceived barriers of action and commitment to use condoms. Theoretical and empirical literature that is relevant to these relationships will be presented in this chapter. The first section will present a discussion of the HBM/HPM as it is the theoretical framework that will guide this study. The second section will provide a review of the empirical literature that supports the relationships among the HBM/HPM concepts to be tested in this study. Lastly, gaps in the empirical literature will be identified and theoretical rationales for the research questions and the appropriate hypotheses will be clearly outlined.

#### The Health Belief Model/Health Promotion Model

The Health Belief Model (HBM) and Health Promotion Model (HPM) provide a foundation for understanding and explaining risky sexual behavior in this study. These models are both derived from Social Learning/Cognitive Theory and are based on the multi-dimensional concept that health behavior is determined by personal beliefs or perceptions about a disease and the strategies available to decrease its occurrence (Pender et al., 2002). One major difference between these theories is that the HBM was based on a sociological model and the HPM was based on a nursing model. The main constructs



of the HBM are perceived seriousness, perceived susceptibility, perceived benefits and perceived barriers; and the theory posits that these constructs can individually or collectively influence health behavior (Janz & Becker, 1984). Although the original model was developed in the 1960's it wasn't until 1988 when the constructs of motivating factors, cues to action and self-efficacy were added to this model (Strecher & Rosenstock, 1997). The early work on the Health Belief Model served as a foundation for the Health Promotion Model which was developed and revised in the 1980's and early 1990's. The Health Promotion Model is very similar to the Health Belief Model except that it does not incorporate perceived fear or threat as a motivation for health behavior. As a Nursing model, it may be a slightly better fit for studying the pregnant adolescent population because of the developmental stage that most adolescents are in, when they perceive themselves to be invulnerable (Royer & Zahner, 2009).

The Health Promotion Model focuses on depicting the multidimensional nature of persons interacting with their interpersonal and physical environments as they pursue health. It integrates many of its constructs from Expectancy-Value Theory and Social Learning/Social Cognitive Theory (Tomey & Alligood, 2005). The HPM focuses on individual characteristics or behavior including the concepts of prior related behavior and personal factors. These in turn drive behavior-specific cognitions and affect including, perceived benefits of action, perceived barriers to action, and perceived self-efficacy. Along with a variety of other elements, the ultimate outcome of these combined factors is proposed to be commitment to a plan of action and ensuing health promoting behavior. (Tomey & Alligood, 2005)

Numerous studies have shown that perceived barriers tend to be the most powerful of the HPM dimensions in explaining or predicting health promoting behavior (Pender, 2002). In 1988 the construct of self-efficacy was added to the HBM in order to expand the model so that it would be more effective in application to more complex behavioral risks, including risky sexual behavior, which necessitate an individual's perception of self-competency in order to engage in health protective behaviors over any lengthened period of time (Strecher & Rosenstock, 1997). The construct of self-efficacy is a central concept that is also derived from Social Cognitive Theory (SCT) and accordingly it is proposed that "the cumulative perception of efficacy determines predisposition to undertake a given behavior" (Bandura, 1989). As it is important to consider all theories that have similar constructs, in order to understand why a given theory is chosen for continued research, other theories based on SCT will also be explored.

Other theories that are deeply rooted in Social Cognitive Theory are The Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB), which also focus on an individual's behavior, attitude and intention to change behavior. The TRA assumes that behavior is under the control of the individual and that there are no barriers to the performance of the intended behavior. The TPB adds the construct of perceived behavioral control which is measured by beliefs regarding opportunities to perform a behavior as well as factors that may inhibit performance of that behavior. Both of these theories are very useful in approaching health promotion and how to affect change in an individual's intentions toward a given behavior. (Bandura, 1986) However, in order to

understand what drives risky sexual behavior in a specific population, the HPM is more effective at helping one to understand how prior related behavior and personal factors can drive commitment to action. The HPM specifically addresses the individual's beliefs and perceptions about the risk of illness and the likelihood of the individual to avoid illness. In application to risky sexual behavior; the beliefs would be related to sexual transmitted diseases (STDs) in relation to the use of condoms to prevent obtaining an STD.

### Self-Efficacy

The most important construct that was focused on in relation to risky sexual behavior was perceived self-efficacy. It is hypothesized that when self-efficacy is perceived to be high, it does indeed improve the commitment to use condoms, and the actual behavior of using condoms (Brafford & Beck, 1991). The theoretical proposition from the Health Promotion Model that best supports this concept is “perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior” (Pender et al., 2002).

In the HPM, the construct of self-efficacy, or perceived competence, is assumed to be a predictor that will increase the likelihood of commitment to action and actual performance of a specified behavior. Another key proposition in this model is that the greater the perceived self-efficacy, the fewer perceived barriers; which as a mediator of behavior, should actually increase the performance of the health promotion behavior (Pender et al., 2002). Therefore in the application of the theory to risky sexual behavior it could be of utmost importance to measure the construct of self-efficacy in a given

population in order to determine if there is the likelihood of future commitment to action and what may drive that commitment in the future.

### Behavior Specific Constructs Related to Self-Efficacy

The HPM suggests that in combination, prior related behavior, perceived self-efficacy, perceived barriers of action and commitment to use condoms can lead to an individual's commitment to a plan of action and ensuing health promoting behavior.

#### *Prior Related Behavior*

Prior related behavior can be very complex but the HPM focuses on specific prior behavior and inherited and acquired characteristics that influence the individual's beliefs about a specific health related behavior. This prior related behavior can then precipitate perceived barriers, perceived benefits, and ensuing levels of self-efficacy that either deter or inspire the individual toward participating in a specific health promoting behavior. (Pender et al., 2010) This level of perceived competence to perform this behavior can then lead to a commitment to continue to perform this behavior in the future. According to Pender et al. (2010) the greater the commitment to a plan of action the less likely that the perceived barriers will inhibit the individual from fulfilling their plan. Furthermore, the greater the commitments to a specific plan of action, the more likely that they will continue to participate in the health promoting behavior over time.

Prior related behavior in condom usage can be affected by many different variables. However, an excellent randomized controlled study performed by Sales et al. (2012) does a thorough job of examining and explaining pertinent factors that can be

associated with prior condom use behavior and its impact on non-change behavior in condom use following STD/HIV prevention intervention programs. Based on Social Cognitive Theory, this study focused on the extent to which socio-demographic, psychosocial, and life history factors differed in those who did and did not increase condom usage after participation in an STD/HIV prevention program. Out of 205 African American, adolescent, female, participants, it was found that upon enrollment in the program, condoms were used on average in less than half (48%) of the sexual encounters in the two weeks prior to the program and 18% of the participants tested positive for either Chlamydia or Gonorrhea. The STD/HIV intervention program utilized in this study was the HORIZONS program, which has been nationally adopted through the CDC as it has been shown to consistently be effective in reducing risky sexual behavior and STDs (DiClemente et al., 2009). This program consisted of STD/HIV educational prevention sessions, provision of vouchers to have their male partner tested for STDs in the clinic, and follow up phone calls to reinforce prevention information presented in the sessions. Data was collected at baseline and at 6 month follow up and upon multivariate analyses it was shown that 43.4% of the participants did not increase their condom usage. It was also found that in this condom use non-change group there was significantly higher fear of condom use negotiation and lack of improvement in condom use self-efficacy. These results highlight the importance of involving specific strategies to negotiate condom use in established relationships where condom use is not normative. Overall, this study provided valuable insight into prior related behavior and how it can impact STD/HIV prevention behaviors.

### *Perceived Barriers*

Since perceived barriers have been shown to be linked in explaining or predicting health promoting behavior, they will be investigated in relation to condom use behavior (Pender, 2002). Perceived barriers to condom use are explored in the qualitative research study performed by Lesser and colleagues (2003) which utilizes the ethnographic approach of participant observation and group interviews to study pregnant adolescents and their perceptions of maternal role and HIV risk. The study participants were pregnant or mothering adolescents living in Los Angeles County, California. The eligibility criteria consisted of the women being 14-19 years of age, English or Spanish speaking, and having no pregnancy complications that might interfere with class attendance. Based on self-reported characteristics of these participants 67% were pregnant, 33% were young mothers, and they were predominantly Latina (63%) and African American (34%). The majority of them had a steady partner (87%) but few had utilized condoms at last intercourse (20%) and most of them had a lifetime history of some non-prescription drug use (78%). As demonstrated in quotes from the participants during the class sessions; efforts to decrease risky sexual behavior were overshadowed by violence, paternal incarceration, smoking, drug use, poverty, and inequality, which were found to be daily challenges in the lives of these women. The participants were also able to describe how becoming a mother empowered them to attempt to be more responsible

in HIV/STD prevention, however gender and power issues in their relationships often decreased the ability to follow through on their ongoing commitments to protect their health. Ultimately, the participants described decreased self-efficacy based on their environment. It was predicted by the author that beliefs about gender and power issues would need to be resolved with the participant and her partner in order to increase condom use self-efficacy in this population. Very few qualitative studies have been found on this topic in the adolescent population; and although this study did not address all perceived barriers, it did provide valuable insight into some of the challenges that may affect adolescents and impact their self-efficacy with condom usage.

*Empirical Support for Self-Efficacy as a Predictor for Decreased Risky Sexual Behavior*

This thorough review of the literature found very few studies that support the HBM/HPM in relation to adolescent risky sexual behavior and self-efficacy as a predictor for decreased risky sexual behavior. Three of the most pertinent articles found to support this proposition will be evaluated for their congruence with this construct based on the HPM.

Baele et al. (2001) analyzed the operational and empirical adequacy of the isolated proposition from the HPM as the authors specifically state that one of its major goals was to assess to what extent self-efficacy measures can be used to predict and explain condom use. Although a specific theory to be tested in this article is not referenced, Bandura's (1986) definition of self-efficacy is referenced, which is one of the foundational propositions in his work in Social Learning/Cognitive Theory.

In this study by Baele et al. (2001) a total of 428 Flemish high school students, with a mean age of 17, were asked to complete the specified questionnaire. The instrument used was a questionnaire that was developed to assess condom use self-efficacy and actual condom use. The questionnaire was based on the Global Condom Use Self-Efficacy Scale, along with items from “other” questionnaires. A regression analysis was used to test the dependent variables of intention to use condoms and consistency of condom use in relation to the independent variable of self-efficacy. These regression analyses were performed on two groups, those who were sexually experienced (have had sexual intercourse)  $n=165$  and those who were sexually inexperienced (never had sexual intercourse)  $n=255$ . Overall, all multiple regression models were significant ( $p<.05$ ) and the correlations between self-efficacy measures and condom use intention ( $.65, p < .05$ ), and self-efficacy measures and condom use consistency ( $-.42, p < .05$ ) demonstrated that global self-efficacy did highly increase the explained variance in condom use intention and consistency. The original goals/hypotheses were “to understand the multidimensional construct of condom use self-efficacy” and “to assess to what extent these self-efficacy measures can be used to predict and explain condom use”. This study was successful in demonstrating the multidimensionality of condom use self-efficacy and was able, through principal component analysis, to narrow the construct of self-efficacy down to two major components which were ‘communication skills’ and ‘emotional control’. Condom use self-efficacy measures, which best predicted and explained condom use intention and consistency in both sexually experienced and inexperienced adolescents were also examined. It was found that global self-efficacy



measures, as opposed to singular or specific self-efficacy measures, were shown to highly increase the explained variance in condom use intention and consistency.

