PREDICTING CONDOM USE BEHAVIOR IN SEXUALLY ACTIVE ADOLESCENTS: APPLICATION OF THE HEALTH BELIEF MODEL AND DEVELOPMENTAL ASSETS FRAMEWORK

by

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Abstract

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A significant amount of progress has been made over the past decade to reduce the impact of risky sexual behavior among adolescents; however, rates of unwanted pregnancy and contraction of sexually transmitted infections remain high. Finding ways to mitigate the consequences of risky sexual behavior continues to be a focus of many working with adolescents engaging in risky behavior. This study performed a secondary analysis of data collected during a 5-year evaluation of a teen pregnancy program targeting youth ages 17-19 who were at high risk for dropping out of high school.

The goals of this study were two fold: 1) Test the applicability of the Health Belief Model (HBM) for assessing both adolescent intentions to use condoms and condom use behavior, and 2) Assess the moderating effect of the Developmental Assets framework on the relationship between condom use intentions and behavior. Guided by the Health Belief Model framework, factor analyses were conducted to identify the model that best fit the data. This resulted in six factors comprised of 26 items that reflected different aspects

of the HBM and predicted 63% of the variance in the model. This was followed by ordinal and logistic regressions to detect the relationship between each of the identified factors and condom use intentions, as well as between each of the identified factors and condom use behavior. The results demonstrated that *Partner Efficacy*, *Interpersonal Barriers – Partner Trust*, *Structural Barriers – Accessibility*, *Benefits*, and *Physical Barriers – Comfort* significantly predicted intentions to use condoms. *Susceptibility* was the only factor that did not produce a significant result for intentions to use condoms. *Interpersonal Barriers – Partner Trust*, *Structural Barriers – Accessibility*, and *Physical Barriers – Comfort* significantly predicted a positive relationship between the factor and condom use behavior. *Susceptibility* was found to have a significant negative relationship between susceptibility and condom use behavior, while *Partner Efficacy* and *Benefits* failed to produce significant results. Ultimately, participants who reported greater intentions to use condoms were more than twice as likely to report using a condom in the past three months. Overall developmental assets scores did not significantly demonstrate a moderating effect on the relationship between intentions and behavior.

These findings confirm that the Health Belief Model in the originally hypothesized form did not fit well for this sample; however, the newly identified model demonstrated a stronger fit for this population. The development of a new model guided by the HBM may be more applicable when assessing condom use intentions with academically at-risk adolescents. While some of the factors exhibited limitations, revisions to items, inclusion of new items, and removal of weaker items may lead to an improved model and should be explored. Further examination into the role of the developmental assets should also be assessed. Implications of this study's findings for social work policy, practice and future research are discussed.

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Chapter 1

Introduction

Sexual health among adolescents has been a longstanding concern due to the high rates of unwanted pregnancies and sexually transmitted infections (STI) in this population (CDC, 2011, 2013; Martin, Hamilton, Osterman, Curtin, & Mathews, 2013). Whether the focus is on comprehensive sexual education or abstinence only education, service providers have put a great deal of effort and resources into trying to curtail this problem. Contracting an STI or getting pregnant while in middle school or high school does not doom a youth to failure; however, the avenues to success are fewer and more difficult to navigate. This chapter begins with an overview of some of the efforts currently in place to address teen pregnancy and STIs. Many of these intervention programs have been successful in attacking this problem and the overall rates have shown a decline in recent years. However, in spite of these successes, pregnancy rates and STI rates in the United States continue to be some of the highest among industrialized nations. Identifying ways to communicate with youth about sexual health and the consequences of risky sexual behavior is critical to the continued efforts attempting to address unwanted pregnancy and STIs.

In order to understand the magnitude of this problem, it is necessary to review the current trends in youth sexual behavior (Kann, Kinchen, Shanklin, Flint, Hawkins, Harris, Lowry et al., 2014). Youth are dealing with a myriad of challenges on a daily basis, which are only compounded when they are faced with an unwanted pregnancy or STI. Whether it is dealing with the immediate health consequences, or long-term sociological sequalae, neither of these sexual health related events are easily overcome without support from family, peers, school and the community. This chapter will include a review of teen pregnancy and STI rates in the U.S. and the impacts on the youth, their children, and the community that supports them. Even with extensive support, the consequences of teen pregnancy and STIs can be devastating to a young person. As social workers, it is imperative that the needs relating to the health and well being of this vulnerable population be addressed in a manner that is empowering and respectful. The purpose

of this study is to uncover effective mechanisms to proactively empower youth to prevent an unwanted pregnancy or STIs.

Steps to Address Pregnancy and STIs Among Youth

The state of teen pregnancy and rates of STIs among youth have been critical foci of federal health initiatives. In 2010, President Obama issued a Teen Pregnancy Prevention Initiative (TPPI), which set aside $164 million dollars to address the issue of teen pregnancy. As part of this initiative, the Centers for Disease Control (CDC) targeted teen pregnancy as a "winnable battle" in which significant progress can be made to address this public health challenge. The CDC has set forth three objectives to address this effort with the goals to (1) Decrease the pregnancy rate among adolescent females by 20%, (2) Delay the initiation of sexual activity among teens, and (3) Increase the use of contraception among teens who are sexually active by 2015 (CDC, 2012). As a result, there have been numerous programs developed with the aim to decrease STIs and unwanted pregnancies among youth (e.g., *Be Proud! Be Responsible!, FOCUS, Making Proud Choices!*).

In an effort to ensure this funding stream was well utilized, the Department of Health and Human Services (HHS) performed a systematic review of both published and unpublished research studies to identify quality programs that have demonstrated effectiveness at reducing teen pregnancy, STIs, or other risky sexual behaviors (Goesling, Colman, Trenholm, Terzian, & Moore, 2014). Programs were assessed on a variety of criteria for quality and execution of their research designs and assigned a quality rating of high, moderate, or low. This resulted in a total of 88 studies receiving a higher or moderate quality rating that demonstrated positive program impacts on at least one measure of pregnancy, STIs, or risky sexual behavior (i.e., sexual initial, frequency of sexual activity, recent sexual activity, number of sexual partners, or contraceptive use) (Goesling et al., 2014). Selected characteristics of these 88 studies are included in Table 1-1. An overview of the programs identified with evidence of effectiveness relating to STI reduction, condom use, or pregnancy reduction is provided in the next section.

Table 1-1 Program and Sample Characteristics of Studies with High or Moderate Ratings (Adapted from Goesling et al., 2014, p.502)

Characteristic	Number of Studies
Program Type:	
• **Abstinence Based**	n = 17
• **Clinic-Based**	n = 10
• **Sexuality Education**	n = 41
• **Programs for Special Populations**	n = 10
• **Youth Development**	n = 10
Evaluation Setting:	
• **After school/Community based**	n = 33
• **Health clinic**	n = 14
• **In-school**	n = 26
• **Multiple settings**	n = 5
• **Specialized setting**	n = 10
Average Age of Participants:	
• **13 or younger**	n = 39
• **14-17**	n = 39
• **18-19**	n = 10
Majority Racial/Ethnic Group:	
• **African American**	n = 45
• **Asian**	n = 1
• **Latino**	n = 17
• **White**	n = 25
Gender	
• **Male & Female**	n = 62
• **Female Only**	n = 19
• **Male Only**	n = 7

Of the 88 studies receiving a high or moderate quality rating, there were 78 unique program models identified. Further assessment identified 33 program models with evidence of a favorable statistically significant impact on one or more of the following variables: sexual activity, contraceptive use, STIs, and/or pregnancy or birth (Goesling, et al., 2014). While this process assessed hundreds of studies attempting to address the problem of teen pregnancy and STI prevention, only a very small number were proven to be effective. Ongoing reviews continue and have resulted in the addition of two more programs being added to the list model interventions; however, finding a universal solution to this problem remains elusive (Mathematica Policy Research and Child Trends, 2012). Table 1-2 summarizes some of the characteristics of these 33

identified evidence based programs. An overview of the studies demonstrating effectiveness with condom use, pregnancy, and/or STI reduction is provided below.

Table 1-2 Characteristics of Evidence Based Programs

Characteristic	Number of Studies
Program Type:	
• **Abstinence Based**	n = 3
• **Clinic-Based**	n = 3
• **Sexuality Education**	n = 15
• **Programs for Special Populations**	n = 9
• **Youth Development**	n = 5
Evaluation Setting*:	
• **After school/Community based**	n = 13
• **Health clinic**	n = 7
• **In-school**	n = 11
• **Multiple settings**	n = 1
• **Specialized setting**	n = 5
Average Age of Participants*:	
• **13 or younger**	n = 19
• **14-17**	n = 27
• **18-19**	n = 13
Majority Racial/Ethnic Group*:	
• **African American**	n = 30
• **Asian**	n = 9
• **Latino**	n = 20
• **White**	n = 16
• **Native American**	n = 5
• **Other**	n = 15
Outcomes Affected*:	
• **Number of Sexual Partners**	n = 10
• **Frequency of Sexual Activity**	n = 5
• **Contraceptive Use and Consistency**	n = 13
• **Sexually Transmitted Infections or HIV**	n = 5
• **Pregnancy or Birth**	n = 5
Study Rating*	
• **High**	n = 22
• **Moderate**	n = 12

(Note*: May not add up to 33 if programs fit more than one category.)

School Based Programs

In order to understand how to better address teen pregnancy and STIs, it is necessary to understand what has already been done that has been effective. Out of the 33 evidence based effective programs, five programs are based in school settings and have proven effectiveness with contraceptive use, pregnancy reduction, and/or HIV/STI reduction. Some of these programs

may have proven effectiveness in other areas (e.g., reducing rates of teen pregnancy, decreasing frequency of intercourse, delaying sexual activity); however, for the purpose of this review, only impacts that are directly related to the proposed study will be included (i.e., increased condom use, reduction of pregnancy, and reduction of STIs). *Raising Healthy Children* is currently the only evidence-based school-centered program targeting younger children (i.e., Kindergarten - 6th grade) and focuses on positive youth development. This longitudinal study followed participants until they were age 21 and found a significantly increased probability in condom use among single participants as well as a reduced probability of contracting and STIs (Lonczak, Abbott, Hawkins, Kosterman, & Catalano, 2002). At age 21, female participants were significantly less likely to report a pregnancy or birth (Lonczak et al., 2002). This would suggest that there is foundation that can be established for students in elementary schools that can positively impact long-term sexual health outcomes.

One of the five school based programs with proven effectiveness was administered in middle schools and targeted 7th and 8th grade youth. *It's Your Game: Keep it Real (IYG)*, is a classroom and computer based HIV, STI, and pregnancy prevention program that addresses knowledge, behavioral beliefs, attitudes, perception of risk and self-efficacy. Markham et al. (2012) found that at the 9th grade follow up students participating in this program were significantly less likely to engage in unprotected sex, among other factors. The program was found to have a positive effect on various psychosocial outcomes; however, it is unclear the impact those outcomes may have had on participants' condom use (Markham et al., 2012). While these results are promising, the study experienced high rates of attrition at follow-up data collection points, and there is a possibility that this may have impacted the overall findings.

The three remaining school based programs were implemented in a high school setting with older youth (i.e., *All4You!, Reducing the Risk*, and *Safer Choices*). All three programs focus on HIV, STIs, and pregnancy prevention. Two of the programs place a strong emphasis on changing attitudes, beliefs, and norms associated with sexual risk taking (i.e., *All4You!* and *Safer Choices*), while *Reducing the Risk* aims to encourage students to develop skills, such as risk

assessment and refusal strategies, that will enable them to avoid risky behaviors. Researchers studying *All4You!* found program participants reporting an increased frequency of condom use at last intercourse, and a lower frequency of intercourse without a condom at the six month follow up, although these findings were not sustained at 12-months and 18-months post intervention (Coyle, Kirby, Robin, Banspach, Baumler, & Glassman, 2006). A second study reported program participants being significantly less likely to engage in unprotected intercourse in the past 3 months at the 6-month follow up (Coyle, Glassman, Fanks, Campe, Denner, & Lepore, 2013). This positive finding is promising and suggests that the program impacts can be replicated. A study examining *Safer Choices* found similar findings demonstrating increased condom use among sexually active program participants at follow up (Kirby, Baumler, Coye, Basen-Engquist, Parcel, Harrist, & Banspach, 2004). Researchers examining *Reducing the Risk* did not find statistically significant program findings at 6-month follow up, but did find that sexually inexperienced females at baseline were less likely to report having unprotected sex at 18 months after receiving the intervention (Kirby, Barth, Leland, & Fetro, 1991). While all these findings are promising, it is still unclear what makes these programs effective for some and not for others. There are similarities in the curricula of these school-based interventions; however, outcomes are not consistent across age groups, gender or time frames. It continues to be important to further examine these programs and understand the complexities behind adolescent decision-making as it relates to condom use and sexual health.

After School or Community Based Programs

Four after-school or community-based programs were found to exhibit positive program outcomes (i.e., *Be Proud! Be Responsible!, Making Proud Choices!, Health Improvement Project for Teens*, and *Respeto/Proteger). Be Proud! Be Responsible! (BP!BR!)* and *Making Proud Choices! (MPC!)* were both created by the same developers and thus have many similarities. *BP!BR!* focuses on knowledge, beliefs and intentions related to condom use, as well as skill building and self-efficacy, while *MPC!* focuses on the same, with an added emphasis on the consequences surrounding STIs, pregnancy, and condom use. Both programs target African

American adolescents, with BP!BR! targeting males only. Multiple studies have found that participants in the *BP!BR!* program exhibited more favorable beliefs about condoms, greater self-efficacy, and stronger intentions to use condoms six months after the intervention (Jemmott, Jemmott, Fong, & McCaffree, 1999). While program impacts were not consistent across data collection time points (i.e., 3-month, 6-month, 12-month), program participants reported significantly lower frequencies of unprotected sexual intercourse as compared to non-program participants at six months post intervention as well as more consistent and frequent condom use over time (Jemmott et al., 1999; Jemmott, Jemmott, Fong, & Morales, 2010).