Kaneko's research (2007) is also appropriate to assess the operational and empirical adequacy of the HPM, with specific focus on the aforementioned proposition related to self-efficacy. In an online, anonymous cross-sectional survey, 456 women age 15-19 were asked 43 questions regarding sexual behavior, condom use, perceived barriers, and self-efficacy of safe sex with a primary sex partner. In an ensuing multivariate analysis, significant association existed between self-efficacy of practicing safe sex and condom-use behavior ( $p = <0.00$ ). The results also showed that the percentage of participants showing higher self-efficacy was higher among those who reported always using condoms than those who reported not always using condoms ( $p = <0.05$ ). Factors associated with consistent condom use were also analyzed and the variables that most highly associated with condom use included age, the lifetime number of sex partners, the perceptual barrier of "condoms reduce sexual sensation", and self-efficacy of "confidence in using condoms correctly from beginning to end" and "confidence to refuse sex if neither my partner nor I have a condom at hand" (Adjusted OR (95% CI); 0.75-4.03). The author successfully utilized the HBM /Social Cognitive Theory as the theoretical foundations for this study and highlighted that in these theories the perception of perceived barriers and perceived self-efficacy have been shown to be key factors in predicting behavior and undertaking beneficial health action. Along with the Baele et al. (2001) article, this study also provided support that self-efficacy can be a strong predictor of condom use in adolescent women.

Lastly, a cross-sectional exploratory study by Basen-Engquist and Parcel (1992) was evaluated and determined to be based on the Theory of Reasoned Action and Social Cognitive/Learning Theory (Bandura, 1986). In this study there were a total of 1,720 participants, age 14-17, whom were asked appropriate questions to assess the constructs of attitudes, norms, self-efficacy, behavioral intentions, and behaviors related to condom use. In a cross-sectional survey, administered during ninth grade social studies classes, this study tested the theoretical proposition that the participant's expectations about skills and abilities (self-efficacy) relevant to the behavior (condom use) could be used to predict the intention to perform that behavior (Bandura, 1986). The questionnaire that was developed utilized items from pre-existing instruments and tested the construct of self-efficacy, along with other variables. Overall, multi-variate analysis revealed that self-efficacy and condom use intentions had the strongest relationship to frequency of condom use ( $\beta = .23, .22$ ). These results did confirm the hypothesis that self-efficacy did contribute to explaining the respondents' sexual intentions and behaviors, especially when related to condom use. This article also referenced and tested vital components of the HBM/HPM as the construct of self-efficacy was one of the constructs measured in relation to condom use.

#### *State of HBM/HPM Theory Testing in the Adolescent Population*

The current state of the science on testing of variables of the HBM and Social Cognitive/Learning Theory and its impact on risky sexual behavior in the adolescent population is clearly quickly becoming outdated, and virtually no testing of the HPM on the adolescent population has been noted. As reported in the above studies the majority

of the applicable research on perceived self-efficacy and perceived barriers in condom use in the adolescent population was performed in the 1990's. As it is now about twenty years later, it is vitally important to perform more current testing of these concepts on the adolescent population in order to understand what is driving the continued risky sexual behavior in this population. As the HBM is the foundation for the HPM, it would be most current and appropriate to use the HPM as the foundation for further testing for this population.

#### *Perceived Self-Efficacy and Commitment to Use Condoms*

Some of the foundational literature that supports interventions that improve self-efficacy and the perceived competence to use condoms and the outcome of reduced risky sexual behavior (unprotected intercourse), in the non-pregnant population, are multiple studies that have been performed by Jemmott et al. (1992, 1998, 2000, 2005, 2008, 2010). The most recent and applicable studies will be evaluated.

In a randomized control trial performed by Jemmott et al. (2000) over 600 sexually experienced African American and Latino adolescents were given three 250-minute interventions based on cognitive-behavioral theories. These interventions included an information-based STD/HIV intervention that provided information to practice safer sex; a skill-based STD/HIV intervention which provided information and taught skills necessary to practice safer sex; and a health promotion control intervention concerned with health issues unrelated to sexual behavior. At twelve month follow up there was no statistically significant data to support the information intervention over the health

control intervention, which focused mainly on healthy lifestyle habits. The skills-intervention group however reported less unprotected sex than did the information-intervention and health-control intervention participants. The skills-intervention group also reported fewer sexual partners and were less likely to test positive for STDs compared with the health control intervention participants. This study provided support for the hypothesis that improving self-efficacy with condom use skill practice will indeed increase condom use which in turn decreases STD/HIV risk.

In a study performed by Jemmott et al. (2005) the efficacy of brief, twenty minute, STD/HIV risk-reduction interventions for African American women in primary care settings was tested. In a randomized controlled trial over 500 African American women were assigned to either a 20 minute individual STD/HIV behavioral skill building intervention or a 200 minute group behavioral skill building intervention. The individual intervention was an informational/educational session, whereas the group intervention included education as well as behavioral skill demonstrations or practice. The focus of the intervention was to improve the individual's confidence and competence with condom usage and even included practicing correct use of condoms with anatomical models, and engaging in role-playing to increase skill in negotiating use of condoms. At twelve month follow up, participants in the group skill building sessions reported less unprotected sexual intercourse than those that were in the individual informational/educational sessions ( $d=0.17$ ;  $p=.04$ ). Participants in the group skill building sessions also reported a greater proportion of protected sexual intercourse than those in the information/education session and control participants ( $p=.03$ ). Lastly, they

also were less likely to test positive for an STD than were control participants ( $d = 0.18$ ;  $p = .05$ ). Overall this study suggests that single session individual or group skill building interventions can indeed improve self-efficacy in condom usage and may reduce HIV/STD risk behaviors and STD morbidity among inner-city African American adolescent women in primary care settings.

Another study performed by Jemmott et al. (2008) reinforced that specific peer related STD/HIV interventions in clinical practice settings can decrease STD/HIV risk-associated sexual behavior and incidence of infection in African American women. This study included 564 black women who were seeking Women's Health care at a Primary Care Center. The focus of this one-on-one, practitioner to patient intervention was to provide education, condom use skill practice, and to instill confidence/competence in the women involved in order to increase condom usage. In this study it was determined that brief one-on-one twenty minute interventions could be as effective as group skill-building interventions that were much longer in duration. Women who participated in the brief skill-building intervention reported increased condom usage at 12 month follow up compared to the control group ( $d = .24$ ;  $p = .03$ ). These women were also less likely to test positive for STDs at the 12 month follow up compared to the control group ( $d = .20$ ,  $p = .03$ ). Overall, this study showed that a more clinically feasible STD/HIV intervention could improve peer support and self-confidence/self-efficacy in condom usage and an overall decrease in risky sexual behavior in this population.

Lastly, Jemmott et al. (2010) conducted a cluster-randomized controlled trial on the effectiveness of an HIV/STD risk-reduction intervention for adolescents when

implemented by community-based organizations (CBO's). In this study, 1707 adolescents in 86 different CBO's participated in either the HIV/STD intervention, or the control-intervention, which was based on general healthy lifestyle behaviors. This intervention, as in previous studies, was based in Social Cognitive Theory and was designed to give adolescents knowledge, skills and motivation necessary to improve self-efficacy in condom usage. At 12 month follow-up it was found that HIV/STD intervention participants were more likely to report consistent condom use (OR=1.39; 95% CI=1.06, 1.84) than were control-intervention participants. It was also found that the HIV/STD intervention participants reported a greater proportion of condom-protected intercourse ( $\beta = 0.06$ ; 95% CL=0.00, 0.12) than did the control group. This was another reassurance that self-efficacy does indeed contribute to decreased risky sexual behavior in the adolescent population, even when applied in a large scale study across many different community based organizations.

### *Summary of Literature Review*

In summary, although these studies have included non-pregnant adolescents and have shown that prior related condom use behavior, perceived barriers to condom use, and condom use self-efficacy, are all mediators to commitment to use condoms, none of them focused on what drives condom use behavior in the pregnant adolescent population. The empirical literature is clear that self-efficacy and the antecedents to self-efficacy can have an impact on condom use behavior. However, they have been tested on limited populations and it is not clear what drives self-efficacy in the varying adolescent populations as there are so many variables that can have an effect on condom use

behavior. As previously discussed, the pregnant adolescent population is at even higher risk for acquiring STDs/HIV and based on the empirical literature it is plausible that by understanding and improving self-efficacy in this population this risky behavior may be decreased.

### *Theoretical Rationale*

As discussed according to the HBM/HPM it is theoretically conceivable that improved self-efficacy could improve the commitment to use condoms and therefore promote behavior change, which in this case would be decreased risky sexual behavior in individuals. Although the HBM/HPM are lacking in the ability to utilize predictors to prevent certain behaviors from occurring, one can use the model to determine what might drive change in an individual; but since humans are inherently vastly different it is impossible to consistently determine what will drive change for each individual (McAlister & Perry, 2008). However, the strengths of this model are that use of the model has been shown to improve patient outcomes in certain populations and circumstances (Pender et al., 2010). This gives hope that if enough time is spent observing predictors of behavior that eventually individual change can be supported and predicted. Since adolescents sense of belonging and peer support systems have been represented in the empirical literature to be of utmost importance, it may be useful to utilize studies based on non-pregnant adolescents to determine what barriers are in place

that prevent health maintenance and apply those concepts to begin to gain an understanding of how to provide health promotion in pregnant adolescents.

In the testing that has been performed with the HBM/HPM, it has been shown that prior related behavior with condom use, perceived barriers, and self-efficacy can all impact the commitment to use condoms (Baele et al., 2001, Basen-Engquist & Parcel, 1992, & Kaneko, 2007) . Since self-efficacy has been shown to mediate prior related behavior and commitment to perform a given behavior in the non-pregnant population, it is plausible that improved self-efficacy may improve condom use and decrease risky behavior in the pregnant adolescent population.

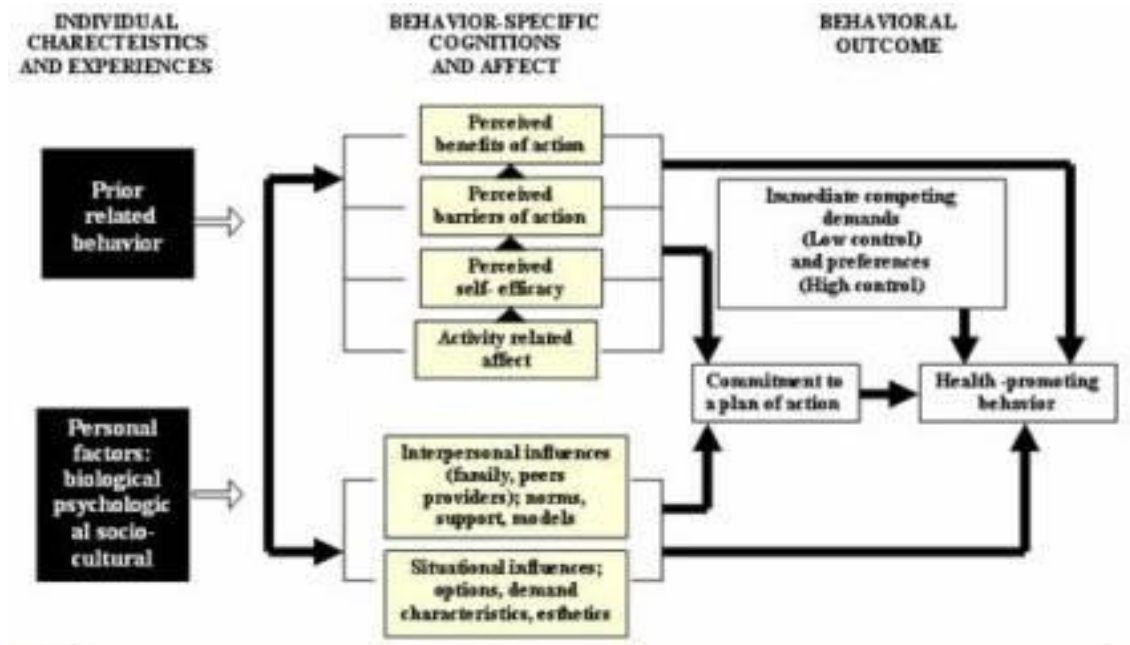
The following hypotheses were examined:

- 1) Prior related behavior with condom use is significantly related to commitment to use condoms.
- 2) Perceived self-efficacy in condom use is significantly related to commitment to use condoms.
- 3) Perceived barriers of action to condom use are significantly related to commitment to use condoms.
- 4) Perceived self-efficacy will significantly mediate prior related behavior and commitment to use condoms.





Figure: 1



Health Promotion Model. Pender, 2002.

## Chapter 3

### Methods

This chapter will present the research design for this study on pregnant adolescents. This will include the research setting, sample, sampling methods, instrument, data collection procedure, and data analysis. A descriptive correlational design will be used to examine the relationships between prior related condom use behavior, perceived barriers to condom use, and perceived self-efficacy as they relate to commitment to use condoms and ensuing condom use behavior.

#### Research Setting

The participants were recruited from a local clinic which is part of the Virginia Commonwealth University (VCU). The clinic offers comprehensive prenatal care to underserved women in downtown Richmond, Virginia. Clinic for pregnant adolescents is held on Tuesday afternoons and these women are followed closely during their pregnancies since they are considered to be at high risk due to their age. Adolescents are considered to be at high risk for pregnancy complications including preterm birth, low birth weight babies, placenta previa, and pregnancy-induced hypertension (CDC, 2008). This clinic in the Department of Obstetrics sees an average of 150 pregnant adolescent women per month and the majority of the women seen are low income or Medicaid dependent (VCUDO, 2012).

### Sampling Method

All of the VCU clinic patients who met the inclusion criteria were recruited for participation in the study. Study participants were between the ages of 18 and 24. This age group was chosen in order to provide a larger pool of subjects to recruit, as the younger population must have parental consent and often the parents are not available at the time of the clinic visit. In addition, the subjects had to be able to read, write, and understand English. They also had to be greater than 20 weeks pregnant in order to give them time during their pregnancy to make decisions about condom use. The participants which were eligible and willing to participate were approached in the waiting room by the PI before their scheduled appointment. The PI was present and available at all times in order to provide individualized attention to each participant. When the participant came to the waiting room the PI would explain the procedure for completion of the questionnaire and give the participant a letter of assent that included (a) an explanation of the study purpose and invitation to participate, (b) an assurance of anonymity and the participant's right to choose not to participate or to terminate participation at any time, (c) a summary of risks and benefits, (d) contact information for the Principal Investigator, and Rutgers University IRB, and (e) instructions to complete the questionnaire and return it to the PI upon completion. Once the participant reviewed the letter of assent and agreed to participate, they then proceeded with the demographic questionnaire and CUSES scale completion. On average each participant took fifteen minutes or less to complete the demographic and Condom Use Self-Efficacy Scale Questionnaire.

To determine sample size, previous meta-analyses which have demonstrated condom use intention to have a moderate effect size on behavior, were examined. Based on these analyses, since self-efficacy is theorized to be a determinant of intention and behavior, it is reasonable to assume at least a moderate effect size (a multiple R of around 0.3) for this study using a multiple regression approach (Sheeran, Abraham & Orbell, 1999). Sample size must be considered before a study is conducted and a power analysis helps reduce the possibility of a Type II error (Brink & Wood, 1998). The goal of this analysis is to have a sample size that will achieve a power of .80 for the expected effect size (Cohen, 1988). The estimated effect size based on the literature rating for condom use self-efficacy and social cognitive theory variables in adolescents is  $r^2=.37$  (Jemmott et al., 2007),  $r^2=.34$  (Villarruel et al., 2004), and  $r^2=.35$  (Baele et al., 2001). The formula for the calculation of sample size in this study, based on the 'Sample Size for Multiple Regression: Power Analysis Calculation is  $N=L/ES+k+1$  ( $N$ =sample size,  $L$ =lambda,  $k$ =number of independent variables). Therefore, for this sample the 'L' was 10.90 based on an alpha of .05, power .80 and 3 predictor variables (Polit & Beck, 2007). Effect size was based on the lowest  $r^2$  from the literature which is .34.  $N=10.90/.34=32+3+1=36$ . Therefore, according to these calculations the initial sample size needed to be at least 36 participants and a 20% buffer was added in order to account for attrition. In summary, the final sample size would be forty three participants. All forty three participants were recruited, however three surveys were incomplete and therefore not included in the ensuing analyses.

## Instruments

### *Demographics Questionnaire*

The following demographic data and participant characteristics were collected to describe the study sample: age, highest level of education completed, marital status, number of weeks pregnant, number of previous pregnancies, prior diagnosis of STDs during pregnancy, level of condom use over the past month using a Likert scale (Appendix A), and plans for condom use in the next month using a Likert scale (Appendix A).

### *Condom Use Self-Efficacy Scale*

Due to the increase of STDs/HIV, many instruments have been developed to help to determine what some of the attitudes or behaviors are that drive the intention to use condoms. According to Bandura's Social Cognitive/Learning Theory (1977, 1986) self-efficacy is directly linked to the expectations of one's ability to change their behavior, and therefore has a direct impact on the ability to perform that behavior. Based on this theory one of the most applicable instruments to evaluate self-efficacy in condom usage in the adolescent population is the Condom Use Self-Efficacy Scale (CUSES). The CUSES instrument is a 28 item self-report questionnaire that was developed to measure condom use self-efficacy in the adolescent and young adult population (Brafford & Beck, 1991) (Appendix B & C).

Brafford and Beck (1991) hypothesized that when self-efficacy is perceived to be high, it does indeed improve the commitment to use condoms, and the actual behavior of

using condoms. This initial study was utilized to critique the reliability and validity of the CUSES.

The development of the CUSES tool by Brafford & Beck (1991) followed the first steps of developing content validity which includes a thorough literature review. In this initial review, lack of condom use in the adolescent and young adult population, which is at extremely high risk for obtaining HIV and STDs was defined (CDC, 1999). The construct of interest, which is self-efficacy in condom usage, was then also thoroughly defined based on Bandura's Social Learning/Cognitive Theory (1977). Bandura's assertions that perceived self-efficacy can be a key factor in condom usage was then used as the foundation to develop CUSES. To continue to follow the steps of providing content validity expressed by Netemeyer et al. (2003), population sampling was then performed. However, it is not clear whether a content validity index (CVI) was ever created for this tool which, according to Lynn (1986), can help to establish content validity at the .05 level of significance. An expert panel was also purported to have been utilized in the initial development of the CUSES which provides an even sounder foundation for this instrument (Netemeyer et al., 2003). After testing this scale on 768 college students, it was shown in the report of their study that the CUSES is a very reliable measure with a Cronbach's  $\alpha$  of 0.91 and a 2 week test-retest reliability of 0.81. According to Hair et al., (1992) an acceptable reliability is indicated with a reported  $\alpha$   $>.70$ , so this report of the reliability of the instrument was more than adequate. The authors also reported testing of and finding acceptable levels of discriminant validity and convergent validity for the instrument. Criterion validity can be addressed with

convergent and discriminant validity by evaluating the instrument's capability to analyze a convergence between constructs that are theoretically similar and constructs that are theoretically different (DeVon et al., 2007). The convergent validity was adequately tested by comparing the CUSES with three other highly rated scales including Brown's Attitude Toward the Condom Scale (ATC) (1984), Levinson's Contraceptive Self-Efficacy Scale (CSE) (1986), and the short form of the Marlow-Crowne Social Desirability Scale (1972). It was found that the CUSES correlated significantly with the ATC ( $r = .51, p < .001$ ) and CSE scales ( $r = .55, p < .001$ ), however it was uncorrelated with the Social Desirability Scale ( $r = .01$ , not significant). This testing gave even further support of the validity of the instrument. The authors continued to be very thorough in their testing and used a series of questions to also evaluate the discriminant validity of the CUSES. The results showed that the instrument was successful in discriminating self-efficacy levels in the following analyses: condom users and non-condom users ( $p < .001$ ), those who had previously experienced sexual intercourse and those who had not ( $p < .001$ ), those who used a condom for birth control and those who did not ( $p = .001$ ), those who always used a condom with intercourse and those who did not ( $p = .001$ ) and those who had previously been diagnosed with an STD and those who had not ( $p = .001$ ). The in depth analysis of the validity of this instrument was quite surprising and encouraging in light of the fact that very few articles reflect this level of psychometric testing in the published literature (DeVon et al., 2007).

Further testing of this instrument was conducted in five other studies that all showed support for the reliability and validity of the instrument (Barkley & Burns, 2000;



Brien et al., 1994; Forsyth et al., 1997; Langer et. al., 1994; Mahoney et al., 1995).

However, based on the observation of 'variance in condom use' report and 'actual condom use demonstration of proper use', Forsyth et al. (1997) and Langer et al. (1994) reported that condom use self-efficacy and actual condom use skill may be two separate concepts. Brian et al. (1994) conducted an initial factor analysis of CUSES, also tested on the adolescent and young adult population, which supported the prior work performed by Brafford and Beck (1991) and supplied additional data on the discriminant validity of the scale. The more recent factor analysis performed by Barkley and Burns (2000) also provided further evidence of the sound psychometric properties of CUSES including; internal consistency, and freedom from bias based on social desirability, by continuing the initial measures of keeping the survey anonymous. In this 2nd factor analysis, the authors aimed to test the CUSES on a more culturally diverse convenience sample of college students in order to ascertain if factorial validity of the CUSES could be supported. This study was reviewed in order to reaffirm the validity and reliability of the CUSES and to determine the psychometric soundness of the CUSES when tested on the adolescent and young adult population.

In this most recent factor analysis study, by Barkley and Burns (2000), the CUSES instrument was utilized in a convenience sample of 477 college students who were asked to take a 28 item self-report questionnaire. Instrument validity testing was done and this study reported that internal consistency and attitudes about condoms were correlated with the overall score on the scale. This instrument elicited responses utilizing a five-point Likert scale format ranging from 'strongly agree' to 'strongly disagree'. The

construct validity was also analyzed and the instrument did perform according to the theoretical predictions. Predictive inter-item correlation did also show high correlations between higher scores and increased condom use self-efficacy across all items to dimensions, indicating strong validity. The construct was also supported by the fact that the instrument's items are very closely related to its operationally defined theory and concepts. As Bandura (1977) identified four sources of self-efficacy which were (1) performance accomplishment, (2) vicarious experiences, (3) verbal persuasion, and (4) physiological arousal, all of these sources were extracted in the Barkley and Burns (2001) factor analysis. These were (1) 'Appropriation' factor, which represents performance accomplishment as a component of self-efficacy; (2) 'STDs' factor which is indicative of the physiological arousal component of self-efficacy and; (3) 'Partner's reaction', which is representative of both the vicarious experiences and verbal persuasion components of self-efficacy. According to DeVon et al. (2007) factor analysis is an acceptable approach to evaluating construct validity. It is an excellent statistical method that can be used during instrument development to analyze relationships among large numbers of variables. According to Munro (2005) unrelated items that do not define the construct, should be deleted from the tool. This was accurately performed by Barkely & Burns (2000) as reported that the factors that did not meet the specified criteria were eliminated and that all remaining factors extracted had Eigenvalues greater than 1.5. After administering and scoring the CUSES, the data was analyzed with factor analysis and Varimax rotation. An item designation criteria was utilized and it required that an item have a factor loading of 0.45 or higher on the designated factor and a loading of less than

0.35 on all other factors. In accordance to this rule, three distinct factors emerged from the analysis and together accounted for more than 48.2% of the variance in the CUSES. The aggregated score based on 10 items loaded on these three factors: 'Appropriation', 'STDs', and 'Partner's Reaction'. The 'Appropriation' factor had a Cronbach's alpha of 0.76, the 'STDs' factor had a Cronbach's alpha of 0.83, and the 'Partner's Reaction' factor had a Cronbach's alpha of 0.66. According to the authors, all of these scores indicated adequate reliability. However according to (Hair et al., 1992) a good reliability is indicated with a reported  $\alpha$  of  $>.70$ . This indicated that the Partner's Reaction factor actually had slightly less than adequate reliability. Barkely and Burns (2000) did not specifically report testing for discriminant validity in their study but they did refer to the intense criterion validity testing in the previous work performed by Brafford & Beck (1991).