MPC! also demonstrated some positive findings related to condom use among youth. Three months after the program, participants who were sexually active at baseline were less likely to report unprotected sexual intercourse in the past three months and reported significantly lower frequencies of unprotected intercourse (Jemmott, Jemmott, & Fong, 1998). Neither of these findings were found to be true for youth who were not sexually active at baseline (Jemmott et al., 1998). Even more promising is the fact that these findings remained consistent over time at both six and twelve months after the program (Jemmott et al., 1998). Both *BP!BR!* and *MPC!* share many core components; however, the findings are not consistent between the two programs. Understanding the nuances that help one program to demonstrate effectiveness over time compared to another similar program would benefit program developers as they continue to improve the overall effectiveness of sexual health programs.

Unlike the previously mentioned programs, *Health Improvement Project for Teens (HIP Teens),* offers booster sessions following the primary intervention sessions and does not discuss pregnancy or contraception. This program emphasizes improving knowledge about HIV and AIDS, learning communication and decision making skills, and improving knowledge about condoms in the context of personal goals. The follow up booster sessions take place at three and six months post intervention and act as a mechanism to reinforce these messages. Researchers found that program participants were significantly less likely to engage in sexual intercourse following the intervention (Morrison-Beedy, Jones, Xia, Tu, Crean, & Carey, 2013). Significant

program impacts at 3-months and 12-months post-program showed a reduction in the number of times a youth engaged in sexual intercourse without a condom; however, this was not found to be the case at 6-months post programming, in spite of the booster sessions (Morrison-Beedy et al., 2013). These findings point to the possibility that emphasizing condom use may not be the only avenue to encourage youth to refrain from engaging in risky sexual behavior.

Respeto/Proteger is a community centered asset-based HIV prevention program targeting Latino couples. This couple based program focuses on HIV awareness and prevention in a culturally aware framework that includes activities focusing on relationships, consequences of HIV, and barriers to condom use, making decisions, and personal goals. Results found that the proportion of males engaging in intercourse without a condom declined more over time than for control group participants (Lesser, Koniak-Griffin, Huang, Takayanagi, & Cumberland, 2009). While this program does not address many of the areas that the previously mentioned programs cover, it has shown some positive impacts and addresses the importance of relationships and the impact they have on sexual health. The role a partner plays in decisions to utilize a condom is essential; however, this is the only evidenced-based program showing impacts that are effective with both partners simultaneously. Unfortunately, the characteristics of those partner relationships and the influence of the partner on condom use were not reported.

Clinic Based Programs

Clinic based programs provide a unique access and opportunity to report on rates of STIs among program participants. Studies for all five of the clinic based programs in the review reported statistically significant impacts on STI rates among program participants at either 6 months (Downs, Murray, Bruine de Bruin, Penrose, Palmgren, & Fischhoff, 2004) or 12 months (Jemmott, Jemmott, Braverman, & Fong, 2005) following the program, with some demonstrating sustained program effects over time (Champion, Dimmitt, & Collins, 2012; DiClemente, Wingood, Rose, Sales, Lang, Caliendo, Hardin, & Crosby, 2009; DiClemente, Wingood, Harrington, Lang, Davies, Hook et al., 2004).

Each of these clinic-based programs targeted youth in a variety of ways from peer-led interventions (i.e., *SiHLE*) to facilitator-led interventions (e.g., *Project IMAGE*) to independently watching videos (e.g., *17 Days*) and has mixed results regarding outcomes. *Project Image* aims to reduce STIs though education regarding sexual health risks and teaching strategies to reduce those risks. The program has three components (i.e., workshop sessions, support group sessions, and individual counseling sessions) that reinforce the same messages and has demonstrated effectiveness in reducing the likelihood of contracting new STIs over the year following the intervention (Champion et al., 2012). *17 Days* focuses on improving sexual health knowledge through videos and found increased knowledge of STIs but no statistically significant impacts on condom use (Downs et al., 2004). This points to the notion that there is a gap between having knowledge about condom use and actually using condoms. Both *Horizons* and *Sisters Helping Sisters* reported positive impacts related to condom use, which may be the result of both programs discussing condom use skills (DiClemente et al., 2009; Jemmott et al., 2005). *Horizons* also informs participants regarding communication skills and risk reduction strategies, which is similar to *Sisters Helping Sisters'* programming that discusses beliefs relevant HIV/STI reduction, condom use negotiation skills, and barriers to condom use. The combination of each of these factors has the potential to play a role in changing condom use behavior; however, the extent of this effect is not clear. *SiHLE*, a peer-led HIV prevention program that addresses relationships and uses cultural and gender pride to emphasize empowerment and self-efficacy, appears to have the strongest positive findings (DiClemente et al., 2004). At 12-month follow up, intervention youth were more likely to use condoms, less likely to have a new sex partner in past 30 days, had better condom application skills, as well as higher condom use self-efficacy scores, more favorable attitudes toward using condoms, and more frequent discussions with partners about HIV prevention, among others (DiClemente et al., 2004). This program moves beyond imparting knowledge and skills on participants by addressing other factors (e.g., self efficacy and empowerment) that may have an impact on condom use, which has proven to be an effective strategy.

Specialized Setting Programs

There are three evidence-based programs that took place in a specialized setting (i.e., alternative school or juvenile detention facility). Since *All4You!* was previously discussed in the school based program section, it will not be included here. The remaining two programs (*Sexual Health and Adolescent Risk Prevention*, or *SHARP*, and *Rikers Health Advocacy Program*) took place in juvenile detention facilities and demonstrated some promising impacts. *Rikers Health Advocacy Program* focuses on problem solving skills for HIV prevention among youth who are incarcerated and reported drug users. Researchers found youth who participated in the intervention reported significantly higher rates of condom use and increased positive attitudes about condoms at follow up, but found little evidence of changes in substance use behaviors, which is believed to contribute to risky sexual behavior (Magura, Kang, & Shapiro, 1994). *SHARP* has multiple goals aimed at increasing knowledge of STIs and HIV, improving condom use skills, reducing sexual risks and setting long-term goals. While condom use declined over time for all participants in *SHARP*, participants who attended the full intervention reported a more significant decline than youth who received a portion or none of the program (Bryan, Schmiege, & Broaddus, 2009). There were no intervention impacts on substance use even though this was a key component of the program (Bryan et al., 2009). Evidence provided by both of these programs suggests that there are often external factors (e.g., drug use, alcohol use) that are believed to influence condom use behavior; however, addressing other factors can lead to positive impacts on condom use in spite of little to no change on other potentially negative factors.

A cursory review of the evidence-based programs identified to have significant impacts on contraceptive use, teen pregnancy, and STI rates among teens provides a glimpse into the complexity of the adolescent experience and subsequent sexual behavior. Program components that work for one population may not be effective for another population. Each program hones in on different areas believed to be the critical component that will make a difference. Whether this critical component is the type of knowledge youth need (e.g., STI knowledge, condom use knowledge), or the specific skills a youth must obtain (e.g., condom use skills, negotiation skills),

or personal growth that must occur (e.g., improved self efficacy), or the combination of two or more of these is not clear. It is evident that there is no single factor that determines sexual health outcomes for youth; however, the benefits of addressing any one factor that may lead to fewer unwanted pregnancies or STIs far outweigh the consequences of not addressing all possible factors at once.

Risky Sexual Behavior and Outcomes

Many youth engage in sexual intercourse and do not experience negative outcomes. In contrast, there are a number of youth that engage in sexual intercourse and experience devastating life consequences. Identifying the factors that can prevent youth from falling into the second category and experiencing an unwanted pregnancy or STI is what has been the source of adolescent sexual health research for several decades. It is these consequences that bring to the forefront the impacts of engaging in risky sexual behavior. Risky sexual behavior is defined by the CDC as engaging in behaviors that increase the chance of contracting an STI or experiencing an unwanted pregnancy (Kann et al., 2014). These behaviors include engaging in sexual intercourse at a young age, engaging in intercourse with multiple partners, engaging in intercourse while under the influence of alcohol or drugs, or engaging in unprotected sexual behaviors (Kann et al., 2014).

The latest data from the Youth Risk Behavior Surveillance conducted by the CDC (Kann et al., 2014) monitors risky behaviors among students in grades 9-12 and provides a current snapshot of youth risky sexual behavior. It is important to note the limitations of this data, which does not include youth that are sexually active in middle school, nor does it include older youth that have dropped out of high school. Of the students who were most recently surveyed, almost half (46.8%) indicated they had engaged in sexual intercourse at some time in their lives, while only 34.0% indicated they were currently sexually active (or had engaged in intercourse in the past three months) (Kann et al., 2014). Table 1-3 provides an indication of the level of risky behaviors these youth are engaging in by gender and race.

Table 1-3 Rates of Risky Sexual Behaviors (Kann et al., 2014)

Risky Sexual Behavior	% of Youth	
	Male	Female
Ever Had Intercourse by Race		
• **Black**	68.4%	53.4%
• **White**	42.2%	45.3%
• **Hispanic**	51.7%	46.9%
Had Sexual Intercourse Before Age 13		
• **Black**	4.9%	24.0%
• **White**	2.1%	4.4%
• **Hispanic**	3.8%	9.2%
Had Sexual Intercourse with Four or More Persons		
• **Black**	37.5%	15.8%
• **White**	12.4%	14.1%
• **Hispanic**	16.5%	10.5%
Currently Sexually Active		
• **Black**	47.0%	37.6%
• **White**	29.7%	35.9%
• **Hispanic**	34.7%	34.7%

Among the 34% of sexually active students in this sample, 59.1% reported using a condom during last sexual intercourse, which has not changed in the past few years (Kann et al., 2014). While this is promising, there are still 40.9% of sexually active youth placing themselves at high risk for contracting and STI or getting pregnant. While many adolescent females are utilizing some form of contraception, 13.7% reported not using any contraceptive method, including condoms, to prevent pregnancy (Kann et al., 2014). These data indicate that a large proportion of the adolescent population are engaging in intercourse, and a great deal of these youth are engaging in risky sexual behaviors that might lead to unwanted pregnancies or STIs.

Unwanted Teen Pregnancy

The consequences of engaging in risky sexual behavior are two fold: unwanted pregnancies and contraction of STIs. The impact on both youth and their communities can be devastating, with numerous educational, socioeconomic and health challenges that arise for adolescents who become parents at a young age. This section provides an overview of some of the sequelae related to unwanted teen pregnancy.

Educational Impacts of Teen Pregnancy

In the United States, one of the primary goals is for youth is to attend school and receive an education. While a high school education may be the ending point for some teens, many others seek to continue their formal education at technical schools, community colleges, or four-year universities. When a youth becomes pregnant during these critical years, the negative impact on educational outcomes for these young mothers can be both short term and long term. Young mothers have a lower rate of high school educational attainment with only 66% obtaining a high school diploma or GED by the age of 22, as compared to a 94% attainment rate among young women who had not given birth (Perper, Peterson, & Manlove, 2010). Roughly one third of adolescent females who become teen parents never obtain a high school diploma or GED, compared with only 6% of adolescent females who do not get pregnant (Perper et al., 2010). When asked what prevents young mothers from obtaining a formal education, 30% cite pregnancy and parenthood as a key factor leading to their decision to drop out of high school (National Campaign to Prevent Teen and Unplanned Pregnancy, 2012). Among those youth who become parents and are able to finish high school, the odds of obtaining a college degree are reduced with less than 2% of teen mothers reporting they have attained a college degree by the age of 30 (Hoffman, 2006). Becoming a teen parent not only impacts a youth with immediate educational consequences, but continues to be a limitation that prevents them from achieving educational goals beyond high school as well.

Economic Impacts of Teen Pregnancy

A further complication resulting from teen mothers' lack of educational attainment is seen in their economic well being. Unemployment rates are typically higher for people with lower levels of educational attainment. In 2010, the unemployment rate for those who had dropped out of high school was 17%, while it was only 12% for those with a high school diploma and even lower (5%) for those with a bachelors degree or higher (Snyder & Dillow, 2012). The average annual income for a female high school dropout in 2010 was $20,880, while the average income for a female with a high school diploma or bachelor's degree with dramatically higher ($29,860 and $47,440,

respectively) (Snyder & Dillow, 2012). These economic impacts are significant. Data collected by the National Campaign to Prevent Teen and Unplanned Pregnancy from 2009-2010 found that 48% of teen mothers surveyed were currently living in poverty (2012), which is not surprising given the disparities in salary for many of these young mothers. Racial and ethnic differences are also apparent, with 60% of Hispanic teen mothers reporting living in poverty compared to 39% of Non-Hispanic White and 48% of Non-Hispanic Black teen mothers (NCPT, 2012). With so many teen mothers living in poverty, there is a noticeable link to the number of young mothers receiving public assistance. In 2008, the U.S. Census Bureau published a report that found 63 percent of teen mothers were enrolled in some form of public assistance in the first year following the birth of their child (Dye, 2008). The National Campaign to Prevent Teen and Unplanned Pregnancy performed an analysis of costs and estimated the taxpayers' cost for teen childbearing is approximately $9.4 billion (2014). Broken down, the highest costs are spent in public sector health care (roughly $2.1 billion) and child welfare ($3.1 billion) (National Campaign, 2014). Even with declining rates of teen pregnancy, the sizable economic impacts on affected communities can be devastating.

Health Impacts of Teen Pregnancy

Teen mothers and their babies face many unique medical risks not often associated with older mothers. A major contributing factor to failing to seek out prenatal care, regardless of age, is unwanted or unplanned pregnancy (Braveman, Marchi, Egerter, Pearl, & Neuhaus, 2000). Many pregnant adolescents fail to seek out adequate prenatal care due to cost barriers, lack of resources, and lack of social support (Petersen & Alexander, 1992; Cartwright, McLaughlin, Martinez, Caul, Hogan, Reed, & Swafford, 1993). Failure to access prenatal care can have devastating impacts on the health of both the mother and the baby. Children of adolescent mothers are at greater risk for low birth weight and have a higher likelihood of a preterm birth (Childtrends, 2012; Gortzak-Uzan, Hallak, Press, Katz, & Shoham-Vardi, 2001). While preterm birth rates for mothers age 19 and younger have dropped from 14.6% in 1990 to 13.3% in 2012, younger mothers have shown a consistent trend of having higher rates of preterm births than

mothers ages 20-29 and ages 30-39 (Childtrends, 2012). The additional challenges a new mother faces with a premature baby (e.g., medical costs, emotional costs) compound with the other challenges previously discussed. Tragically, infants of teenage mothers also have the highest mortality rate (15.31) of all age groups.