Overall some of the strengths of this study are that there was a large sample, representing multiple cultures providing for a strong foundation for analysis. This second factor analysis was also very useful in providing a simplified description of complex behaviors and support of the theoretical framework and was used as a guide in the present study.

A few of the study limitations included a reportedly large Hispanic population (63.5%) which is not necessarily reflective of the population at large in the U.S. It was also tested solely on college students, and according to the most recently publicized data the largest population of college students, age 16-24, is Caucasian (62%), with Black (14%), Hispanic (13%) and other (11%) ethnic groups still having much lower enrollment

rates (USCB, 2010). Testing on a more diverse population may have been more effective as it is clear that the black and Hispanic populations are at higher risk for STDs than whites (CDC, 2011). Based on the validity and reliability of this instrument it would be recommended for further testing in a variety of populations to further confirm its psychometrics and to improve its generalizeability.

Overall this instrument has a very strong potential to assist in understanding self-efficacy and condom usage in the pregnant adolescent population. As it has clearly been shown to have acceptable reliability and validity it would be appropriate to continue to test it on another sub-group of the adolescent population, specifically pregnant adolescents. Since pregnant adolescents are shown to be at even higher risk for obtaining HIV/STDs compared to the non-pregnant adolescent population it is imperative to understand what drives their intentions and actual usage of condoms (Meade & Ickovics, 2005). As self-efficacy has been theoretically linked to condom use and intentions CUSES seemed to be a high quality instrument to use in this exploratory study to assess and understand what drives the risky sexual behavior in this very vulnerable population.

### Data Collection Procedures

Prior to data collection, this study was submitted to the Institutional Review Board (IRB) of Rutgers, The State University of New Jersey and the IRB of Virginia Commonwealth University in order to ensure that the protection of the rights of human subjects was carried out.

Data was collected from a convenience sample of program participants from the clinic. The clinic medical director, the adolescent clinic Nurse Practitioner, and the Nurse Manager approved access for the PI to use the clinic waiting room to recruit eligible participants.

A description of the study procedures and the inclusion criteria were verbally described by the PI prior to obtaining consent from the participants. Any subjects who did not meet the inclusion criteria or who declined participation in the study were not asked to stay in the waiting room to complete the questionnaires. Every eligible participant was given the assent form for their review, and to take home. The demographic data form and the Condom Use Self-Efficacy questionnaires were given to the participant after review and consent upon completion of reading and discussing the assent form. The subjects were given as much time as needed to complete the questionnaires, but never took longer than 20 minutes. The PI remained in the waiting room with the participants to answer any questions and to collect the questionnaires upon completion.

### Data Analysis Plan

Based on the study by Barkley and Burns (2001) and the HPM this study also focused on three main factors which were 1) Appropriation/Prior Related Behavior; 2) STDs/Self-Efficacy; and 3) Partners Reaction/Perceived Barriers. The appropriate corresponding CUSES questions were applied to each factor when performing the factor analysis (Appendix D).

The Statistical Package for the Social Sciences (SPSS) version 18.0 for Windows was planned to be used by the PI in order to create a statistical database with the data obtained. A codebook was created with the original data and the revised data, and copies of all tests run and notes to self were to be kept. Demographic and condom use self-efficacy data from CUSES were to be entered into the database by the PI and a descriptive analysis of the demographic data was to be conducted in order to describe sample characteristics.

Hypothesis 1 was to be measured based on a continuous level of measurement table. Once frequency tables, histograms, stem and leaf, and scatterplots were created and normality was determined either the Pearson's Correlation or the Spearman Rho and the Kendall Tau-B tests were to be used to test either the parametric or non-parametric data. Tests for skewness and kurtosis were also to be run, the data was inspected for inconsistencies or outliers, and description of the sample including the mean and standard deviations were to be completed. A two-tailed test of significance set at the .05 level was also planned to be used to assist in data interpretation (Polit & Beck, 2004). Correlational analysis of the study data was also to be completed using both Pearson Product Correlation and chi square tests for nominal level data. If there were any demographic variables that were significantly correlated with the independent variable, that needed to be controlled for, subsequent analysis was to be performed. For hypothesis 1 the correlational matrix would also be reviewed in order to determine if prior related behavior (independent variable) with condoms was significantly related to commitment to use condoms (dependent variable).

Hypothesis 2 was also to be measured based on a continuous level of measurement table. Once normality and correlational analysis were completed as described above, any demographic variables that were significantly correlated with the independent variable were to be controlled for and subsequent analysis was to be performed. For hypothesis 2 the correlational matrix would be reviewed in order to determine if perceived self-efficacy (independent variable) was significantly related to commitment to use condoms (dependent variable).

Finally Hypothesis 3 likewise was to be measured based on a continuous level of measurement table. Once normality and correlational analysis were completed as described in both Hypothesis 1 and 2, any demographic variables that were significantly correlated with the independent variable, would also be controlled for and subsequent analysis would be performed. For hypothesis 3 the correlational matrix would also be reviewed in order to determine if perceived barriers of action (independent variable) with condom use are significantly related to commitment to use condoms (dependent variable).

In order to test hypothesis four, Baron and Kenny's (1986) test for mediation was to be used. This test specifies that three conditions must be met in order to establish mediation. These three conditions are described as follows: 1) the independent variable (prior related behavior) must be significantly related to the mediator (self-efficacy); 2) the independent variable (prior related behavior) must be significantly related to the dependent variables (self-efficacy & commitment to use condoms); and 3) the mediator (self-efficacy) must be significantly related to the dependent variables (prior related

behavior & commitment to use condoms). If it is found that significant relationships exist among the previously described variable, then three regressions were to be conducted to test the mediation model. The first regression would test the relationship between prior related behavior and self-efficacy. The second regression would test the relationship between self-efficacy and commitment to use condoms. The third regression would test the effect of self-efficacy on prior related behavior and commitment to use condoms simultaneously and complete or partial mediation should be able to be determined. This mediation will be clear after controlling for the effects of the mediating variable on the dependent variables; the effect of the independent variable on the dependent variables should become zero or diminish (Baron & Kenny, 1986).

#### Human Subjects Protection

Prior to initiation of this study all plans for the study were submitted to the Rutgers, The State University of New Jersey IRB and the Virginia Commonwealth University (VCU) IRB in order to ensure protection of the human subjects that may be involved in the completion of this study. Due to the minimal risk to subjects, where the magnitude of harm or discomfort anticipated are no greater than those ordinarily encountered in daily life, an expedited IRB was requested and granted through the Rutgers, The State University of New Jersey IRB. The VCU IRB gave approval to the Rutgers' IRB as a secondary institution in order to allow the actual recruitment of subjects to be performed in their facility. Since the study only required completion of questionnaires and the participant responses to all questions was kept anonymous, the participants were not exposed to any potentially harmful situations.



The questionnaires and any printed or backed up data are solely accessible by the PI and kept in locked files. All computer files are password protected and accessible only by the PI.

Data collected from this study will only be represented as grouped data, when presented and/or published, and none of the participants can ever be identified by name as the names of the participants were never collected. Three years after completion of the study, all documents and databases will be destroyed.

## Chapter 4

### The Analysis of the Data

The purpose of this study was to examine the impact of condom use self-efficacy on pregnant adolescents. Specifically, the dependent variables of prior related behavior; perceived self-efficacy and perceived barriers, were hypothesized to be significantly related to the commitment to use condoms. Perceived self-efficacy was also tested to determine if it would significantly mediate a participant's prior related condom use behavior and commitment to use condoms. The instruments used in this study were 1) a demographic questionnaire developed by the PI to collect information on the participants age, highest level of education, marital status, number of weeks pregnant, number of times being pregnant, having ever been diagnosed with an STD including the current pregnancy and past and future condom use; 2) The Condom Use Self-Efficacy Scale (CUSES) which utilized the original 5-item Likert scale to measure condom use self-efficacy in the pregnant adolescent population (Brafford & Beck, 1991). This scale was broken down into three subscales which were 1) Appropriation/Prior Related Behavior, 2) STDs/Self-Efficacy, and 3) Partner's Reaction/Perceived Barriers based on research performed by Barkley and Burns (2000).

### Statistical Description of Variables

The PI created a statistical database using the SPSS version 18.0 for Windows (SPSS, 2009). Data from the demographic survey and the CUSES questionnaire were entered into the database. A code book including copies of the original data set, copies of

the basis descriptive, correlations, regression analysis and output, and notes to self were created and maintained in password protected computer files. The actual questionnaires were also kept and will be stored in a locked cabinet for three years. The data was cleaned and inspected for inconsistencies and outliers, as well as incorrect data entry codes. Forty Three questionnaires were obtained although three were incomplete so only data from forty questionnaires was utilized in the analysis.

### *Demographic Variables*

When looking at the data gathered from the demographic questionnaire, it was important to understand what the results meant compared to both local and national statistics. In the United States (2011) it was reported that there were 2,912 cases of STDs per 100,000 females or roughly 3% of sexually active adolescents aged 15–24 years that had a reportable STD. Out of that group women aged 20–24 years had the highest rate of Chlamydia (3,722.5 cases per 100,000 females) or roughly 4% compared with any other age and sex group. Chlamydia rates for women age 20-24 increased 10.5% during 2010–2011 (CDC, 2011).

In comparison there were 29,484 STD cases per 100,000 females or roughly 29% of sexually active women aged 15-24 years that had reportable STDs in Virginia in 2011, which is a 2% increase from 2010 and is significantly higher than the U.S. average. In Virginia, the highest rates of Gonorrhea and Chlamydia were reported to be in young women ages 15 to 24. In 2011 an average of 4% of the new STD rates in the state of Virginia were found to be in women age 15-24 in the city of Richmond, which relates

specifically to this study population as the age group studied had one of the highest increases in newly reported STDs. While the U.S adolescent pregnancy rate in 2011 was roughly 3%, the city of Richmond reported a roughly 5% adolescent pregnancy rate; both in the 15-24 age range, once again demonstrating a higher STD rate than the U.S. average (VDH, 2011). Unfortunately there were no reportable STD rates per pregnant woman to be found, but the literature clearly states that pregnant women are also at very high risk for obtaining STDs and have reoccurring STDs during pregnancy (Crosby et al. 2002, 2003; Koniak-Griffen & Brecht, 1995). It was also found upon interview of the Nurse Manager that there is a high rate of STDs found in pregnant adolescents at the clinic in the city of Richmond, where the PI performed the research for this study, however, no specific data recording those rates was kept at that time (V. Byrnes, personal communication, May 12, 2013).

In the data found in the demographics in this study the mean age of the pregnant adolescent population tested was 21.28 years old. The mean education level was "high school" ( $M = 2.08$ ) and the mean marital status was found to be that most of the women tested were "married" or in a "committed relationship" ( $M = 2.30$ ). The mean "weeks pregnant" was 31 weeks and the mean number of pregnancies was that these women were first time mothers ( $M = 1.10$ ). In the tested population it was also found that 22.5% of them did report having an STD during pregnancy ( $M = 1.78$ ). Out of the nine STDs reported, they were all reported as having Chlamydia. This number is quite significant compared to the 29% reportable STD rate in the state of Virginia and the 4% reportable STD rate in the city of Richmond. It is not surprising in this case that overall this

population rated the mean condom use as 65% of the participants had not used condoms in the past month and did not plan to use them at all in the next month. Only 15% were undecided about condom use and 20% agreed that they did and would use condoms in the future.

A correlational analysis was also conducted to determine if any of the demographic variables were significantly correlated prior to hypothesis testing. It was found that there was a significant relationship between 'Age' and 'Highest level of Education Completed' ( $p = .030$ ), 'Age' and number of Pregnancies' ( $p = .006$ ), and 'Highest level of Education Completed' and 'Commitment to use Condoms' ( $p = .008$ ). It was also found that 'Marital Status' was significantly correlated with 'How Often Plan to Use Condoms in Next Month' ( $p = .045$ ). 'Number of Times Pregnant Prior to Current Pregnancy' and 'Highest Level of Education' were also significantly correlated ( $p = .006$ ). Another interesting correlation was 'Ever had an STD During Pregnancies' and 'Condom use Self-Efficacy' ( $p = .048$ ); and 'Ever had an STD During Pregnancies' and 'Level of Condom Use Over the Past Month' ( $p = .048$ ). Lastly, 'Level of Condom Use over the Past Month' and 'Level of Condom Use over the Next Month' were also significantly correlated ( $p = .000$ ), and 'Level of Condom Use Over the Next Month' was also significantly correlated with 'Highest Level of Education Completed' ( $p = .007$ ). (See Table 1)

Table 1

*Summary of Scores for Demographics and Significant Correlation Coefficients*

	Mean	Range	Percentages	Significant Correlation Coefficients
Age	21.28	18-24	47.5% - 18-21 52.5% - 22-25	Highest level of Education Completed .277* $p = .030$
Highest Level of Education Completed	2.08	0-3	55% - Never completed to graduated High School 45% - College to Graduate School	<u>1.</u> Age .277* $p = .030$ <u>2.</u> #of Pregnancies -.366** $p = .006$ <u>3.</u> Commitment to Use Condoms .347** $p = .008$
Marital Status	2.30	1-3	40% Single 60% Married or in a Committed Relationship	How Often Plan to Use Condoms In Next Month .284* $p = .045$

# Weeks Pregnant	30.55	20-40	45% -20-30 weeks 55%- 30-40 weeks	No Significant Correlations
# Times Pregnant Prior to Current Pregnancy	1.10	0-7	70%- 0-1 30%-2-7	Highest Level of Education -.366** $p = .006$
Ever had an STD During Pregnancy	1.78	1-2	22.5% Yes 77.5% No	<u>1.</u> Self-Efficacy -.271* $p = .048$ <u>2.</u> Condom Use over Past Month .300* $p = .048$
Level of Condom Use Over Past Month	3.97	1-5	22.5% - Always or Undecided 77.5% - Seldom or Never	<u>1.</u> Condom Use in Next Month .655** $p = .000$ <u>2.</u> STD During Pregnancy .300* $p = .048$
How Often Plan to Use Condoms in Next Month	3.35	1-5	47.5% - Always, Often, or Undecided 52.5%- Seldom or Never	<u>1.</u> Condom Use Over Past Month .655** $p = .000$ <u>2.</u> Highest Level Education

				Completed .365** $p = .007$
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\*\*Correlation significant at 0.01 level (2-tailed)

\* Correlation significant at 0.05 level (2-tailed)

Frequency tables, scatter plots and histograms were used to assess distribution of study variables for normality and all of them demonstrated non-parametric data. Tests for skewness and kurtosis were also conducted and the degree of skewness was computed by converting the skewness statistic for each study variable to z-scores. According to Tabachnick and Fidell (2007), a z-score between +1.96 and -1.96 represents a normal distribution of scores. The scores for the variables “commitment to use condoms” ( $z = -2.14$ ), and “barriers” ( $z = -2.03$ ) indicated mild negatively skewed data. The scores for “behavior” ( $z = 4.06$ ), and “self-efficacy” ( $z = 4.76$ ) were positively skewed. Scores were not transformed. (Tabacknick & Fidell, 2007) (See Table 2) However, once it was clear that the data was non-parametric the Spearman Rho and Kendall Tau-B tests were used to perform tests of association instead of the Pearson’s Correlation.

Table 2

Summary of Distribution of Study Variables

	Skewness	SE	Skewness z-score	Kurtosis	SE
Commitment to use	-0.799	.374	-2.14	-0.846	.733



condoms					
Behavior	1.52	.374	4.06	1.32	.733
Barriers	-0.761	.374	-2.03	-.946	.733
Self-efficacy	1.78	.374	4.76	2.44	.733

### *Dependent Variable*

The dependent variable was commitment to use condoms. This variable was a combination of two questions; 1) How would you rate your level of condom use over the past month; and 2) How often do you plan to use condoms in the next month. The mean of these two questions was 3.67 which were measured on a Likert scale with “1” meaning “always” using condoms and “5” meaning “never” using condoms ( $M = 3.67$ ,  $SD = 1.55$ ) (Likert, 1932). Therefore the study participants in this measured population ( $n=40$ ) were between “undecided” and “never”, but closer to rating that they did not often use or plan to use condoms in the future. Specifically, the response frequencies revealed that for question one, that 78% of the participants seldom or never used condoms, while only 4.5% were positive about condom use. In question two frequencies revealed that 53% planned to seldom or never use condoms in the future, 12.5% were undecided and 30% planned to always use condoms in the future. Therefore very few of the participant’s scored positively about plans for current or future condom use.

## *Independent Variables*

### *Prior Related Behavior*

The mean score for prior related behavior was based on sub-scale 1 from the CUSES scale (Questions # 1, 2, 3, and 14) (See Appendix D) ( $M = 1.36$ ,  $SD = .566$ ). All four of those related questions described confidence in past condom use behaviors. These questions were based on the Likert scale as described above. The average of these questions revealed that 62.5% of the participants answered a “1” on this group of questions, meaning that they “strongly agreed” that they were confident in their prior related behavior in relation to condom use. The other 37.5% answered an average of “3” or less on the Likert scale meaning that they were “undecided” or “strongly disagreed” in answer to these questions. These data were skewed due to the fact that they rated supreme confidence on past condom use behavior but also rated minimal current condom usage as described in the dependent variable section.

### *Condom Use Self-Efficacy*

The mean score for “Condom Use Self-Efficacy” was based on subscale 2 from the CUSES scale (Questions # 4-8, 11-14, and 19-28) that related directly to condom use self-efficacy ( $M = 1.60$ ,  $SD = .650$ ). These questions were also based on the Likert scale as described above. The results of the averaged scores showed that 92.5% of participants

scored a “3” or above, meaning that this population rated themselves as extremely self-confident in condom usage. Only 7.5% rated themselves slightly negatively >”3” regarding self-confidence in condom use. This variable was significantly positively skewed because although this population rated themselves as having extremely high self-efficacy in condom usage, they showed that in the dependent variable answers that they very rarely used condoms or planned to in the future.

### *Perceived Barriers*

The mean score for “Perceived Barriers” was based on Sub-scale 3 which were appropriately reverse coded from the CUSES scale (Questions # 9, 10, and 15) ( $M = 3.78$ ,  $SD = 1.41$ ). Given the scores were reverse coded on the Likert scale, the responses were changed to: “1”= Strongly Disagree and “5”= Strongly Agree. The results of the averaged scores showed that 42.5% of the participants scored a “5” (Strongly agree) on these questions, and 30% of them scored “3” or above, meaning that they if they thought a partner might reject them for multiple reasons, they would not choose to use a condom in that situation. Therefore only 27.5% of the participants “strongly agreed” that they would use a condom when perceived barriers arose. For this reason “Perceived Barriers” were only mildly skewed since there was a large percentage that agreed when perceived barriers arose they wouldn’t use condoms. This correlated with what was found in the measurements of the dependent variable which was that there was minimal condom usage in this population. Table 3 demonstrates the summary of scores for all of the measured study variables.

Table 3

Summary of Scores for Study Variables N=40

	Mean Score	SD	Range of Scores
Commitment to use condoms	3.66	1.55	1-5
Behavior	1.36	.566	1-3
Barriers	3.78	1.41	1-5
Self-efficacy	1.60	.650	1-3.47

## Psychometric Properties of the CUSES Scale

The Cronbach's alpha for the entire CUSES scale was .85 based on standardized items. Since according to Hair et al., (1992) an acceptable reliability is indicated with a reported  $\alpha > .70$  this showed excellent reliability and internal consistency of this scale based on this population. Based on Barkley and Burns (2001) Factor Analysis, the CUSES sub-scales were broken down into three separate factor analyses which were

1)“Appropriation/Prior Related Behavior”, 2) “STDs/Self/Efficacy”, and 3) “Partner’s Reactions/Perceived Barriers”. The “Commitment to use Condom’s” factor was based on two questions from the demographics survey which were 1) How would you rate your level of condom use over the past month; and 2) How often do you plan to use condoms in the next month. These two questions were validated in previous work by Pender et al. (2002) and Jemmott et al. (2010). Overall all of the alpha reliability coefficients were acceptable (see Table 4) except for Prior Related behavior which scored an unacceptable  $\alpha = .40$ . This indicates that this section of the instrument did not have strong inter-rater reliability and may need to be changed in further research or the sample size just may have been too small in this population to provide an adequate Cronbach’s alpha for the questions related to this factor. In this study since it is part of an overall reliable instrument the data will still be utilized.

Table 4

*Alpha Reliability Coefficients for Instrument and Factor Analyses*

	Cronbach’s alpha
Commitment to use condoms	.83
Prior Related Behavior	.40
Perceived Barriers	.81
Condom Use Self-efficacy	.93
CUSES	.85

### Hypothesis Testing

The following hypotheses were tested:

- 1) Prior related behavior with condoms is significantly related to commitment to use condoms.
- 2) Perceived self-efficacy in condom use is significantly related to commitment to use condoms.
- 3) Perceived barriers of action to condom use are significantly related to commitment to use condoms.
- 4) Perceived self-efficacy will significantly mediate prior related behavior and commitment to use condoms.

The Spearman Rho and the Kendall Tau-B correlation tests were utilized for Hypothesis 1 due to the non-parametric data discovered when analyzing the distribution of the study variables. Two tailed tests of significance set at the .05 level were also used to test the hypothesized relationships.

The Spearman Rho and the Kendall Tau-B correlation tests were also utilized for Hypothesis 2 due to the non-parametric data discovered when analyzing the distribution of the study variables. Two tailed tests of significance set at the .05 level were also used to test the hypothesized relationships.