Developmental Impacts of Teen Pregnancy

Youth who become pregnant are not the only ones who experience adverse consequences as a result of becoming a young parent. The impact of parenting at a young age can be seen in the children of teen mothers as well, who often exhibit developmental deficiencies. Numerous studies have shown that children of teen mothers have cognitive and developmental deficits that may be attributed to younger maternal age (Morinis, Carson, & Quigly, 2013; Molborn & Dennis, 2012, Dahinten, Shapka, & Wilms, 2007). Often these delays are not solely ascribed to the age of the mother; rather, to the myriad of challenges surrounding teen mothers previously described (e.g., low educational attainment, living in poverty) (Gueorguieva et al., 2001). Developmentally, young mothers may not be capable of effectively managing the inevitable stressors and challenges associated with parenting. A study of minority teen mothers found that more parenting stress and less perceived social support following the birth of a child were associated with higher levels of depression among teen mothers (Huang, Costeines, Kaufman, & Ayala, 2014). Depression can present additional challenges for a new mother, making it even more difficult to parent effectively and care for the needs of her child. Depression rates among these mothers were also associated with added developmental delays in their infants, which points to the complexity of factors that may be associated with these delays (Huang et al., 2014). These factors place the children of young mothers at a disadvantage, and will likely result in added financial and emotional costs to ensure that the needs of the child are being met.

Rates of Teen Pregnancy - Scope of the Problem

There has been a steady decline in the rate of birth among adolescents over the past decade, dropping by more than 50% since 1991 (61.8 births per 1,000 aged 15-19) (Martin et al., 2013). The birth rate for adolescent girls aged 15-19 fell 6% from 2011 to 2012, representing the

lowest rate on record (29.4 births per 1,000 aged 15-19) (Martin et al., 2013). These rates place the United States as one of the highest among industrialized nations, falling below only Bulgaria (41.7) and Romania (35.2) (Ventura, Hamilton, & Mathews, 2014). With some countries reporting rates of less than 5 per 1000 (i.e., Denmark, Japan, Netherlands, & Switzerland), the U.S. has considerable room for improvement (Ventura et al., 2014). While rates indicated a decline across all race and ethnicities, there continue to be significant disparities in teen pregnancy rates for both Hispanic (49.6 births per 1,000 aged 15-19) and non-Hispanic black youth (47.3 births per 1,000 aged 15-19) compared to non-Hispanic white youth (21.7 births per 1,000 aged 15-19) (Martin et al., 2013). These disparities suggest a need to gain more understanding into the various factors influencing youth behaviors that result in teen pregnancy.

State data for the state of Texas reflects national data showing a decline in the birth rate among teens by 5% (44.4 births per 1,000 aged 15-19) from 2011 to 2012; however, the state still has one of the highest rates of teen pregnancy and teen births in the nation with a ranking of 46th and 47th respectively (National Campaign to Prevent Teen and Unplanned Pregnancy, 2014). The dramatic difference between the teen birth rates in Texas and other states (e.g., New Hampshire = 13.8, Massachusetts – 14.1) may be attributed to the previously mentioned disparities in birth rates based on ethnicity due to larger Hispanic population residing in Texas (Marin et al., 2013). These disparities appear to be prevalent in Texas, as well, reporting birth rates among Non-Hispanic white youth (26.3 births per 1,000 aged 15-19) being dramatically lower than Non-Hispanic black youth (44.1 birth per 1,000 aged 15-19) and Hispanic youth (62.0 births per 1,000 paged 15-19) (Ventura et al., 2014). This points to the need to target programming at specific sub-populations in order to have a more impactful result on these rates.

Sexually Transmitted Infections (STIs)

The impact of sexually transmitted infections ranges from minimal to life altering. Many youth who contract an STI will never exhibit symptoms, while others, who contract more debilitating STIs, may experience devastating life-long consequences or even death. The most apparent impact is on the youth's health with immediate health implications; however, the long-

term health impacts can be significant as well. Once a youth contracts an STI, the possibility of contracting additional STIs increases. A study of American youth that found young people who contracted an STI during adolescence were at an increased risk for contracting HIV (Newbern et al., 2013). The risk nearly triples for youth with multiple STIs, suggesting the compounding nature of risky sexual behavior and STIs (Newbern et al., 2013).

Health Impacts of Sexually Transmitted Infections

There are multiple short and long term health consequences for youth who experience an STI. For young women, health risks associated with STIs include increased risk for ectopic pregnancy, chronic pelvic pain, infertility, and the potential for increased risk of contracting other STIs (CDC, 2014; Paavonen, Westrom, Eschenbach, 2008; Westrom, 1994). Increased risk for developing certain cancers is associated with some STIs. For example, HPV increases the risk for developing cervical cancer in women, penile cancer in men, and cancers of the mouth throat and anus in both men and women (Schiffman, Castle, Jernoimo, Rodriguez, & Wacholder, 2007; Munoz, Bosch, Castellsague et al., 2004; Chaturvedi, Engles, Pfeiffer et al, 2011). Hepatitis C is linked to liver cancer (De Oliveria Andrade, D'Oliveira, Melo, De Souza, Silva, Parana, 2009) and HIV/AIDS increases the risk of developing a variety of cancers including anal cancer, Hodgkin lymphoma and liver cancer (Simard, Pfeiffer, & Engels, 2011). As with many illnesses, certain STIs, such as genital herpes, syphilis, and HIV, can be passed to infants at birth, resulting in the potential for stillbirth, low birth weight, brain damage, blindness and deafness (CDC, 2011, Antoniou et al., 2014). This again speaks to the need for young mothers to seek out prenatal care early in order to avoid transmitting these infections to their infants.

Economic Impacts of Sexually Transmitted Infections

Similar to pregnancy, STIs can result in a significant economic impact. Once diagnosed, the health care costs associated with curing the disease, or providing lifetime treatment, as is the case with incurable STIs such as herpes, HPV, and HIV, can present challenges. The CDC recently updated estimates on the economic impact of healthcare costs related to treatment of STIs to be close to $16 billion (Owusu-Edusei et al., 2013). Treatment of lifelong STIs, such as

HIV, have the highest associated costs; however, it is estimated that approximately $742 million is spent each year to treat the numerous curable STIs (Owusu-Edusei et al., 2013). The cost to treat these illnesses is significant in spite of the strong push for programming in the area of STI prevention, but could be even more costly without it. Costs are compounded beginning with the cost of getting tested, through the cost to attain a diagnosis and then the subsequent costs of treatment of symptoms. The costs to get tested for STIs among insured youth age 15-24 years was more than $400 million in a one year period and does not include the millions of uninsured youth who also sought treatment (Owusu-Edusei, Nguyen, & Gift, 2013). Seeking out treatment has additional impacts resulting in lost productivity among working adults, which may outweigh the medical costs of seeking treatment (Owusu-Edusei, Roby, Chesson, & Gift, 2013). Unfortunately, there are no reported studies that currently have an effective measure of lost productivity among youth, whose primary job should be to attend school; however, it would be anticipated that there would be similarities. The direct and indirect costs are the most easily measured costs; however, the intangible costs associated with the pain and suffering of becoming infertile or having a miscarriage cannot be measured fiscally and can have an even greater long-term impact on individuals affected by STIs.

Rates of Sexually Transmitted Infections - Scope of the Problem

In spite of the dire consequences associated with STIs, the CDC estimates 20 million new cases of sexually transmitted infections occur each year with more than half of those occurring in young people age 14-24 (CDC, 2013). A review of the eight most common STIs (i.e., chlamydia, gonorrhea, hepatitis B virus (HBV), herpes simplex virus type 2 (HSV-2), human immunodeficiency virus (HIV) human papillomavirus (HPV, syphilis, and trichomoniasis) found there to be more than 110 million total infections occurring in the U.S. at any given time (Satterwhite et al., 2013). Roughly 1 in 4 adolescent females (age 14-19) have an STI, with HPV being the most common in this age group (Forhan et al., 2009). These rates have shown a continual rise over the past several years amongst both males and females in this age group (CDC, 2011), which points to the need to address this growing issue. The reasons for this rise are

multifaceted with family history, neighborhood and school characteristics all playing a role in the likelihood a youth will contract an STI (Upchurch, Mason, Kusunoki, & Johnson, 2004). Taking these key characteristics into account may aid programs in addressing the contributing factors in developing more effective programs.

The prevalence of STIs has shown a climbing trend in the past eight years, with Texas showing a consistently higher rate of STI transmission than the majority of the U.S. in terms of HIV diagnoses (ranked 7th), syphilis (6th), Chlamydia (9th) and gonorrhea (9th) (Kaiser Family Foundation, 2014 and CDC, 2014). Looking more specifically, Chlamydia rates are the most prevalent STI, with incidences among 14-24 year olds almost triple that among adults aged 25-39 years old (Texas Department of State Health Services, 2014). The current estimate from the Texas Department of State Health Services is that 1 in 15 sexually active females aged 14-19 has chlamydia (2014). These numbers are only a portion of those actually infected with Chlamydia due to the majority of people with the infection being asymptomatic and therefore are never diagnosed. Chlamydia is merely one of many STIs that sexually active youth are contracting. More than half of the cases (59.9%) of gonorrhea in the state of Texas in 2013 were diagnosed in young people aged 15-24 years (TDSHS, 2014). While overall instances of syphilis have declined in recent years, it remains highest in young men aged 20-29 years old (TDSHS, 2014). These numbers are a reflection of the high numbers of sexually active youth encountering STIs. As with pregnancy rates, there continue to be ethnic disparities among youth who contract STIs with Black and Hispanic youth reporting higher rates of infection compared to White, non-Hispanic youth (TDSHS, 2014). STIs are easily preventable, yet the rates remain high and the impacts continue to be detrimental to youth. Addressing this problem among youth has the potential to have longstanding positive health, economic, and emotional impacts.

Problem Statement

Policy makers in the United States continue to look to research to seek out ways to reduce risky sexual behavior among adolescents and the subsequent consequences of unwanted teen pregnancy or contraction of an STI. A great deal of work has been done and there are many

evidence-based programs that are making impacts in this area. Although unwanted teen pregnancy and STI rates have fallen over the past decade, the United Sates continues to have some of the highest rates among youth in industrialized countries (CDC, 2014). The physical, emotional, and economic consequences of risky sexual behavior are significant, yet educating youth about condoms and safe sex practices does not ensure they will act on this knowledge in the moment. It is critical to understand what factors play a determining role in youth sexual behavior in order to develop new and innovative strategies that will impact these outcomes.

Relevance to Social Work

Adolescent sexual health is a key area of concern for social workers that work with youth at a micro, mezzo and macro level. With the high rates of youth engaging in risky sexual behavior, social workers must take on a dual role that is both proactive and reactive. Practice professionals working in a variety of contexts (e.g., clinics, schools) often are faced with assisting youth after an unwanted pregnancy or STI has occurred. This reactive role often times occurs in the context of working with youth and their families to overcome the additional challenges resulting from risky sexual behavior. The profession continues to push to become more proactive in dealing with risky sexual behavior in teens, resulting in a push to develop evidence based prevention programs aimed at preventing unwanted pregnancy and STIs in youth. Ensuring those programs are working is the goal of numerous social work researchers evaluating programs for effectiveness. The Office of Adolescent Health recently allocated $105 million in grant fund aimed at developing and replicating evidence based pregnancy prevention programming (HHS, 2014a). The need to identify ways to prevent unwanted pregnancy is clearly a focus for current legislators and will likely continue to be at the forefront in the future.

In spite of the numerous programming efforts focused on primary prevention, a large number of young people continue to experience unwanted pregnancies and STIs, requiring social work interventions after the fact. Recent legislation allocated $25 million in funds to provide support to pregnant and parenting teens, emphasizing the significant needs young people have after becoming a parent (HHS, 2014b). Service providers often focus on preventing subsequent

pregnancies or STIs; however, the extensive and complex nature of the needs these youth experience is considerable, often requiring ongoing and targeted support for years after the birth of their child. The Administration for Children and Families (ACF) (2012) recently published recommendations for working with pregnant and parenting teens, emphasizing the numerous unique needs facing these youth. Building on previous research by the Center for Assessment and Policy Development (Batten & Stowell, 1996), ACF (2012) recommends a comprehensive program that aims to improve self-sufficiency outcomes (e.g., improve graduation rates, increase self-reliance and transition to independent living, reduce subsequent pregnancies and STIs), improve developmental outcomes for children of teen parents (e.g., increase healthy births through prenatal care and support during pregnancy, increase age-appropriate development), and improve relationship outcomes (i.e., increase healthy relationship between partners, peers, and family). Some of these goals are not only beneficial for pregnant and parenting teens, but are likely to have a positive impact on all youth.

Purpose Statement

The purpose of this study was two-fold. First, the study aimed to test the applicability of the theoretical framework of the Health Belief Model on sexually active adolescent's intentions to use a condom and condom use behaviors. Factor analyses were performed to assess the various factors in the model and identify the best fitting model for this dataset. This study further examined the relationship between the identified factors and condom use intentions, as well as condom use behavior, through a series of ordinal and logistic regressions. Secondly, this study attempted to bridge the gap between intentions and action by assessing the moderating effect of the developmental assets on intentions and condom use behavior.

Chapter 2

Review of Literature and Theoretical Framework

A strong theoretical framework serves as a guide for a researcher to navigate a prospective study. A great deal of research has occurred in the recent years to attempt to understand why sexually active youth decide to either use a condom or not using a variety of theoretical frameworks. The Health Belief Model (HBM) is one such framework that has been used to guide investigations into why people choose to engage in a health promoting behaviors. This model is not without limitations, but when utilized in conjunction with other theoretical perspectives, namely Positive Youth Development and Developmental Assets, it provides a basis for understanding condom use behavior among youth. This chapter provides an overview of these frameworks as a foundation for the current study.