Similarly the Spearman Rho and the Kendall Tau-B correlation tests were also utilized for Hypothesis 3 due to the non-parametric data discovered when analyzing the distribution of the study variables. Two tailed tests of significance set at the .05 level were also used to test the hypothesized relationships.

Hypothesis 4 was to be tested using multiple regression analysis according to Baron and Kenny's (1986) method for testing a mediation model. However based on the results of the first three hypotheses there were no significant relationships to use to test mediation.

#### *Hypothesis 1*

Hypothesis 1 proposed that prior related behavior with condom use would be significantly related to commitment to use condoms. Correlational analysis revealed that there was not a significant relationship between the two variables ( $r = -.106, p = .434$ ). Therefore this hypothesis was not supported.

#### *Hypothesis 2*

Hypothesis 2 proposed that perceived self-efficacy with condom use would be significantly related to commitment to use condoms. Correlational analysis revealed that

there was not a significant relationship between these two variables ( $r = -.110, p = .377$ ). Therefore this hypothesis was not supported.

### *Hypothesis 3*

Hypothesis 3 proposed that perceived barriers of action to condom use would be significantly related to commitment to use condoms. Correlational analysis revealed that there was not a significant relationship between these two variables ( $r = -.202, p .117$ ). Therefore this hypothesis was not supported.

### *Hypothesis 4*

Hypothesis 4 proposed that self-efficacy would significantly mediate prior related behavior and commitment to use condoms. According to Baron and Kenny's (1986) mediation model there must be significant relationships in the previous hypotheses in order to continue any mediation testing. As there were no significant relationships in the previous three hypothesis there were no relationships to use to test for mediation.



## Chapter 5

### Discussion of the Findings

The purpose of this study was to determine if condom use in pregnant adolescents would be related to self-efficacy. That is, since studies have shown that pregnant adolescents often choose not to use condoms, they sometimes end up with STDs, which put the mother and baby at risk (Crosby et al., 2002, 2003; Koniak-Griffen & Brecht, 1995). The intention was to understand which constructs based on the Health Promotion Model (Pender et al., 2010) may impact this population's intention to use condoms. Since previous research has demonstrated that self-efficacy may be a strong predictor of condom use, this factor was chosen to be studied in this pregnant adolescent population as well in order to understand if it indeed did influence condom use behavior in pregnant adolescents in the same way it seemed to in non-pregnant adolescents (Jemmott et al., 2005; Meade & Ickovics, 2005). This chapter includes demographic findings in this population, interpretation of the findings of the hypothesized relationships among condom use, prior related behavior, condom use self-efficacy, perceived barriers of action, and commitment to use condoms. All of these hypotheses are examined in relation to the theory and empirical findings from which these hypotheses were derived.

#### *Prior Related Behavior*

Proponents of the HPM theorize that prior related behavior can precipitate perceived barriers, perceived benefits, and ensuing levels of self-efficacy that either deter or inspire the individual toward participating in a specific health promoting behavior.

This level of perceived competence to perform this behavior can then lead to a commitment to continue to perform this behavior in the future (Pender et al., 2010). This can be applied to condom use in that prior related behavior with condom use could provide increased levels of condom use self-efficacy and therefore increase condom use at all times. For this reason one of the hypotheses in this study was that prior related behavior with condoms would significantly be related to commitment to condom use. Unfortunately, this was not found to be true, however it was found that prior related behavior was significantly related to self-efficacy ( $r = .306, p = .016$ ), which does support the HPM in that the participants with prior related condom use had high levels of self-efficacy, however they chose not to use condoms regardless of their level of confidence in condom use. Therefore this hypothesis was not supported but if it was changed in the future to explore the relationship between prior related behavior and self-efficacy instead of prior related behavior and commitment to use condoms there is evidence that there may be more of a significant relationship.

The cause of this may be solely that they are pregnant and don't think that there is any reason to continue to use condoms but this will be discussed further in the limitations section. This would correlate with findings by Crosby et al. (2003) when a similar adolescent population also tested positive for STDs during pregnancy and reported infrequent condom use once they were pregnant.

### *Perceived Self-Efficacy*

According to another prominent theorist on planned behavior, Bandura (1997) stated that “the greater the perceived efficacy, the more individuals will engage in behavior even in the face of barriers and adversity”. Baele et al. (2001) also reported that self-efficacy in condom use has not only the potential to increase peoples' intentions to use a condom, but it also can increase the percentage of time they actually do use them. Based on this foundational literature the second hypothesis in this study stated that perceived self-efficacy would be significantly related to commitment to use condoms. Although this was not found to be true in this study, it was found that the highest educational level completed which was an average of “high school” in this population, did significantly affect commitment to use condoms. This was an interesting finding because the self-efficacy levels were so high one might think that based on the literature that they would use condoms but once again they may not due to the fact that they are already pregnant as found in previous literature (Crosby et al. 2002, 2003). Or in this case it also may be related to the developmental stage that these participants were in as many of them had only completed high school. According to Bell (2009) low educational attainment can also be associated with risky sexual behavior.

#### *Perceived Barriers of Action*

In the HPM another key proposition is that the greater the perceived self-efficacy, the fewer perceived barriers; which as a mediator of behavior, should actually increase the performance of the health promotion behavior (Pender et al., 2002). Although perceived barriers to condom use could be theoretically related to condom use, in this population, there was no significant relationship. Since the self-efficacy was so high in

this population according to theory there should have been fewer perceived barriers (Pender, 2002). However, based on the CUSES scores noted previously, the participants responded that when perceived barriers arose they were less likely to use condoms. According to Pender (2002) perceived barriers can also be one of the most powerful predictors of the HPM in predicting actual health promoting behavior. This is extremely important because this adds new information that in this population maybe perceived barriers is the motivation for changing risky sexual behavior rather than self-efficacy.

In the fourth and last hypothesis Baron and Kenny's (1986) test for mediation could not be utilized as there was no mediation to test since the first three hypotheses were not significant.

Findings from this study do support use of the HPM in understanding what may drive condom use in the pregnant adolescent population. However, the stronger HPM construct may have been perceived barriers in this population. Understanding relevant factors related to condom use in the pregnant adolescent population are crucial if STD rates in pregnant women are ever to decrease. It is imperative that they do as STDs are significantly harmful not only to the mother but also the unborn child.

## Chapter 6

### Summary, Conclusions, Limitations, Implications, and Recommendations

#### *Summary*

The purpose of this study was to examine the implications of condom use self-efficacy on the pregnant adolescent population. Theoretical propositions derived from the Health Promotion Model (Pender et al., 2010) were tested in this study. The specific theory constructs that were investigated included prior related behavior with condom use, perceived self-efficacy in condom use, barriers of action to condom use, and commitment to use condoms.

The dependent variable in this study was commitment to use condoms, which is theoretically defined as the concept of intention and identification of a planned strategy that leads to the implementation of condom use during intercourse (Pender et al., 2010). The HPM suggests that individual's beliefs and perceptions about the risk of illness will impact the likelihood of an individual to avoid illness, which in this case would be an STD. It also posits that when there is perceived self-efficacy to execute a given behavior there is an increased likelihood of commitment to action and actual performance of the intended behavior (Pender et al., 2010). This theoretical relationship is well supported by empirical literature on the non-pregnant adolescent population, in that adolescents with a strong commitment to use condoms have been shown to have higher levels of condom use and therefore less cases of STDs (Brafford & Beck, 1991, Jemmott et al., 1992, 1998, 2000, 2005, 2008, 2010, Tomey & Alligood, 2005).

The independent variables in this study were prior related behavior, perceived barriers to condom use, and condom use self-efficacy.

Prior related behavior is theoretically defined as any past experiences with the intention to use condoms (Pender et al., 2010). According to the HPM prior related behavior with condom use is related to perceived self-efficacy and participation in the health promoting behavior which in this case is condom use. This theoretical relationship is supported by empirical literature in that non-pregnant adolescents with successful prior history of condom use have been shown to have increased self-efficacy and ensuing increased condom use in future sexual experiences (Sales et al., 2012, Tomey & Alligood, 2005).

Perceived barriers of action are theoretically defined as anticipated, imagined, or real blocks and personal costs of understanding a given behavior (Pender et al., 2010). According to Pender (2002) numerous studies have shown that perceived barriers tend to be the most powerful of the HPM dimensions in explaining or predicting health promoting behavior. This theoretical relationship is supported by empirical literature in non-pregnant adolescents, that the less barriers to condom use, the more likely the commitment to use condoms (Lesser et al., 2003, Pender et al., 2002).

Lastly perceived self-efficacy in condom use is theoretically defined as the judgment of the personal ability to organize and execute a health promoting behavior. It also influences perceived barriers to action, so higher self-efficacy is proposed to result in decreased perceptions of barriers to the performance of condom use (Pender et al., 2010).

Therefore theorists purport that self-efficacy mediates the relationship between prior related behavior and commitment to the behavior change, which in this case is condom use (Pender et al., 2010). This theoretical relationship is also supported by empirical literature in non-pregnant adolescents by clearly demonstrating that increased self-efficacy does indeed promote increased condom use and therefore decrease STDs (Brafford & Beck, 1991; Jemmott et al., 1992, 1998, 2000, 2005, 2008, 2010; Strecher & Rosenstock, 1997; Tomey & Alligood, 2005).

### *Conclusions*

The study sample consisted of forty participants, all of whom were pregnant adolescents that attended the prenatal clinic at Virginia Commonwealth University Health System. All of the participants were able to read, write, speak and understand English and were 20 weeks pregnant or greater. The majority of the subjects were married or in a committed relationship (60%) and had completed high school (55%). The mean age of the participants was 22 with a range of 18-24. For the majority of the participants it was their first or second pregnancy (70%) with a range of never having been pregnant prior to this pregnancy to having been pregnant seven times prior to this pregnancy. The mean weeks pregnant was 31 weeks and 22.5% of the participants reported having an STD during pregnancy. On the whole this population did not rate high usage of condoms although they did rate high levels of self-efficacy in condom usage.

Data were collected using the demographic survey designed by the PI and the Condom Use Self-Efficacy Scale designed by Brafford & Beck (1991). Data were

analyzed using the Statistical Package for the Social Sciences (SPSS) version 18.0 for Windows (SPSS, 2009). Characteristics of the sample data were analyzed using descriptive statistics. Kendall's Tau\_B and Spearman's Rho analysis were used to examine the interrelationships between study variables and to test Hypothesis 1, 2, and 3. Multiple regression analysis could not be used to test Hypothesis 4. The level of significance used in the hypothesis testing was .05.

Hypothesis 1, which stated that prior related behavior was significantly related to commitment to use condoms in the pregnant adolescent population, was not supported. Hypothesis 2, which stated that perceived self-efficacy was significantly related to commitment to use condoms in the pregnant adolescent population, was not supported. The third hypothesis, which stated that perceived barriers action in condom use was significantly related to commitment to use condoms in the pregnant adolescent population, was not supported. Lastly, the fourth hypothesis, which stated that self-efficacy would mediate prior related behavior and commitment to use condoms in the pregnant adolescent population, could not be tested for mediation as no significant relationships existed in the prior three hypotheses.

In summary, it was found that in opposition to what was found in the non-pregnant adolescent population; this pregnant adolescent population rated themselves as having high self-efficacy, even when based on prior related condom use behavior and perceived barriers, but did not increase their condom usage or plan to use condoms based on their highly rated condom use self-efficacy. However, the construct 'Barriers to Condom Use' did have a significant impact on condom use and warrants further testing.



### *Limitations*

1. Having a convenience sample of only patients from the clinic at the Virginia Commonwealth Health System decreases generalizeability of these study findings.
2. Testing only the older adolescent population of 18-24 year old pregnant women. More information about the entire pregnant adolescent population included could be obtained if the younger adolescent patients age 11-17 were also tested.
3. The demographic survey did not include racial ethnicity. This may have been of further use in providing more information about the population and generalizeability of the data.
4. Social class or income status was not included on the demographic survey. This could have provided more information about the population and its impact on condom use.
5. The sample size was relatively small. The findings may be different if tested on a larger sample size and would also increase generalizeability.

### *Implications for Nursing*

Research has shown that adolescents still have the highest rates of STD occurrence in the United States, it has also shown that many of those adolescents who are pregnant also have a very high rate of STD occurrence and it is still growing at an alarming rate (CDC, 2011). While an extremely large volume of research has been performed to test how to potentially decrease risky sexual behavior and condom use in the adolescent population, virtually no research has been performed on the pregnant

adolescent population. In the adolescent population many studies have shown that by increasing self-efficacy in condom usage, by teaching subjects how to purchase, use, carry, and persuade others to use condoms, STD rates go down and condom usage goes up (Jemmott et al., 1992, 1998, 2000, 2005, 2008, 2010). However, what was found in this study was that the subjects rated themselves as having high self-efficacy, however they did not use condoms nor did they plan on using condoms in the near future. This is an extremely important implication for Nursing in that education in this population may not need to be focused on how to use condoms correctly etc. Instead it is plausible that future research should be focused more on barriers to condom use and the impact of STDs on pregnancy and problems they can cause in the mother and the fetus, rather than condom use solely to prevent pregnancy.. Empirical literature has shown that when women get pregnant they decrease usage of condoms, it has been suggested that the reason for this is that they no longer have to worry about being pregnant (Meade & Ickovics, 2005). However, STD testing of pregnant women has become mandatory for many Women's Health Practitioners because even though women may think that they are no longer at risk for STDs because their partner is now faithful, there still is a large number of women who are pregnant and still contracting STDs, sometimes even multiple times during the same pregnancy (ACOG, 2010). By acknowledging some of the significant barriers these pregnant adolescents may need to overcome such as trust, fear of blame, inequality etc. (Lesser et al., 2003) and providing suggestions of how to successfully manage to get past them, caregivers may eventually be able to help decrease risky sexual behavior in this population.

The theoretical literature is clear that the HPM focuses on the multidimensional aspects of human beings and that there is a mixture of interpersonal and physical environments that impact each individual's decision making regarding health. The HPM specifically relays that the components of prior related behavior and personal factors can drive behavior specific cognitions and affect including perceived benefits of action, perceived barriers of action and perceived self-efficacy. With these and other factors combined, the ultimate outcome is proposed to be commitment to a plan of action and ensuing health promoting behavior (Tomey & Alligood, 2005). The HPM is plausibly effective for both populations only the difference in the non-pregnant adolescent versus the pregnant adolescent population may be that the educational focus needs to change from education on self-efficacy in condom usage based on risk of pregnancy and STDs to how to overcome barriers that may prevent condom usage and therefore increase the safety of the mother and baby.

### *Recommendations*

Based on findings of this study, the following recommendations for future research are proposed:

1. Replication of this study in multiple geographic settings in order to increase the generalizeability of study findings.
2. Replication of this study on the entire adolescent population age 11-24 to determine if there are differences in self-efficacy based on age.

3. Replicate the study with the addition of racial ethnicity in the demographic questionnaire to understand if there are differences in self-efficacy rating based on ethnicity; and to determine if race is a significant confounding variable.
4. Replicate the study with inclusion of income and social status on the demographic questionnaire to determine if this variable significantly affects self-efficacy ratings.
5. Perform an experimental study where commitment to use condoms is assessed then STD education about the impact of STD's on the mother and fetus is given. Then follow up with assessing commitment to use condoms again to determine if this specific education makes an impact on condom usage in the pregnant adolescent population. STD testing could also be performed before and after the specific education is given.
6. Replicate the current study or the proposed experimental study with a larger population in multiple sites to improve statistical confidence and generalizeability across other populations.
7. Replicate the study with the same population but with the use of another tool that focuses more on condom use barriers rather than condom use self-efficacy.

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## Appendix A

### Demographic Questionnaire

#### Condom Use Self-Efficacy in the Pregnant Adolescent Population

Question #1- What is your current age? \_\_\_\_\_

Question#2-What is the highest level of education you have completed (e.g.diploma, high school, college, graduate school)? \_\_\_\_\_

Question #3- What is your marital status (Single, Married, In a Committed Relationship)?\_\_\_\_\_

Question #4- What number of weeks pregnant are you?\_\_\_\_\_

Question #5- How many times have you been pregnant prior to this pregnancy?\_\_\_\_\_

Question #6- Have you ever had a diagnosis of an STD during pregnancy (e.g. gonorrhea, Chlamydia, etc.)?\_\_\_\_\_

**USE THE FOLLOWING RESPONSE CATEGORIES FOR QUESTIONS #7 AND #8:**

- 1. Strongly agree (Always)**
- 2. Agree {Often)**
- 3. Undecided**
- 4. Disagree (Seldom)**
- 5. Strongly disagree (Never)**

Question #7- How would you rate your level of condom use over the past month?

\_\_\_\_\_

Question #8- How often do you plan to use condoms in the next month?

\_\_\_\_\_

## Appendix B

### Condom Use Self-Efficacy Survey (CUSES) – Participant Version

**USE THE FOLLOWING RESPONSE CATEGORIES FOR ALL QUESTIONS BELOW:**

- 1. Strongly agree (Always)**
- 2. Agree (Often)**
- 3. Undecided**
- 4. Disagree (Seldom)**
- 5. Strongly disagree (Never)**

### **Assessment**

#### **Scale items:**

1. I feel confident in my ability to put a condom on myself or my partner. \_\_\_\_\_  
(Example: Answer # 1 (I strongly agree))
2. I feel confident I could purchase condoms without feeling embarrassed. \_\_\_\_\_
3. I feel confident I could remember to carry a condom with me should I need one. \_\_\_\_\_
4. I feel confident in my ability to discuss condom usage with any partner I might have. \_\_\_\_\_
5. I feel confident in my ability to suggest using condoms with a new partner. \_\_\_\_\_
6. I feel confident I could suggest using a condom without my partner feeling "diseased". \_\_\_\_\_
7. I feel confident in my own or my partner's ability to maintain an erection while using a condom. \_\_\_\_\_

8. I would feel embarrassed to put a condom on myself or my partner. \_\_\_\_\_
9. If I were to suggest using a condom to a partner, I would feel afraid that he or she would reject me. \_\_\_\_\_
10. If I were unsure of my partner's feelings about using condoms, I would not suggest using one. \_\_\_\_\_
11. I feel confident in my ability to use a condom correctly. \_\_\_\_\_
12. I would feel comfortable discussing condom use with a potential sexual partner before we ever had any sexual contact (e.g. hugging, kissing, caressing, etc.) \_\_\_\_\_
13. I feel confident in my ability to persuade a partner to accept using a condom when we have intercourse. \_\_\_\_\_
14. I feel confident I could gracefully remove and dispose of a condom when we have intercourse. \_\_\_\_\_
15. If my partner and I were to try to use a condom and did not succeed, I would feel embarrassed to try to use one again (e.g. not being able to unroll condom, putting it on backwards, or awkwardness). \_\_\_\_\_
16. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I've had a homosexual experience. \_\_\_\_\_
17. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have a sexually transmitted disease. \_\_\_\_\_
18. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I thought they had a sexually transmitted disease. \_\_\_\_\_
19. I would feel comfortable discussing condom use with a potential partner before

we ever engaged in intercourse. \_\_\_\_\_

20. I feel confident in my ability to incorporate putting a condom on myself or my partner into foreplay. \_\_\_\_\_

21. I feel confident that I could use a condom with a partner without "breaking the mood." \_\_\_\_\_

22. I feel confident in my ability to put a condom on myself or my partner quickly. \_\_\_\_\_

23. I feel confident I could use a condom during intercourse without reducing any sexual sensations. \_\_\_\_\_

24. I feel confident that I would remember to use a condom even after I have been drinking. \_\_\_\_\_

25. I feel confident that I would remember to use a condom even if I were high. \_\_\_\_\_

26. If my partner didn't want to use a condom during intercourse, I could easily convince him or her that it was necessary to do so. \_\_\_\_\_

27. I feel confident that I could use a condom successfully. \_\_\_\_\_

28. I feel confident I could stop to put a condom on myself or my partner even in the heat of passion. \_\_\_\_\_

## Appendix C

### Condom Use Self-Efficacy Survey (CUSES) – PI Version

**Assessment: USE THE FOLLOWING RESPONSE CATEGORIES:**

- 1. Strongly agree**
- 2. Agree**
- 3. Undecided**
- 4. Disagree**
- 5. Strongly disagree**

**Scale Items-Please Circle The Applicable Response:**

1. I feel confident in my ability to put a condom on myself or my partner. (1, 2, 3, 4, 5)
2. I feel confident I could purchase condoms without feeling embarrassed. (1, 2, 3, 4, 5)
3. I feel confident I could remember to carry a condom with me should I need one. (1, 2, 3, 4, 5)
4. I feel confident in my ability to discuss condom usage with any partner I might have. (1, 2, 3, 4, 5)
5. I feel confident in my ability to suggest using condoms with a new partner. (1, 2, 3, 4, 5)
6. I feel confident I could suggest using a condom without my partner feeling "diseased". (1, 2, 3, 4, 5)
7. I feel confident in my own or my partner's ability to maintain an erection while using a condom. (1, 2, 3, 4, 5)
8. I would feel embarrassed to put a condom on myself or my partner. **R** (1, 2, 3, 4, 5)
9. If I were to suggest using a condom to a partner, I would feel afraid that he or she

would reject me. **R** (1, 2, 3, 4, 5)

10. If I were unsure of my partner's feelings about using condoms, I would not suggest using one. **R** (1, 2, 3, 4, 5)

11. I feel confident in my ability to use a condom correctly. (1, 2, 3, 4, 5)

12. I would feel comfortable discussing condom use with a potential sexual partner before we ever had any sexual contact (e.g. hugging, kissing, caressing, etc.) (1, 2, 3, 4, 5)

13. I feel confident in my ability to persuade a partner to accept using a condom when we have intercourse. (1, 2, 3, 4, 5)

14. I feel confident I could gracefully remove and dispose of a condom when we have intercourse. (1, 2, 3, 4, 5)

15. If my partner and I were to try to use a condom and did not succeed, I would feel embarrassed to try to use one again (e.g. not being able to unroll condom, putting it on backwards, or awkwardness). **R** (1, 2, 3, 4, 5)

16. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I've had a homosexual experience. **R** (1, 2, 3, 4, 5)

17. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have a sexually transmitted disease. **R** (1, 2, 3, 4, 5)

18. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I thought they had a sexually transmitted disease. **R** (1, 2, 3, 4, 5)

19. I would feel comfortable discussing condom use with a potential partner before we ever engaged in intercourse. (1, 2, 3, 4, 5)

20. I feel confident in my ability to incorporate putting a condom on myself or my partner into foreplay. (1, 2, 3, 4, 5)
21. I feel confident that I could use a condom with a partner without "breaking the mood." (1, 2, 3, 4, 5)
22. I feel confident in my ability to put a condom on myself or my partner quickly. (1, 2, 3, 4, 5)
23. I feel confident I could use a condom during intercourse without reducing any sexual sensations. (1, 2, 3, 4, 5)
24. I feel confident that I would remember to use a condom even after I have been drinking. (1, 2, 3, 4, 5)
25. I feel confident that I would remember to use a condom even if I were high. (1, 2, 3, 4, 5)
26. If my partner didn't want to use a condom during intercourse, I could easily convince him or her that it was necessary to do so. (1, 2, 3, 4, 5)
27. I feel confident that I could use a condom successfully. (1, 2, 3, 4, 5)
28. I feel confident I could stop to put a condom on myself or my partner even in the heat of passion. (1, 2, 3, 4, 5)

## Appendix D

### CUSES Sub-Scale Factor Analysis Questions

#### **Subscale 1 - Appropriation/Prior Related Behavior**

1. I feel confident in my ability to put a condom on myself or my partner.
2. I feel confident I could purchase condoms without feeling embarrassed.
3. I feel confident I could remember to carry a condom with me should I need one.
14. I feel confident I could gracefully remove and dispose of a condom when we have intercourse.