Health Belief Model

The Health Belief Model was developed in the 1950s by a group of social psychologists trying to understand why people fail to participate in health promoting programs (Hochbaum, 1958; Rosenstock, 1974). The model was developed based on the work of Lewin's (1951) Change Theory, which theorizes that individuals exist in various "life spaces" that are deemed as either negative, positive, or neutral. Lewin posited that negative events, such as an illness, lead people to seek out more positive life spaces; however, the theory failed to take into account the potential positive outcomes that may be associated with an illness (Huff & Kline, 1999). Applying this to teen sexual health, it would suggest that if youth perceived pregnancy as a negative event resulting in one or more negative impacts (e.g., health consequence, academic consequences, financial consequences – see Chapter 1 for an expanded explanation of these impacts), it would be expected that they would actively avoid getting pregnant and thus be more likely to use a condom to prevent pregnancy. This theory is limited in that it fails to take into account the potential benefits that may result in having a child (e.g., parent/child relationship, additional emotional, social, and financial supports provided for pregnant teens – see Chapter 1 for a brief overview of these impacts). The need to account for these potential beneficial outcomes after

accounting for the costs and benefits of taking a particular action led to the development of the concept of "value expectancy" (Huff & Kline, 1999). Theorists posit that behavior is a "function of the subjective *value* of an outcome, and of the subjective probability, or *expectation*, that particular action will achieve that outcome" (Champion & Skinner, 2008, p. 46). When applying this theory to condom use among adolescents, the assumptions are that youth value NOT getting an STI and NOT getting pregnant *and* have an expectation that using a condom will prevent them from experiencing both. This is too simplistic and fails to take into account a myriad of factors that may influence a youth's subjective reality and impacts their decision-making.

Building on this framework, the developers of the Health Belief Model believed that a person's actions were influenced by their internal perceptions of the world, whereas external factors impacted decision-making insofar as the external factor impacted the internal perception of the individual (Huff & Kline, 1999). As a result, the HBM was first comprised of four constructs including perceived susceptibility, or beliefs about how likely it is to experience a negative health condition, and perceived severity, or beliefs about how serious the condition may be, either physically or socially. The additional two constructs termed perceived benefits, or benefits of engaging in the health promoting behaviors, and perceived barriers, or any aspect that might hinder a person from engaging in the health promoting behavior. In later formulations of the model, cues to action, or external cues that incite the health promoting behavior, and self-efficacy, or the belief one can perform the desired health promoting behavior, were also included. Table 2-1 provides an overview of the components of the HBM.

Table 2-1 Health Belief Model Components and Definitions (adapted from Champion & Skinner, p.48)

Concept		Definition	Application to Condom Use
Perceived Susceptibility	**Perceived Threat**	Belief about the chances of experiencing a risk or getting a condition or disease	Belief of how likely engaging in unprotected sex will lead to STI or unwanted pregnancy
Perceived Severity		Belief about how serious a condition and its sequelae are	Belief in the negative impact of an STI or unwanted pregnancy

Table 2-1—*Continued*

Perceived Benefits	**Belief in efficacy of the advised action to reduce risk or seriousness of impact**	**Belief in how effective condoms are to prevent STIs and unwanted pregnancies**
Perceived Barriers	Belief about the tangible and psychological costs of the advised action	Beliefs about the barriers to condom use. This includes tangible barriers (e.g., access to condoms) and relational barriers (e.g., partner does not want to use a condom)
Cues to Action	Strategies to activate "readiness"	Things that will incite a person to act. May include brochures/flyers on sexual health benefits of condoms, pregnancy and STI prevention programs, or it may be a physical symptom (e.g., contracting an STI or getting pregnant)
Self-efficacy	Confidence in one's ability to take action	Belief that one has the ability to use condoms. This includes confidence that one can overcome the barriers, has the knowledge of how to use condoms, and the ability to use them at the appropriate time

Perceived Susceptibility

Perceived susceptibility refers to the perceived potential to experience the health condition in question. This notion is not the realistic possibility; rather, it encompasses the personal awareness of the likelihood one will experience the negative health condition (Champion & Skinner, 2008). Rosenstock, Strecher, and Becker (1994) note that in the case of an illness, a person must accept the diagnosis, believe there is a possibility to get the illness again, and perceive susceptibility of the illness in general. For example, even though research has shown that youth engaging in unprotected sex are more susceptible to STIs or unwanted pregnancies (see Chapter 1 for an overview of the literature on this topic), unless a youth believes this to be true for themselves, it is unlikely they will purposefully engage in condom use.

Perceived Severity

Perceived severity refers to the perceived seriousness of the health condition in question. An individual must not only assess the health condition as being severe in terms of medical outcomes (e.g., illness, death, physical pain), but also in terms of social outcomes (e.g., impact on ability to graduate, impact on family, peer relationships) (Champion & Skinner, 2008; Rosenstock et al., 1994). Following the same example, youth must perceive the possibility of getting pregnant as a significant negative outcome. Youth must believe that if they get an STI they will experience severe negative health consequences. In terms of pregnancy, youth must not only make the connection that an unwanted pregnancy may have a detrimental effect on their ability to graduate, or on parental and peer relationships, but must also see these consequences in a negative light. If a youth believes that his/her parents will be angry or he/she will no longer be able to hang out with friends, the consequences of unprotected sex are more severe.

Perceived Threat

Perceived susceptibility and perceived severity are often combined into one construct termed perceived threat (Rosenstock et al., 1994). Without a formal definition, this concept is difficult to conceptualize; however, it is the blend of the two that appears to provide an overall impact on intentions to engage in a specific behavior. If a youth believes unprotected sex could lead to an unwanted pregnancy *and* an unwanted pregnancy has dire consequences, then not using a condom becomes a significant threat and thus has the potential to influence sexual behavior. However, having high levels of one without the other are unlikely to have a significant impact. For example, a youth who perceives herself to be highly susceptible to pregnancy, but does not feel this is a severe negative consequence is unlikely to utilize a condom to prevent that pregnancy. In contrast, a youth who believes that getting HIV from unprotected intercourse could lead to death, but does not see himself at risk for contracting HIV is also unlikely to utilize a condom to prevent the contraction of an STI.

Perceived Benefits

In order to take action against a threat, an individual must see value in taking a particular course of action over another. Viewing oneself as susceptible to experiencing a serious consequence, or a perceived threat, "produces a force leading to behavior"; however, the course of action taken "depends upon beliefs regarding the effectiveness of the various available action in reducing the…threat" (Rosenstock et al., 1994, p.8). Whether or not a person will change their behavior is directly related to the benefit he/she sees in making that change (Champion & Skinner, 2008). These benefits may be directly related to the health outcome (e.g., I won't get pregnant if I use a condom) or they may be non-health related outcomes (e.g., my sexual partner would be happier if we used a condom). Regardless of the perceived benefit, individuals are unlikely to take action against a perceived threat unless there is some benefit in doing so (Rosenstock et al., 1994).

Perceived Barriers

Perceived barriers include any factors that prevent an individual from taking a health-promoting course of action. Champion and Skinner (2008) describe this as "a kind of nonconscious, cost-benefit analysis…wherein individuals weigh the action's expected benefits with perceived barriers" (p. 47). In terms of condom use, an individual may see the benefit of using a condom; however, this benefit is weighed out with the numerous reasons that might prevent condom use (e.g., condoms are expensive, condoms reduce sensitivity during intercourse, condoms are difficult to use). Rosenstock (1974) states that it is the combination of both susceptibility and severity that compels a person to act, and the perception of benefits, minus the barriers, that offers a favorable course of action. So, while many models show barriers and benefits as separate constructs, some evidence has demonstrated that the benefit and barrier constructs should not be treated independently, but rather the effect on behavior should be a subtraction of one (barriers) from the other (benefits) (Becker & Maiman, 1975).

Cues to Action

Some earlier versions of the Health Belief Model include cues to action, or factors that initiate action. These cues may be bodily events, such as experiencing an illness, or environmental cues, such as public health awareness campaigns (Champion & Skinner. 2008). This construct has been dropped from newer versions of the model due to the difficult nature of empirically measuring these cues. Sheeran and Abraham (1996) attribute this to a lack of clear construct definition. When looking at condom use, cues to action can vary significantly and have varying effects. Experiencing an STI may be a cue that is easily measured, but the impact on an individual who knows a friend with an STI or fears they may have an unconfirmed STI may serve as just as powerful cues to action; yet, are more difficult to measure. A cue to action for one person may not have the same level of impact on another person and thus is difficult to address empirically.

Self-Efficacy

Another factor of the Health Belief Model that was noticeably missing from earlier versions is the notion of self-efficacy and its impact on behavior. Self efficacy was first introduced by Bandura (1977) and is defined as "the conviction that one can successfully execute the behavior required to produce the outcomes" (1977, p.79) Self-efficacy was added to the Health Belief Model in order to increase the explanatory power and incorporate a person's feelings of competence to perform the selected behavior (Rosenstock, Strecher, & Becker, 1988). If a person does not feel confident or competent in their personal ability to perform the health promoting behavior it is unlikely they will follow through with the behavior. Noting this limitation, theorists began to include self-efficacy in later versions of the model (Rosenstock et al., 1988). When considering the likelihood a youth will choose to use a condom, it is important to determine whether the youth believes they have the skills to use it. This may be skills related to negotiating with a partner to use a condom or skills related to knowing how to properly use a condom. A visual representation of the Health Belief Model with all seven constructs is provided in Figure 2-1.

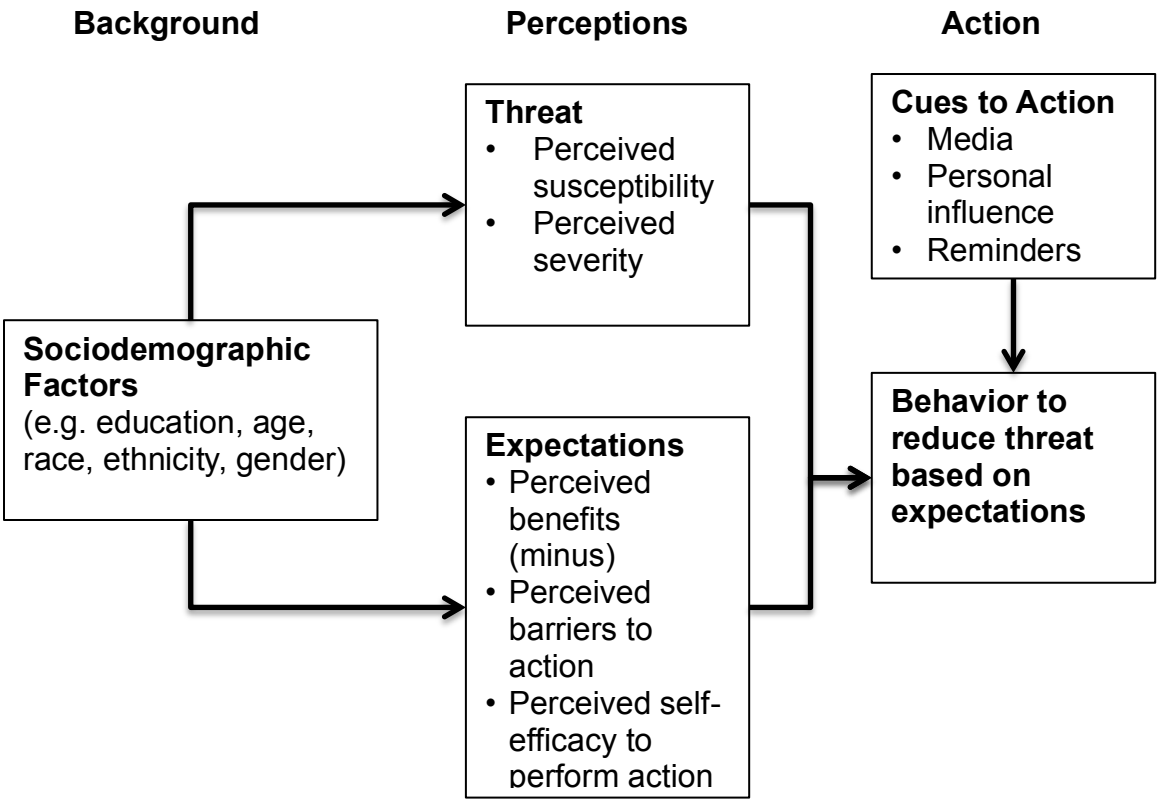

Figure 2-1 Health Belief Model Components and Linkages (Adapted from Rosenstock et al., 1998, p.11)

General Applications and Limitations of Health Belief Model

The Health Belief Model has been applied to a variety of contexts since its early development. Several comprehensive reviews have taken place over the past several decades and have presented conflicting findings (Carpenter, 2010; Zimmerman & Vernberg, 1994; Harrison, Mulen & Green, 1992; Janz & Becker, 1984). The majority of studies testing the predictive validity of the model fall into four categories: (1) preventative behaviors (e.g., cancer screenings, STD testing), (2) risk behaviors (e.g., contraceptive use, flu vaccines), (3) sick role behaviors (e.g., diabetic regimen, anti-hypertensive regimen), and (4) clinical use (e.g., preventative care visits, psychiatric visits). A review of selected studies representing each of these areas can be found in Sheeran and Abraham (1994).

The most current review is Carpenter's (2010) meta-analysis, which included only longitudinal studies measuring health-related behaviors using variables of the Health Belief Model to predict those behaviors. A total of 18 studies were included with an overall sample of 2,702 (Carpenter, 2010). His findings suggest that the impact of participants' perceived severity were low for the relationship of how severe a negative outcome would be on the likelihood of engaging in the health promoting behavior (Carpenter, 2010). Susceptibility was found to be the weakest predictor with the relationship of susceptibility beliefs to health promoting behaviors being almost zero (Carpenter, 2010). Perceived benefits were shown to have a positive effect, while perceived barriers consistently had the strongest effect on behavior (Carpenter, 2010). These findings, while limited due to the small sample of studies, suggest the strength of the certain factors over others to predict behaviors.