#### **Subscale 2- STD's/Self-Efficacy**

4. I feel confident in my ability to discuss condom usage with any partner I might have.
5. I feel confident in my ability to suggest using condoms with a new partner.
6. I feel confident I could suggest using a condom without my partner feeling "diseased".
7. I feel confident in my own or my partner's ability to maintain an erection while using a condom.
8. I would feel embarrassed to put a condom on myself or my partner. **R**
11. I feel confident in my ability to use a condom correctly.



12. I would feel comfortable discussing condom use with a potential sexual partner before we ever had any sexual contact (e.g. hugging, kissing, caressing, etc.)

13. I feel confident in my ability to persuade a partner to accept using a condom when we have intercourse.

14. I feel confident I could gracefully remove and dispose of a condom when we have intercourse.

16. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I've had a homosexual experience. **R**

17. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have a sexually transmitted disease. **R**

18. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I thought they had a sexually transmitted disease. **R**

19. I would feel comfortable discussing condom use with a potential partner before we ever engaged in intercourse.

20. I feel confident in my ability to incorporate putting a condom on myself or my partner into foreplay.

21. I feel confident that I could use a condom with a partner without "breaking the mood."

22. I feel confident in my ability to put a condom on myself or my partner quickly.

23. I feel confident I could use a condom during intercourse without reducing any sexual sensations.

24. I feel confident that I would remember to use a condom even after I have been drinking.

25. I feel confident that I would remember to use a condom even if I were high.

26. If my partner didn't want to use a condom during intercourse, I could easily convince him or her that it was necessary to do so.

27. I feel confident that I could use a condom successfully.

28. I feel confident I could stop to put a condom on myself or my partner even in the heat of passion.

### **Subscale 3 - Partner's Reaction/Perceived Barriers**

9. If I were to suggest using a condom to a partner, I would feel afraid that he or she would reject me. **R**

10. If I were unsure of my partner's feelings about using condoms, I would not suggest using one. **R**

15. If my partner and I were to try to use a condom and did not succeed, I would feel embarrassed to try to use one again (e.g. not being able to unroll condom, putting it on backwards, or awkwardness). **R**

**RUTGERS UNIVERSITY**  
**Office of Research and Sponsored Programs**  
**ASB III, 3 Rutgers Plaza, Cook Campus**  
**New Brunswick, NJ 08901**

December 20, 2013

P.I. Name: Simpson

Protocol #: 13-381M

Rachael Simpson  
 Rutgers University, College of Nursing  
 3003 Willow Trace Ln  
 Sandy Hook VA 23153

Dear Rachael Simpson:

( Initial / Amendment / Continuation / Continuation w/ Amendment )

**Protocol Title:** "Condom Use Self-Efficacy in the Pregnant Adolescent Population"

This is to advise you that the above-referenced study has been presented to the Institutional Review Board for the Protection of Human Subjects in Research, and the following action was taken subject to the conditions and explanations provided below:

**Approval Date:** 12/17/2013      **Expiration Date:** 12/16/2014      **Expedited Category(s):** 7  
**Approved # of Subject(s):** 43      **Currently Enrolled:** 18

This approval is based on the assumption that the materials you submitted to the Office of Research and Sponsored Programs (ORSP) contain a complete and accurate description of the ways in which human subjects are involved in your research. The following conditions apply:

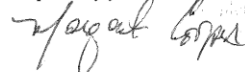
- **This Approval-**The research will be conducted according to the most recent version of the protocol that was submitted. **This approval is valid ONLY for the dates listed above;**
- **Reporting-**ORSP must be immediately informed of any injuries to subjects that occur and/or problems that arise, in the course of your research;
- **Modifications-**Any proposed changes **MUST** be submitted to the IRB as an amendment for review and approval prior to implementation;
- **Consent Form(s)-**Each person who signs a consent document will be given a copy of that document, if you are using such documents in your research. The Principal Investigator must retain all signed documents for at least three years after the conclusion of the research;
- **Continuing Review-**You should receive a courtesy e-mail renewal notice for a Request for Continuing Review before the expiration of this project's approval. However, it is your responsibility to ensure that an application for continuing review has been submitted to the IRB for review and approval prior to the expiration date to extend the approval period;

**Additional Notes:** Continuation Expedited Approval per 45 CFR 46.110

**Failure to comply with these conditions will result in withdrawal of this approval.**

Please note that the IRB has the authority to observe, or have a third party observe, the consent process or the research itself. The Federal-wide Assurance (FWA) number for the Rutgers University IRB is FWA00003913; this number may be requested on funding applications or by collaborators.

Respectfully yours,



Acting For,  
 Dr. Beverly Tepper, Ph.D.  
 Professor  
 Chair, Rutgers University Institutional Review Board

cc: Dr. Claudia A. Beckman

**RUTGERS UNIVERSITY**  
**Office of Research and Sponsored Programs**  
**ASB III, 3 Rutgers Plaza, Cook Campus**  
**New Brunswick, NJ 08901**

April 24, 2013

**P.I. Name:** Simpson  
**Protocol #:** 13-381M

Rachael Simpson  
 Rutgers University, College of Nursing  
 3003 Willow Trace Ln  
 Sandy Hook VA 23153

Dear Rachael Simpson:

✓  
 ( **Initial** / **Amendment** / **Continuation** / **Continuation w/ Amendment** )

**Protocol Title:** "Condom Use Self-Efficacy in the Pregnant Adolescent Population"

This is to advise you that the above-referenced study has been presented to the Institutional Review Board for the Protection of Human Subjects in Research, and the following action was taken subject to the conditions and explanations provided below:

<b>Approval Date:</b>	1/5/2013	<b>Expiration Date:</b>	1/4/2014
<b>Expedited Category(s):</b>	7	<b>Approved # of Subject(s):</b>	43

This approval is based on the assumption that the materials you submitted to the Office of Research and Sponsored Programs (ORSP) contain a complete and accurate description of the ways in which human subjects are involved in your research. The following conditions apply:

- **This Approval-**The research will be conducted according to the most recent version of the protocol that was submitted. **This approval is valid ONLY for the dates listed above;**
- **Reporting-**ORSP must be immediately informed of any injuries to subjects that occur and/or problems that arise, in the course of your research;
- **Modifications-**Any proposed changes MUST be submitted to the IRB as an amendment for review and approval prior to implementation;
- **Consent Form(s)-**Each person who signs a consent document will be given a copy of that document, if you are using such documents in your research. The Principal Investigator must retain all signed documents for at least three years after the conclusion of the research;
- **Continuing Review-**You should receive a courtesy e-mail renewal notice for a Request for Continuing Review before the expiration of this project's approval. However, it is your responsibility to ensure that an application for continuing review has been submitted to the IRB for review and approval prior to the expiration date to extend the approval period;

**Additional Notes:** Expedited Approval per 45 CFR 46.110

**Additional Conditions:** Approval From the IRB at Virginia Commonwealth University Must Be Forwarded to the Rutgers IRB Prior to Commencement of Study Procedures At That Site.

**Failure to comply with these conditions will result in withdrawal of this approval.**

Please note that the IRB has the authority to observe, or have a third party observe, the consent process or the research itself. The Federal-wide Assurance (FWA) number for the Rutgers University IRB is FWA00003913; this number may be requested on funding applications or by collaborators.

Respectfully yours,



Acting For

Dr. Beverly Tepper, Ph.D.

Professor

Chair, Rutgers University Institutional Review Board

cc: Dr. Claudia A. Beckman

## ASSENT

### Condom Use Self-Efficacy in the Pregnant Adolescent Population

You are invited to participate in a research study that is being conducted by Rachael Simpson, who is a PhD student in the Nursing Department at Rutgers University. The purpose of this research is to determine what factors may influence condom use self-efficacy in the pregnant adolescent population.

This research is anonymous. Anonymous means that I will record no information about you that could identify you. This means that I will not record your name, address, phone number, date of birth, etc. If you agree to take part in the study, you will be assigned a random code number that will be used on each test and the questionnaire. Your name will appear only on a list of subjects, and will not be linked to the code number that is assigned to you. There will be no way to link your responses back to you. Therefore, data collection is anonymous.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for three years and then appropriated destroyed.

There are no foreseeable risks to participation in this study. In addition, you may receive no direct benefit from taking part in this study.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact myself at:

Rachael Simpson RN, MSN, PhDc

3003 Willow Trace Lane, Sandy Hook, VA. 23153

[rachael@casasimpson.com](mailto:rachael@casasimpson.com)

804-837-2286

You may also contact my advisor at:

Dr. Claudia Beckmann

180 University Avenue- Ackerson Hall Rm. 364 Newark, NJ 07102

[claudia.anderson.beckmann@gmail.com](mailto:claudia.anderson.beckmann@gmail.com)

484-832-2517

If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:

Rutgers University, the State University of New Jersey

Institutional Review Board for the Protection of Human Subjects  
Office of Research and Sponsored Programs  
3 Rutgers Plaza  
New Brunswick, NJ 08901-8559  
Tel: 848-932-0150  
Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

You will be given a copy of this assent form for your records.

By participating in this study/these procedures, you agree to be a study subject.

Upon completion of the demographic questionnaire and the Condom Use Self-Efficacy Scale please return both forms to the Principal Investigator Rachael Simpson.

## Curriculum Vitae

Rachael Simpson

1977 Born March 27, 1977

1995 Graduated Christian Fellowship School, Denver, Colorado

1998 Associate's Degree in Nursing, Piedmont Virginia Community College,  
Charlottesville, Virginia

1998-2005 Staff Nurse - Multiple Units, University of Virginia Health System,  
Charlottesville, Virginia

2001 Bachelor of Science in Nursing, University of Virginia, Charlottesville, Virginia

2004-2005 Clinical Instructor, University of Virginia Labor and Delivery Unit,  
Charlottesville Virginia

2005 Master's Degree in Nursing with a Major in Health Systems Management,  
University of Virginia, Charlottesville, Virginia

2005-2008 Nurse Manager, University of Virginia Medical Center, Charlottesville, VA

2008-2011 Nursing Classroom/Clinical Instructor at Bon Secours Memorial College of  
Nursing, Richmond, Virginia

2011-2013 Teaching Assistant at Virginia Commonwealth University College of  
Nursing, Richmond, Virginia

2013 Effects of Guided Imagery on Maternal Stress during Hospitalization for Preterm  
Labor, accepted for publication, Holistic Nursing Practice

2014 Doctor of Philosophy in Nursing Research, Rutgers University, Newark, New  
Jersey