The aforementioned reviews have focused on how well the Health Belief Model predicts behaviors; however, there are limited reviews on the efficacy of the Health Belief Model framework as a foundation for interventions. Jones, Smith, and Llewellyn (2014) performed such a review and found that of the 18 studies included in the analysis, 14 reported significant improvements in health belief outcomes; however only a small portion (n = 6) actually used the complete model as a foundation. It would appear that some portions of the model might be more impactful than others, as was suggested by Carpenter (2010).

There are several limitations to providing an accurate picture of the predictive nature of the full model. First, the model lacks a set of standardized construct definitions (Carpenter, 2010). Although there appears to be a consistent set of generalized definitions for each construct, there is a lack of consistency between studies in the operationalization of each construct. As a result, it is difficult to compare findings between studies with each researcher using different measures across studies for each construct. A search of the literature yielded no results for replications of studies using identical operationalized definitions.

The Health Belief Model is also limited in that it fails to take into account other factors that may be contributing to the health promoting behavior. The possibility of other influencing factors

is unlimited; however, Janz and Becker (1988) note three key factors not assessed by the model. These include the habitual nature of some behaviors, health-related behaviors taking place for non-health reasons, and economic or environmental factors preventing a person from engaging in a health promoting behavior (Janz & Becker, 1988). More complex models that include factors related to social and environmental cues may present a stronger case for an enhanced model that builds on the foundation set by the Health Belief Model.

Health Belief Model and Condom Use

Numerous studies have utilized the framework of the Health Belief Model in an attempt to predict condom use behavior; however, a review of the literature found that testing the model with adolescents in the United States is limited. Often, researchers fail to test the complete model; rather, they focus on components of the overall model and/or add new predictors to attempt to account for the overall variance in condom use. A review of the findings from the limited studies addressing condom use among U.S. adolescents in the context of the Health Belief Model is provided below.

Qualitative Studies

Two qualitative assessments of condom use within the context of the Health Belief Model have demonstrated In the first study, researchers interviewed African American adolescent females and sought to understand the reasons for recurrent chlamydia infections (Craft-Blacksheare, Jackson, & Graham, 2014). These young women described a change in perceived susceptibility following a recurrent infection, as evidenced by participants indicating an improvement of perceived benefits of condom use and fewer perceived barriers as they gained a sense of what researchers termed empowerment (Craft-Blacksheare et al., 2014). This sense of empowerment may be akin to self-efficacy; however further examination is needed to determine the connection. This particular study is unique in that it looks at the Health Belief Model constructs following the negative health outcome, namely experiencing an STI, suggesting that experiencing an STI itself may be a contributing factor to perceived susceptibility and does have a direct impact on intentions to use condoms.

In another qualitative study, researchers conducted interviews with adolescent females using hormonal contraception and found several barriers to condom use. These included use of hormonal contraception, perceived trust in a partner, and perception of condoms as “irritating” (Roye & Seals, 2001). These adolescents indicated not being with a steady partner and fear of pregnancy or STIs as reasons for condom use (Roye & Seals, 2001). Both of these are in line with the concepts of perceived susceptibility, lending support to the importance of this construct. Participants go on to suggest methods that would promote condom use for them that included availability of condoms (eliminating the barrier of condom accessibility), being able to talk to parents about condom use (another potential barrier), as well as having HIV-prevention messages in multiple locations (cue to action) (Roye & Seals, 2001). The inclusion of these three demonstrates alignment with some aspects of the Health Belief Model.

Quantitative Studies

Several studies used quantitative analysis to better understand the predictive capability of the Health Belief Model (Boon & Lefkowitz, 2004; Hingson, Strunin, Berlin, & Heeren, 1990; Laraque, Mclean, Brown-Peterside, Ashton, & Diamond, 1997; Orr & Langefeld, 1993; Rahman, Berenson, & Herrera, 2013). Rahman, Berenson, & Herrera (2013) measured only one construct from the Health Belief model and found that perceived susceptibility to pregnancy did not have any impact on condom use. This contradicts the findings of other researchers who found the opposite to be true (Laraque et al, 1997). These differences may be due to the lack of consistent measurement between the two studies or the possible confounding impacts of other aspects of the model, not included in the first study. Laraque et al. (1997) operationalized the Health Belief Model with two overarching factors – Individual perceptions (i.e., attitudes and beliefs about pregnancy and condom use and perceived risk of becoming pregnant, barriers to use of condoms, and parenting attitudes) and modifying factors (i.e., teen-parent conflict, depression, self-esteem, health locus of control, parental and/or peer support for birth control, teen assets, and demographics) and motivation (i.e., motivations to avoid STDs, HIV, and pregnancy).

Predictors of condom use were partner preference for condoms, perceived benefit of avoiding pregnancy, and support for birth control (typically by a parent) (Laraque et al., 1997).

Orr and Langefeld (1993) tested a modified version of the Health Belief Model that included perceived threat and seriousness, attitudes and beliefs about condoms, and STDs as contributing to the perceived benefit factor. Participants with positive attitudes and beliefs about condoms were more likely to use condoms (Orr & Langefeld, 1993). Benefits of condom use, defined as pregnancy prevention, STD prevention, and AIDS prevention, were significant predictors of condom use in this population (Orr & Langefeld, 1993). In contrast, Hingson, Strunin, Berlin, & Heeren (1990) found barriers to use to be the most significant predictor of condom use. Effectiveness of condoms (benefits), how much participants worried about getting AIDS (susceptibility-severity), and discussing AIDS with a physician (cue to action) were all significant predictors as well (Hingson et al, 1990). With no consistent conceptual model, it is difficult to draw comparisons; however, these two studies suggest that various aspects of the model have predictive value. A negative relationship between alcohol use and drug use as predictors was also found, further suggesting the need to take into account other external factors that may be consciously or unconsciously influencing an individual's decision to use a condom (Hingson et al.)

Boon & Lefkowitz (2004) conceptualized the Health Belief Model slightly differently as well, and included additional predictors of peer norms for condom use and sexual behavior, general sexual attitudes, and endorsement of the sexual double standard. All of the tested components of the Health Belief Model (i.e., attitudes about condoms, perceived vulnerability, and condom use self-efficacy) combined with sexual double standard accounted for 28% of the variance in condom use (Boon & Lefkowitz, 2004). While this is promising, there is still a significant amount of variance in condom use that has yet to be explained.

Positive Youth Development

One plausible explanation for explaining why youth utilize condoms can be viewed as a set of internal and external factors that provide balance and support to youth resulting in

behaviors that promote overall growth and development. Many of the challenges that youth face (such as teen pregnancy and STIs) are viewed through a negative lens that perceives the youth experience as a series of problems that must be overcome. Much of the literature reviewed so far has looked at what a youth is lacking that may lead to risky sexual behavior. For example, viewing the cause of teen pregnancy to be a lack of knowledge about proper condom use or a lack of skills on how to effectively use a condom focuses on the shortfalls of the youth rather than the strengths youth need to develop in order to overcome these challenges. The Health Belief Model shifts slightly from this perspective by attempting to predict why a youth would engage in a health promoting behavior and the variables that promote that positive behavior (as opposed to why youth engage in risky behavior and the factors they are lacking that lead to that behavior); however, all but one of the predictors addressed look at something a participant needs, without which the individual may not engage in the health promoting behavior. Self-efficacy is the only predictor that looks at an internal strength of an individual, which may serve as a protective factor encouraging individuals to engage in the health promoting behavior. What are noticeably missing from this model are the numerous other protective factors that may also promote healthy behavior. Positive Youth Development (PYD) is the theoretical perspective that "moves beyond the negative, deficit view of youth…toward a view of the strengths of youth and the positive qualities and outcomes we wish our youth to develop" (Lerner, Phelps, Forman, & Bowers, 2009, p. 524).

PYD is a model that conceptualizes youth development as a process that focuses on the interactions between the individual and the context in which the youth is situated that promotes thriving (Lerner, Lerner, & Benson, 2011). This approach looks at the strengths of the youth in combination with the available resources for positive growth in order to optimize healthy development (Lerner et al, 2011). Markedly positive in nature, this perspective emphasizes what assets a youth may already possess and can further be developed in order to promote positive youth development, as opposed to what a youth does are missing.

Many researchers have attempted to conceptualize positive youth development (e.g., Benson, 1990; Bowers, Li, Kiely, Brittian, Lerner, & Lerner, 2010; Eccles & Gootman, 2002) focusing on the fundamental strengths youth possess that lead to positive healthy development. These key strengths are central to PYD; however, are often described as assets that have been articulated in different ways. Eccles and Gootman (2002) identify four domains that represent health and well-being including physical development (e.g., good health habits), intellectual development (e.g., school success, good decision making skills, knowledge of essential life skills, psychological and emotional development (e.g., good coping skills, good conflict resolution skills, optimism coupled with realism), and social development (e.g., connectedness with peers and other adults, attachment to prosocial/conventional institutions like church or school). Another conceptualization of PYD is termed the Five Cs of positive youth development (Bowers, Li, Kiely, Brittan, Lerner, & Lerner, 2010). This model emphasizes the strengths of youth in five categories including Competence, Confidence, Connection, Character, and Caring. Formal definitions are provided in the Table 2-2.

Table 2-2 Definitions of Five Cs (Bowers et al., 2010, p.721)

C	Definition
Competence	Positive view of one's actions in domain specific areas including social, academic, cognitive, and vocational
Confidence	Internal sense of overall positive self-worth and self-efficacy.
Connection	Positive bond s with people and institutions in which both parties contribute to the relationship
Character	Respect for societal and cultural rules, a sense of right and wrong, and integrity.
Caring	A sense of empathy and sympathy for others.

Yet a third conceptualization provided by the Search Institute (Benson, 1990) focuses on the "talents, energies, strengths and constructive interests that every young person possesses" termed developmental assets (Lerner et al., 2009, p. 528). A comprehensive description of the Developmental Assets framework (DAF) is provided in the next section; however, it is important to note that despite subtle differences, all three frameworks share a great deal of similarities

regarding the identification of factors that assist youth in making a “healthy” transition from adolescence to adulthood, the ultimate goal of PYD.

Developmental Assets Framework

The Search Institute, founded in 1958, focuses on research to better understand the complexities of youth and their life experiences. In 1989, the Institute began administering a 152-item survey instrument titled “Search Institute Profiles of Student Life: Attitudes and Behaviors” to 6th-12th grade you in 111 communities in the United States (Benson, 1990). This report provided the first look at 30 developmental assets that are seen as building blocks for healthy development. In 1996, Benson further revised the Developmental Assets framework presenting an outline of 40 assets that fall under 8 asset categories (see Table 2-3).

Table 2-3 Search Institute’s Forty Developmental Assets (Benson, 2006)

EXTERNAL ASSETS		INTERNAL ASSETS	
Asset Type	**Asset Name and Definition**	**Asset Type**	**Asset Name and Definition**
Support	1. Family support 2. Positive family communication 3. Other adult relationships 4. Caring neighborhood 5. Caring school climate 6. Parent involvement in schooling	**Commitment to Learning**	1. Achievement motivation 2. School engagement 3. Homework 4. Bonding to school 5. Reading for pleasure
Empowerment	7. Community values youth 8. Youth as resources 9. Service to others 10. Safety	**Positive Values**	6. Caring 7. Equality and social justice 8. Integrity 9. Honesty 10. Responsibility 11. Restraint
Boundaries and Expectations	11. Family boundaries 12. School boundaries 13. Neighborhood boundaries 14. Adult role models 15. Positive peer influences 16. High expectations	**Social Competencies**	12. Planning and decision making 13. Interpersonal competence 14. Cultural competence 15. Resistance skills 16. Peaceful conflict resolution

Table 2-3—*Continued*

Constructive Use of Time	17. Creative activities 18. Youth programs 19. Religious community 20. Time at home	**Positive identity**	17. Personal power 18. Self-esteem 19. Sense of purpose 20. Positive view of personal future

Developmental assets are conceptualized as belonging to one of two overarching groups: external assets and internal assets. These two groups are characterized by eight subcategories of human development that are further represented by forty developmental assets (Benson, 1997). Each asset has a theoretical basis and research to support the role of the asset in adolescent development. External assets fall into four categories (i.e., support, empowerment, boundaries and expectations, and constructive use of time) that represent the external factors that promote health and positive development. These elements represent the role of the community and reflect the importance of having positive relationships with a variety of adults youth are in contact with daily including family, neighbors, peers and the overarching school system. Internal assets fall into four separate categories (i.e., commitment to learning, positive values, social competencies, and positive identity), which reflect the internal "compass" youth use to guide their decision-making (Benson, 1997). In the past two decades, the breadth of literature regarding developmental assets has shown dramatic growth. The most comprehensive review to date was conducted by Scales and Leffert (2004). An overview of selected findings from their review, along with an expanded definition of each asset grouping, is provided below.

External Assets - Support

A child who feels love, affirmation and acceptance possesses the first external asset of support as defined by Benson (1997). This asset grouping is represented by six assets (i.e., 1. Family Support, 2. Positive Family Communication, 3. Other Adult Relationships, 4. Caring Neighborhood, 5. Caring School Climate, and 6. Parent Involvement in Schooling). This asset grouping emphasizes that support comes not only from within the family but other non-family

adults, neighbors, as well as from the overall school environment. Benson (1997) notes three key findings related to youth support. First, youth who engage in positive youth-adult relations have more positive outcomes. Scales and Leffert (2004) provide a detailed outline of studies reflecting how adolescents who receive support, either directly or indirectly, and represent numerous positive outcomes including

- lower rates of substance abuse
- higher adolescent self-esteem, self-concept, academic self concept, positive feelings about self, and perceived competence
- less anxiety and depression
- less delinquency and school misconduct
- less casual, unprotected sexual intercourse
- higher school engagement, motivation, personal responsibility for achievement
- increased life satisfaction (e.g., Valois, Zullig, Huebner, & Drane, 2009),

among others (see Scales and Leffert, 2004 for a more comprehensive list). Benson (1997) also notes the importance of sustaining these positive relationships over time, suggesting that the nature of our school system and society is such that relationships are consistently terminated (e.g., school programs that abruptly end, teachers or coaches only present in a child's life for the school year or sports season), potentially leading to adverse consequences. Thirdly, he emphasizes that while having one positive adult relationship is beneficial, having more is even better. It is for this reason that measurement for possessing this asset is based on relationships with three or more nonparent adults (Benson, 1997).

Support is also characterized by the support found in the youth's neighborhood and school settings. Although the breadth of literature is far less, some research studies have shown the role of a caring neighbor or other adult also contributes to positive outcomes such as higher grades, less substance use, fewer feelings of loneliness, anxiety or depression, and greater self-esteem (Scales & Leffert). Having a caring school climate has also been linked to higher grades,

higher self- esteem, less anxiety and depression, as well as less substance use (Scales & Leffert).

External Assets – Empowerment

The external assets of empowerment represent dual needs; both the inherent need to be valued by others, as well as the need to feel valuable (Benson, 1997). Two empowerment assets (7. Community values youth and 8. Youth as resources) look at how youth contribute to community life and what roles youth have within that community, which is a reflection of how the community perceives the youth (Benson, 1997). The third empowerment asset (9. Service to others) represents how that youth is able to give back to his/her community (Benson, 1997). The ability of the youth to give back and feel connected to his/her community hinges upon the fourth empowerment asset (10. Safety) reflecting how safe the youth feels in his/her environment. Scales and Leffert's (2004) review of the literature relating to empowerment assets found numerous studies directly or indirectly correlations between youth who felt valued by their community and had useful roles and

- Higher self esteem
- Reduced delinquency
- Higher levels of moral reasoning
- Greater social and personal responsibility
- More effective parent/child relationships.

Service, defined as community service, volunteering, and service learning, was found to have associations with

- Decreased school failure, suspension or dropout
- Decreased behavior problems at school
- Reduced teen pregnancy
- Increased self-concept, self-esteem, self-efficacy, increased sense of competence

- Increased problem-solving skills
- Increased personal and social responsibility (Scales & Leffert, 2004)

Each of these outcomes has been related to condom use or teenage pregnancy and may offer support to the strength of this asset group on condom use. In contrast, the research associating feelings of safety to developmental outcomes is extremely limited. The few studies identified by Scales and Leffert (2004) seem to be unrelated to condom use or the factors that may be associated with condom use (e.g., skipping school, bringing more weapons to school, more violence).

External Assets – Boundaries and Expectations

Six assets comprise the external asset of boundaries and expectations. The first set of these assets (i.e., 11. Family boundaries, 12. School boundaries, and 13. Neighborhood boundaries) are reflective of the ability of youth to know which behaviors and attitudes are appropriate and which are not. Benson (1997) emphasizes the need for consistency across systems such that boundaries and expectations set forth at home extend to the school setting and subsequently to the community at large. Research has found that family boundaries are related to higher self-esteem, higher school performance, and decreased problem behaviors, reduced alcohol abuse, and reduced substance abuse (Scales & Leffert). Limited effects based on school boundaries and neighborhood boundaries have been found suggesting that family boundaries, taken independently, are the strongest of the three.

The second set of boundaries and expectations assets (i.e., 14. Adult role models, 15. Positive peer influence, and 16. High expectations) are seen as the way in which the boundaries set forth are represented consistently and effectively (Benson, 1997). Youth who have relationships with positive adult and peer role models are able to see a consistent message of healthy choices and subsequently begin to model that same behavior (Benson, 1997). Benson further states that youth who are set with reasonable expectations will strive to meet those goals; however, he notes that while these goals are typically focused on educational attainment, they

can be set for other areas of life. Scales and Leffert's (2004) review found that having a positive adult role model was either directly or indirectly related

- Higher levels of self esteem and self efficacy
- Decreased early sexual intercourse among females
- Improved high school graduation rates
- Improved occupational aspirations and expectations.

This subset of findings reflects key components that are believed to be related to condom use intentions and behaviors and subsequently are valuable in considering impacts of assets on risky sexual behaviors. Positive peer influence was associated with the same factors, while negative peer influence was associated with increased early sexual behavior and lower self esteem, among others (Scales & Leffert, 2004).

External Assets – Constructive Use of Time

The fourth grouping of external assets, constructive use of time, is represented by four assets (i.e., 17. Creative activities, 18. Youth programs, 19. Religious community, and 20. Time at home) that reflect structured environments and activities where youth can participate and interact with caring and nurturing adults (Benson, 1997). Benson (1997) goes on to say involvement in structured activities "provides the opportunity for personal development and adult connection that augments and extends the effects of family" (p.44). This is especially important for youth with strained familiar relationships and provides a positive outlet that might mitigate the negative effects of the home environment (Benson, 1997). Other positive associations with constructive use of time include higher achievement (creative activities), better development of life skills including decision making skills, improved developmental outcomes, improved academic achievement (youth programs) and an increased sense of well-being (religious community) (Scales & Leffert, 2004). Increased self-esteem was also associated with three of the four constructive use of time activities: creative activities, youth programs, and religious community (Scales & Leffert, 2004). Spending time in a religious community also had negative associations

with problem behaviors such as alcohol use, decreased marijuana use and other drugs, as well as sexual activity being decreased the more time a youth spent with a congregation (Scales & Leffert, 2004).

Internal Assets – Commitment to Learning

The first five internal assets (i.e., 21. Achievement motivation, 22. School engagement, 23. Homework, 24. Bonding to school, and 25. Reading for pleasure) represent the internal asset grouping of commitment to learning. Benson (1997) discusses the dual role of these assets as being a foundation for future professional success as well as having a preventative nature the may discourage negative risk-taking behaviors. These assets encompass intrinsic motivations youth have driving them to achieve academically (Huang & Waxman, 1995). These assets are the first of the internal assets indicating they are intrinsically focused, rather an external force. Motivation and school engagement "emphasize internalization of the value of learning as a lifelong commitment" (Benson, 1997, p. 51). These two assets look at the intrinsic motivation behind learning rather than extrinsic factors that may be forms of motivation to do well in school. Research has found that wanting to do well in school, or achievement motivation, is associated with several positive behaviors. Most of these are directly related to academics (e.g., increased high school completion, higher GPA, increased school effort); however, there are also several connections to non-academic outcomes (e.g., less sexual intercourse, less childbearing, less drug use, increased goal setting) indicating school related factors have a far reaching impact on youth behavior (Scales & Leffert, 2004). Connectedness to school was also found to have positive relationships with less drug use and greater feelings of support, as well as more positive perception of number of personal strengths (Scales & Leffert, 2004). In contrast, there have also been reports of a lack of effect between relationship with school and overall life satisfaction (Leung & Leung, 1992).

Benson (1997) discusses the developmental asset of homework as having a dual purpose. It not only assists with the learning process and subsequent academic success, but also provides a level of structure for youth who much learn to manage time through the routine of

completing homework (Benson, 1997). Unfortunately, there are few studies that have demonstrated a relationship between time spent on homework and other positive outcomes. Leffert and Scales (2004) identified a few studies that found connections between time spent on homework and positive mental health and lower drug use. Contradictory findings were also presented in which some found associations between homework and higher achievement (Corno, 1996), while others found that time spent was not related to achievement (Smith, 1990, 1992).

Internal Assets – Positive Values

Positive values assets are comprised of six assets that are broken down into two prosocial values aimed at doing or caring for others (26. Caring and 27. Equality and social justice) and four assets that reflect personal character (28. Integrity, 29. Honesty, 30. Responsibility, and 31. Restraint) (Benson, 1997). Values are not to be viewed as inviolable guidelines that cannot be broken, but rather as "internally deep commitments that consistently guide how one thinks and behaves" (Scales & Leffert, 2004). The focus of these values is inherently positive and does not emphasize beliefs that might be contrary to the greater good. In summarizing the literature on this topic, Scales and Leffert (2004) note the overarching limitation found due to researchers failing to draw direct conclusions from measures of the values themselves, rather, many focused on behaviors believed to be reflections of those values. Nonetheless, researchers have found the following to be associated, either directly or indirectly with positive values:

- Higher levels of prosocial behavior
- Better problem-solving and formal reasoning skills
- Greater self-esteem
- Greater overall well-being
- More hopefulness
- Greater competence (Scales & Leffert, 2004).

In addition to these findings, values were also found to be associated with a greater belief in male responsibility to prevent pregnancy (Pleck, Sonenstein, & Ku, 1993), less intention to have sexual intercourse, less actual sexual intercourse and greater use of condoms or other contraception (Donahue, 1987; Ford & Norris, 1993; Gibson & Kempf, 1990; Kirby, Short, Collins, Rugg, Kolbe, Howard et al., 1994). These findings are likely influenced by the value of Restraint, which reflects the beliefs of youth that adhering to values and not acting in ways contrary to those beliefs.

Internal Assets – Social Competencies

Social competencies are defined as "the skills young people need to confront new situations, face hard decisions, and interact effectively with others" (Scales & Leffert, 2004, p.173). The first two (32. Planning and decision making, 33. Interpersonal competence) reflect personal choice, while Resistance (#35) is defined as the ability to avoid engaging in unhealthy behaviors. Increased competence, increased self-esteem, and decreased engagement in risky behaviors, as well as delay of sexual intercourse have been shown to be associated with planning and decision making (Scales & Leffert, 2004). The limited studies that have investigated Interpersonal competence and cultural competence often do not separate the two constructs. Scales and Leffert's (2004) review of the literature found some studies that linked these assets to positive self-esteem, improved school competence, and perceived self-competence (Scales & Leffert, 2004). Similar to cultural competence, peaceful conflict resolution (#36) is related to interpersonal relationships and as such has demonstrated direct or indirect relationships with

- Increased psychosocial health and adjustment
- Increased self-esteem
- Increased social support
- Decreased use of alcohol and other substances, among others (Scales & Leffert, 2004).

Resistance skills, or the "ability to deal effectively with pressures to engaged in a variety of risky behaviors, are one of the primary focuses for development of programs to avoid risky behaviors;

however, the studies identified in Scales and Leffert's review (2004) only demonstrated association with increased self-efficacy, improved self-competence, decreased substance and alcohol use. It would have been anticipated that this asset to be associated with sexual activity; however, no studies have been identified that make this connection.

Internal Assets – Positive Identity

The final grouping of assets, termed positive identity, reflects a youth's personal understanding of who they are. Assets in this grouping focus on personal power (#37), or youth's perception of control over things happening to them, and self esteem (#38) (Benson, 1997). Personal power has been closely associated with self-efficacy, or the notion that a youth's perception that they competent to impact an outcome. A great deal of work has been done with regards to self-esteem and findings suggest relationships between both negative and positive self-esteem. Most notably, is the connection of positive self esteem to increased positive attitudes about contraception, increased use of contraception, deceased levels of adolescent sexual activity, and decreased non-marital childbearing (Scales & Leffert, 2004). The final two assets reflect a youth's sense of purpose and positive view of the future are critical assets that represent the ability of the young person to maintain optimism as they face critical life choices and move into the future (Benson, 1997)

Strengths of Developmental Assets Framework

Research with the developmental assets has been ongoing for decades with numerous positive outcomes connected to the asset framework. Support has been shown that there are significant relationships between level of developmental assets and greater thriving behaviors, fewer risky behaviors, and academic success (e.g., Alvarado, & Ricard, 2013; Pashak, Hagen, Allen, & Selley, 2014; Scales, Benson, Leffert, & Blythe, 2000; Scales, Foster, Mannes, Horst, Pinto, & Rutherford, 2005). Evidence is being built that "makes the case that assessing the cumulative benefits of Developmental Assets for individual youth can help to

- Increase an understanding of what constitutes risk;
- Explain the prevention of high-risk behaviors;

- Explain protection from high-risk behaviors;
- Explain the expression of thriving behaviors;
- Better understand relationships between asset categories and risk and thriving developmental outcomes; and,
- Explain academic achievement and commitment to learning" (Mannes, 2006, p.278-279).

Another strength of the Developmental Assets framework has been shown to be applicable in youth from various cultural and ethnic regions. While the majority of research using the DAP has been with American youth, research has expanded to other countries as well. There has been consistent evidence supporting cumulative benefit of the assets demonstrating youth who possess more assets result in a reduction in risk behaviors and promote thriving behaviors (Benson, 2006; Mannes, 2006). The extensive literature supporting these notions strengthens the utility of this framework when assessing youth outcomes, regardless of the context.

Limitations of Developmental Assets Framework

The primary limitation of the Developmental Assets framework is the limited number of items reflecting various asset groupings. For example, a single item measures the asset of having a supportive caring adult. In spite of this, the framework has consistently been found to be reliable, consistent and valid (Search Institute, 2005).

Conclusions

In spite of the consequences of risky sexual behavior being evident, youth continue to engage in unprotected sexual intercourse. Researchers and practitioners continue to struggle to identify why some adolescents will use a condom and why others will not, and while they have had some success, determining which factors make the greatest difference continues to drive research in this field. The Health Belief Model is widely used and has evidence that the perceptions of susceptibility, severity, and risk, in conjunction with perceived benefits and barriers, self-efficacy and cues to action play a role in explaining why an individual will engage in

a health promoting behavior. Applying this model to adolescent sexual behavior presents an opportunity to use a proven model to better understand condom use within this population; however, it is not without limitations. The model fails to provide a clear explanation of potentially confounding factors that are also having an influence on behavior and lacks consistency in operationalizing the aforementioned factors across studies. Nonetheless, the model has its strengths and takes a positive approach to understanding behavior, looking for what motivates a person to engage in condom use.

Building on the Health Belief Model, the Developmental Assets framework incorporates a strengths-based approach to youth development. This framework begins to offer an explanation as to what makes youth successful when navigating adolescence, taking into account a plethora of factors including internal skills and competencies, as well as external factors that aid youth to achieve positive developmental outcomes. Viewed together, these two theoretical models have the potential to provide a much clearer picture of the factors influencing the sexual health behaviors of youth.

Chapter 3

Methodology

This study (to be referred to as the current study) performed a secondary data analysis of data collected as part of the Crossroads program evaluation project (to be referred to as the original study). Crossroads was a federally funded intervention program through the Office of Adolescent Health (OAH) that took place in a large urban school district in the southern United States. The five-year project (2010-2015) targeted youth with high risk for dropping out of high school through a three-day intervention where youth learned about building relationships, prevention of pregnancy and sexually transmitted infections, and identified resources available within the community. The original study was a randomized two-group cohort-based longitudinal study using repeated measures to assess outcomes. Participants were randomly assigned to either treatment (i.e., attend the intervention) or control (i.e., do not attend the intervention) and took a series of surveys (i.e., baseline, 3-Month, 6-Month, and 12-Month post intervention follow up). The original study is still in the process of collecting follow up data; however, baseline data collection was complete at the time of this study.

Participant Selection for Original Study

In order to be included in the original study sample a youth must have met the following inclusion criteria at the time of randomization:

1. Currently be enrolled in the local school district
2. Participating in Drop Out Prevention services (i.e., working with a graduation coach for academic support)
3. 17 – 19 years old
4. Have previously dropped out of school and/or be considered at high risk for dropping out. To be considered high risk, a student must meet one or more of the following criteria during the current school year:
    - Not currently on grade level

- Failed STAARS or TAKS (standardized tests used to assess students' attainment of reading, writing, math, science and social studies skills)
- Participated in an alternative education program
- Expelled
- On probation
- Homeless
- Involved in the juvenile justice system
- Involved in Child Protective Services
- Limited English Proficiency
- Parenting (or expecting)

5. Able to read and understand English
6. Provide consent/assent to participate in the study
7. Able to attend a specific program intervention session (three-day period)

Graduation coaches identified students who met these criteria by reviewing reports generated from school district records. Any youth who met the inclusion criterion listed above were eligible to be in the sample. Teachers and administrators in the school district referred a large number of youth who met these criteria. There are six traditional high school campuses and one alternative high school campus in the local school district. Each campus offers drop out prevention services and has one graduation coach assigned to assist with academic support. All campuses participated in the Crossroads evaluation program and provided subsequent participants, which were then randomly selected for participation in the study.

Consent Process for Original Study

Any youth who completed surveys in the original study provided parental consent and participant assent (youth aged 17) or participant consent (youth aged 18-19) when they were initially enrolled in the study. The original consent process was conducted as follows. Graduation coaches, or academic advisors who were part of the Drop Out Prevention (DOP) program, were

located on each campus and identified potential participants and recruited them to participate in the Crossroads program and subsequent research study. A description of the program and the study was provided to eligible individuals (and their parent/guardian if applicable). Students who were age 17 obtained parental consent in addition to providing assent, while students age 18 -19 were able to consent. For all potential participants, the graduation coaches reviewed the consent form with the participant and emphasized the voluntary nature of the program and study and reminded all participants that they would continue to receive DOP services regardless of their decision to consent to participate.

There were multiple versions of the consent form in order to ensure all eligible participants were able to be fully and adequately informed prior to consenting. In addition to an English version consent/assent forms, Spanish versions were available to ensure potential participants who have Spanish-speaking parents were adequately informed. There was also an Unaccompanied Minors Consent form for potential participants who were age 17, but did not have access to their legal guardian (e.g., parent in jail, unsafe for participant to contact parent). Sample consent forms are included in Appendix A. There were no incentives for agreeing to participate and/or returning consent paperwork. It was explained to all potential participants that consenting to participate did not guarantee they would be selected to be in the research study, but gave them to opportunity to be selected at random.

All consent procedures and forms were approved and overseen and approved by the University of Texas at Arlington Institutional Review Board (IRB) (Appendix B). All persons responsible for obtaining consent were required to complete Human Subjects Protection training, sign a Staff Confidentiality Agreement, and a Letter of Collaboration, which demonstrated the staff person's understanding of his/her role in the project. Refresher trainings, that included information on obtaining consent, were provided for all staff on a yearly basis.

Research Design

The current study performed a cross-sectional analysis of the baseline data collected for the original study. For the purposes of the current study, baseline data collected between August

2011 and November 2014 was the only data used for analysis. All baseline data were collected prior to any participation in the intervention program and subsequent program effects; therefore, allowing for the collapsing of the treatment and control groups into one group for the purposes of analysis for the current study.

Participant Selection for Current Study

All youth who provided baseline data, regardless of treatment status in the original study, were assessed for inclusion in the final analytic sample. A small number of participants enrolled in the original study never provided baseline information and were therefore excluded from the sample. Since the current study is examining the behavior to use condoms, only those participants who were currently, or have been in the past, sexually active were included in the sample. This included only participants who were currently sexually active, or sexually active in the past three months, and excluded any participant that indicated they are not currently having sex, or have never had sexual intercourse in the past. The final criterion for inclusion in the current study sample was based on accuracy and suitability of the data provided by each participant on the developmental assets scale. Participants with extreme scores (i.e. greater than 55, or less than 20) were removed from the sample and excluded from analysis. A complete description on how Dap scores were assessed for accuracy and suitability is provided in the Instrumentation section below.

Consent Process for Current Study

Consent to participate in the original study allows for analysis of all data provided; therefore, it was not necessary to obtain additional consent or assent to utilize the data for the purposes of the current study. IRB approval for this study falls under the original IRB review and no further approval was necessary (Appendix B).

Data Collection

The primary source of data was provided via self-report through an online survey participants completed at baseline. The complete survey for the original study is comprised of 105 questions and took approximately 30 minutes to complete (see Appendix C). Questions were a

combination of multiple choice, true/false and fill in the blank and measured participants' knowledge, beliefs and behaviors relating to sexual health and sexual activity, developmental assets, and educational outcomes. The data to be analyzed in the current study was a small portion of the total questions from the original study survey. The survey was administered via computer in a variety of settings either individually or as a group by a trained member of the research team. Surveys were typically administered before/after school hours, during lunch or during class periods that were not core curriculum as determined by the graduation coach. In unique cases, some surveys were completed at the participant's home or location of their choosing (e.g., library, coffee shop, local restaurant). In cases where there were technical difficulties or a participant was uncomfortable with using a computer participants may have elected to complete the survey via paper and pencil. In these cases, a member of the research team entered data manually into the online survey system. Additional data was obtained from program and school records.

Youth received a $20 gift card to a large retail superstore as an incentive to complete the survey. Youth were encouraged to complete the entire survey as honestly and completely as possible; however, the incentive was provided for any attempt to complete the survey. Youth were not required to answer every question in the survey in order to receive the incentive due to the sensitive nature of the questions and the option for youth to stop they survey if they felt uncomfortable.

Instrumentation

Variables were extracted out of the full data set from the original study in order to test the constructs of the Health Belief Model (i.e., perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self efficacy – See Chapter 1 for an expanded description of the HBM), as well as the overall model, which included variables on intention to use condoms, actual condom use behavior, and developmental assets. The current study was limited by the questions used in the original study since it was not possible to return to participants and either rephrase existing survey items or ask additional questions.

Demographics

Demographic data was collected utilizing the performance measures standards set forth by Health and Human Services Office of Adolescent Health (HHS-OAH), the funder for the original study. Demographic variables include Age, Grade, Gender, Race, and Ethnicity. See Table 3-1 for a breakdown.

Table 3-1 Demographic Variables

Variable	Level of Measurement	Values	
Age	Continuous	Calculated variable = Date of Survey – Date of Birth	
Grade	Ordinal	6th Grade 7th Grade 8th Grade 9th Grade 10th Grade 11th Grade	12th Grade Ungraded College/Technical School Not Currently in School
Gender	Dichotomous Nominal	Male Female	
Race	Nominal	American Indian or Alaska Native Asian Black or African-American Native Hawaiian or Other Pacific Islander White More than one race	
Ethnicity	Nominal	Hispanic Not Hispanic	

Health Belief Model Constructs

The Health Belief Model constructs being measured in the CFA were comprised of a series of 32-items (Table 3-2). Participants were asked to answer the questions based on their beliefs, even if they were not currently sexually active. The items selected for analysis are not part of a validated scale; therefore, reliability statistics are not available. The items were assessed for face validity by the primary researcher and an expert in the field of adolescent pregnancy prevention.

Table 3-2 Items Used in Hypothesized CFA Models

Item #	Item Description	Hypothesized Factor
Item1	If I have sex, I will get AIDS.	Perceived Susceptibility

Table 3-2—*Continued*

Item2	If I have sex, I will get a sexually transmitted disease (STD).	Perceived Susceptibility
Item3	If I have sex during my teen years, my partner or I will get pregnant.	Perceived Susceptibility
Item4	If I have sex, and my parents find out, then they will be angry at me.	Perceived Severity
Item5	If I have sex during my teen years, then I am less likely to graduate from high school.	Perceived Severity
Item6	If I have sex during my teen years, then I am less likely to have the career that I am hoping for.	Perceived Severity
Item7	Condoms help prevent pregnancy.	Perceived Benefit
Item8	Condoms help prevent STDs.	Perceived Benefit
Item9	Condoms help prevent AIDS.	Perceived Benefit
Item10*	If my partner or I used a condom sex would NOT feel as good	Perceived Barrier
Item11*	Sex feels unnatural when a condom is used	Perceived Barrier
Item12*	Condoms are embarrassing to use.	Perceived Barrier
Item13*	Condoms make you NOT want to have sex because you have to stop to put one on.	Perceived Barrier
Item14*	Saying we have to use a condom would make my sexual partner think I am having sex with other people.	Perceived Barrier
Item15*	Saying we have to use a condom is like saying to my sexual partner, “I don’t trust you.”	Perceived Barrier
Item16*	My sexual partner is likely to break up with me if I said we had to use a condom.	Perceived Barrier
Item17*	If I had a condom with me, my sexual partner would not like it.	Perceived Barrier
Item18*	Condoms cost too much.	Perceived Barrier
Item19*	It is hard for me to get condoms.	Perceived Barrier
Item20	I cannot talk to my sexual partner about condoms.	Perceived Barrier
Item21	Have you ever had a Sexually Transmitted Disease (STD)?	Cues to Action
Item22	Have you ever been pregnant or gotten someone pregnant, even if no child was born?	Cues to Action
Item23	I can get condoms.	Perceived Self Efficacy
Item24	It is easy for me to have a condom with me all of the time.	Perceived Self Efficacy
Item25	I can get my sexual partner to agree to use a condom, even if he/she doesn’t want to.	Perceived Self Efficacy
Item26	I can say to my sexual partner that we should use a condom.	Perceived Self Efficacy
Item27	Before we are ready to have sex, I can talk to my sexual partner about using a condom.	Perceived Self Efficacy
Item28	I can put a condom on without turning my sexual partner off.	Perceived Self Efficacy
Item29	I am sure that I can use a condom if I have sex.	Perceived Self Efficacy
Item30	If I am sexually aroused, I can stop before sex to use a condom.	Perceived Self Efficacy

Table 3-2—*Continued*

Item31	I can say no to sex if my sexual partner and I do NOT have a condom.	Perceived Self Efficacy
Item32	I can stop sex to get a condom, if I do NOT have one.	Perceived Self Efficacy

*Items were reversed scored to ensure the directionality of all items included was uniform. Specifically, lower scores indicated lower possibility of condom use and higher scores represented higher possibility of condom use.

All items except the two Cues to Action items were scored on a 5-point Likert scale (Table 3-3). Several items included on the hypothesized Barriers construct were reverse scored in order to ensure consistency in the directionality of all items. Items that were reverse scored are indicated in Table 3-2 with an asterisk. Following reverse scoring, these items were consistent with the remaining items in which higher scores represented a greater likelihood of condom use and lower scores represented a lower likelihood of condom use.

Table 3-3 Construct Summary: Scoring and Interpretation

Construct	Definition	# Items	Scoring	Interpretation
Perceived Susceptibility	Belief about the chances of experiencing a risk or getting a condition or disease	3-items	5-point Likert	Higher scores indicate stronger beliefs of susceptibility to negative impacts of intercourse without a condom.
Perceived Severity	Belief about how serious a condition and its sequelae are	3-items	5-point Likert	Higher scores indicate stronger beliefs about severity of consequences related to intercourse.
Perceived Threat		2-constructs		Higher scores indicate greater perceived threat
Perceived Benefits	Belief in efficacy of the advised action to reduce risk or seriousness of impact	3-items	5-point Likert	Higher scores indicate greater perceived benefits to condom use.
Perceived Barriers	Belief about the tangible and psychological costs of the advised action	11-items	5-point Likert	Higher scores indicate fewer perceived barriers to condom use.*
Cues to Action	Strategies to activate "readiness"	2-items	Yes/No	Positive responses indicate experiencing a potential cue to action.
Self-efficacy	Confidence in one's ability to take action	13-items	5-point Likert	Higher scores indicate greater self-efficacy toward condom use.

*This represents interpretation of these items after reverse scoring.

Condom Use – Intentions

One item from the survey was used measure the likelihood of a participant engaging in the health promoting behavior of using a condom during intercourse. Participants rate how much they agree or disagree with the following statement, which was rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly. Participants were instructed to try and answer the question even if they are not sexually active or have never used condoms.

- I plan to use condoms if I have sex in the next 3 months.

Condom Use - Behaviors

One item from the survey asked participants to report condom use behavior. This was measured by a dichotomous variable in which participants answered yes or no to the question "In the past 3 months, have you had sexual intercourse without you or your partner using a condom?". Only participants who were sexually active in the past three months provided a response for this question.

Developmental Asset Profile (DAP)

The DAP is comprised of 58 items that participants are asked to answer based on how true the statement reflects them now or within the past three months (Search Institute, 2005). A full version of the instrument is in Appendix D. Participants rate each item with one of the following options: Not at all or rarely, Somewhat or sometimes, Very or often, or Extremely or almost always, which are subsequently scored 0-1-2-3.

It was necessary to screen responses prior to scoring to determine the accuracy and suitability of the data to be scored. The Search Institute (2005) recommends screening out problems related to incoherent responses, missing data, response patterns, multiple responses, and ambiguous responses. Since the data was collected via computer and not paper/pencil it was not possible to assess for incoherent responses, or signs the participant did not understand the directions or the items (e.g., made random marking on paper rather than providing responses), and ambiguous responses (e.g., making a mark between two answers, marking answer to the

right or left of the checkboxes). Due to the online manner in which the data was collected it was not possible for participants to select multiple responses for the same item; therefore, this will not need to be assessed. The data was assessed for missing data (i.e., too many blank items) and DAPs with fewer than 52 responses were not scored per the recommendation of the Search Institute (2005). The data was also assessed for response patterns (e.g., checked all 1's, checked 0-1-2-3 in a repeated pattern) and were not scored if a response pattern was present.

Scoring begins with calculating the raw average of the eight asset subscales. This value is then multiplied by 10 and rounded to the nearest whole number to get a raw score for each subscale. Missing items are not used in the calculation of this score. Raw scores are then computed into a composite score for external assets by averaging the values of the Support, Empowerment, Boundaries and Expectations, and Constructive Use of Time subscales, and for internal assets by averaging the values of the Commitment to Learning, Positive values, Social Competencies, and Positive Identity subscales. These values are rounded up to the nearest whole number resulting in a score between 0-30. The total score is then computed based on a sum of the Total Internal and Total External scores resulting in an overall asset score between 0-60. The interpretive ranges for the External and Internal Asset scales are categorized as Excellent, Good, Fair, and Low and can be found in Table 3-2.

Table 3-4 Interpretive Ranges for DAP Scores (Search Institute, 2005, p.58)

Label	Range of Scores	Typical Item Responses	Interpretive Guidelines
Excellent	26-30	2's and 3's with mostly 3's	Abundant assets, most assets are experienced strongly and/or frequently
Good	21-25	2's and 3's with mostly 2's	Moderate assets. Most assets are experienced often, but there is room for improvement.
Fair	15-20	1's and 2's with mostly 2's	Borderline assets. Some assets are experienced but many are weak and/or infrequent. There is considerable room for strengthening assets in many areas.

Table 3-4—*Continued*

Low	**0-14**	**Mixture of 0's, 1's and 2's**	**Depleted levels of assets. Few if any assets are strong or frequent. Most assets are experienced infrequently. Tremendous opportunities for strengthening assets in most areas.**

The Total Asset score is comprised of the sum of the Internal Asset score and External Asset score and ranges from 0-60. Interpretive ranges are double that of the External and Internal scales with Excellent = 51-60, Good = 41-50, Fair = 30-40, and Low = 0-29 (Search Institute, 2005). Extremely high scores (greater than or equal to 55) and extremely low scores (less than 20) should be called into question and validated by some other means. Since this data set does not provide another scale or item(s) to assist in validating, cases reporting these scores were excluded from the final analysis.

The DAP has shown high internal consistency ($\alpha = 0.93$ for internal assets, $\alpha = 0.95$ for external assets, and $\alpha = 0.97$ for total assets) for other adolescent populations (Search Institute, 2005).

The DAP demonstrated similar results for this sample ($\alpha = 0.918$ for internal assets, $\alpha = 0.885$ for external assets, and $\alpha = 0.938$ for total assets). Validity has also been shown with high correlations between the DAP and the A&B Survey, another validated instrument that measures self-reported risk behaviors and thriving among adolescents (Search Institute, 2005).

Data Analysis

All data was available online and downloaded into a spreadsheet format. Raw data was analyzed using the Statistical Package for the Social Sciences, Version 22.0 (SPSS; IBM, 2014) and Mplus, Version 1.2 (Muthén, Muthén, Asparouhov & Nguyen, 2014). Prior to analyzing any data the following steps were taken.

Data Cleaning

Throughout data collection, survey administrators noted issues that could impact the answers provided (e.g., internet failures, computer issues) or resulted in participants restarting the survey. In these cases, the survey records were combined into one complete and final record. In some cases, when participants started the survey again, they may answer the same question more than once, rather than skipping questions previously answered. In cases when surveys were combined, the participant's original response was used for analysis.

A visual inspection of the data was conducted to determine if the data appeared to have any issues that could impact the analysis. Univariate and bivariate statistics were performed to double check the validity of the responses and ensure all the values were in an appropriate range. Values that did not fall within an appropriate range were treated as missing data. Internal inconsistencies were assessed and imputed based on responses to prior questions, if appropriate. These issues were extremely rare due to the nature of the survey being administered in an online format, which prevented participants from entering extreme values. The computer version of the survey allowed for limited answer ranges and incorporated skip logic; however, the possibility of data entry error existed due to a limited number of surveys being taking in a paper/pencil format.

A series of items were reversed scored for the purpose of the CFA and EFA so that all items demonstrated the same directionality. Specifically, after reverse scoring, lower scores indicated lower likelihood of condom use and higher scores indicated higher likelihood of condom use. A listing of these items can be found in Table 3-2 and are designated with an asterisk.

Descriptive Analysis

A descriptive analysis using univariate statistics was conducted to describe participants based on select demographic variables (i.e., age, race, ethnicity, gender, and current grade). Descriptive analysis was also conducted on sexual health related variables including if the participant has ever been pregnant or gotten someone pregnant, number of times participant got pregnant or got someone else pregnant, if the participant has had sexual intercourse without

using a condom in the past 3 months, the last time a participant was tested for an STD and if the participant has ever been diagnosed with an STD. Lastly, a descriptive analysis was conducted for the DAP scales and subscales.

Multivariate Analysis

Multivariate analysis was used to assess the fit of the overall model representing the Health Belief Model. This took place in a series of three steps. First, confirmatory factor analyses (CFA) were conducted on each of the hypothesized constructs in the proposed Health Belief model to ensure a good fit of the constructs. Due to poor fit of almost all of these constructs as hypothesized an exploratory factor analysis was conducted to identify possible factors that better fit the dataset. This was followed by a series of logistic regressions to determine the impact of the factors derived from the EFA on intentions to use condoms, as well as the impact of these factors on condom use behavior. Next, a one step regression was used to determine the impact of intentions to use condoms on condom use behavior in the final model. Lastly, a one-step regression was conducted with developmental assets included as a modifier in order to test the moderating effect of developmental assets on condom use behavior.

Step 1: Factor Analyses

The first step in analysis was to apply the HBM framework to the current dataset. This step was completed by testing the validity of the hypothesized model with this dataset using Confirmatory Factor Analysis (CFA) to construct the factors that make up the full latent variable model (Figure 3-3). Guided by theory, each item on the original survey was assessed for inclusion independently by the principal researcher and an expert in the field of adolescent sexual health. Following these independent assessments, items that demonstrated face validity for the constructs under consideration were presented for inclusion. If there was consensus on items and the construct it should represent the item was included in the analysis. If a clear consensus could not be reached the item was excluded from analysis. Following this process, a third person who is an expert in the field of public health reviewed the items proposed for inclusion in the analysis for face validity and confirmed the assessment to include the selected items.

Each construct in the model was assessed independently prior to analysis of the overall model. For data that was ordinal, a polychoric correlation matrix (Flora & Curran, 2004) was used to produce the Satorra-Bentler Chi-square, a robust maximum likelihood estimator that also corrects for non-normality (Byrne, 2012). Model fit was assessed with the Comparative Fit Index (CFI ≥ .95); the Standardized Root Mean Residual (SRMR ≤ .05); and the Root Mean Square Error of Approximation, a parsimony-adjusted index (RMSEA ≤ .06 to .08 with a 90% confidence interval) (Byrne, 2012; Hu & Bentler, 1999; Kline, 2010; Raykov & Marcoulides, 2006). If the original model specification did not exhibit a good fit, model respecification was allowed; however, the theoretical framework and hypotheses guided any changes as recommended by Kline (2011).

Step 2: Logistic and Ordinal Regression Models

The third step in the analysis was to further investigate the relationship between intentions to use condoms and condom use behavior. This was done through the use of a series of different regression models. Step 2a investigated the factors identified in the EFA as predictors of intentions to use condoms. Step 2b investigated the factors identified in the EFA as predictors of condom use behavior. Lastly, Step 2c investigated intention as a predictor of behavior.

Step 2a was conducted using the factors identified in the EFA and the item Intention. Ordinal regression is an extension of logistic regression where the dependent variable has more than two categories; therefore, the assumptions for ordinal regression are similar to those for logistic regression. The dependent variable is ordinal, while the independent variable is continuous; therefore, ordinal regression was appropriate. Ordinal regression also assumes there is no multicollinearity between multiple independent variables. Since each independent variables were run independently there is no issue of multicollinearity and this assumption is met. Lastly, the assumption of proportional odds, or the assumption that each independent variable has the same effect at each level of change in the ordinal dependent variable, must be met. This was tested using the Test of Parallel Lines ($p > .05$). The factors Barrier – Comfort and Benefits met this assumption ($p = .427$ and $p = .472$, respectively), while the remaining factors demonstrated significant values, thus violating this assumption. The test of parallel lines is considered to be

“very conservative and often results in the rejection of the proportional odds assumption (O’Connell, 2006), especially when sample sizes are large (Allison, 1999; Clogg & Shihadeh, 1994) or the independent variable is continuous (Allison, 1999) and there are multiple cells with missing data, both of which are present in this data set.

Overall model fit was assessed by multiple indicators including the -2 log likelihood (-2*LL*), where lower values represent better fitting models, and the Wald statistic ($p < .05$) (Hair, et al., 2006, Peng & So, 2002). Model fit was further assessed with the Likelihood Ratio (LR) Chi-Square ($p < .05$). Nagelkerke R square values were calculated to determine the degree of improvement each parameter added to the predicted null model.

Step 2b was conducted using the factors identified in the EFA and the Condom Use Behavior item. Logistic regression was selected as most appropriate for this regression since the dependent variable is a categorical, binary variable and the independent variable is continuous (Hair, et al., 2006). Logistic regression is often selected due to the robustness of the method when basic assumptions (i.e., independent variable is not normally distributed, linearly related, or demonstrating equal variance within groups) are not met (Foster, Barkus, & Yavorsky, 2006). Since logistic regression assumes the probability of an event occurring, it was necessary to recode the dependent variable scores where 0 = No, condom was not used and 1= Yes, condom used, for the purposes of interpreting the probability of condom use behavior occurring. Logistic regression also assumes that the categories of the dependent variable are mutually exclusive and exhaustive (Foster, Barkus, & Yavorsky, 2006). For the purposes of this study, youth either used a condom every time they engaged in intercourse or did not use a condom on one or more occasions. Youth could not fall into more than one category; therefore, this assumption was met. Lastly, it is recommended to have a minimum of 50 cases per predictor requiring a larger sample size, thus the sample size for this study is more than adequate based on the number of predictors being tested (Foster, Barkus, & Yavorsky, 2006). Since these assumptions were met it was appropriate to conduct the analysis using logistic regression approach.

Logistic regression predicts a metric dependent variable (i.e. probability value) with a value between 0 and 1 (Hair, et al., 2006). Based on this value, the probability value is restated as an odds ratio of the probability of the two outcomes (i.e. 0 = No – No condom used and 1 = Yes – Condom was used). Odds ratio < 1.0 represent probabilities less than .50, while odds ratio > 1.0 represent a probability greater than .50 (Hair, et al, 2006). The logit, or natural algorithm of the odds ratio, was calculated to determine the probability of the two condom behavior outcomes. Negative logit values represent odds ratios less than 1, while positive logit values represent odds ratios greater than 1.The maximum likelihood method for estimation technique was used for the model estimation. The coefficients estimated for the independent variable were estimated using the logit value as the dependent measure.

Assessing goodness of fit of the overall model indicates how well the observed values match the values of the predicted model (Bewick, Cheek, & Ball, 2005). Overall model fit was assessed by multiple indicators including the -2 log likelihood (-2*LL*), where lower values represent better fitting models, and the Wald statistic ($p < .05$) (Hair, et al., 2006, Peng & So, 2002). Hosmer and Lemeshow Test was calculated ($p > .05$) as a further assessment of the goodness of fit of the model. Nagelkerke R^2 values were calculated to determine the degree of improvement each parameter added to the predicted null model.

Step 2c was conducted utilizing a single item representing intention from the original dataset in order to test the odds probability of condom use behavior based on different levels of intentions to use condoms. This was conducted using a one step logistic regression model since the dependent variable was dichotomous (see Figure 3-1).

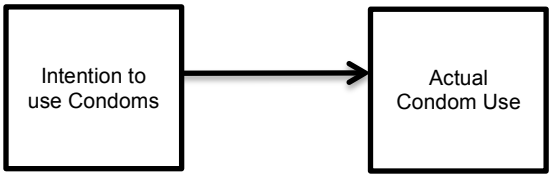

Figure 3-1 Hypothesized Single Item Regression Model Predicting Condom Use

This model hypothesized the greater the intention to use condoms (independent variable), the higher the likelihood a youth will report using a condom (dependent outcome variable). Model fit was assessed based on the guidelines provided above.

Step 3: Logistic Regression Model with Moderating Variable

Step 3 assessed the impact of the moderating effect of developmental assets on the logistic regression model predicting condom use based on intention to use condoms. Moderators are variables that can enhance, reduce, or change the impact of the predictor variable and it's subsequent outcome (Fairchild & MacKinnon, 2009). This study proposes the developmental assets have a moderating effect on the relationship between intentions to use condoms and actual condom use behavior. The regression model using the item from the survey was a stronger model than the model using the intention factor and was therefore used for the analysis of the moderating variable.

A common problem with testing moderating effects is multicollinearity. In order address this issue, the independent variable and the moderator variables were centered (Baron & Kenny, 1986). A moderating effect variable was created by multiplying the value of the independent variable (i.e., intention) times the value of the moderator variable (i.e., Total Developmental Assets, Internal Assets, and External Assets). Due to the dependent variable being dichotomous a logistic regression was used with the centered independent variable and centered moderating effect variables as covariates. It was hypothesized that the developmental assets were moderators impacting the strength of the relationship between intention to use condoms and actual condom use. It is further hypothesized that the greater the number of assets a youth possesses will enhance the effect of the predictor variable (i.e., intention to use condoms) on the outcome variable (i.e., actual condom use) (Figure 3-2). Goodness of fit of this model and interpretation of the coefficients was assessed using the interpretation guidelines provided in the previous section.

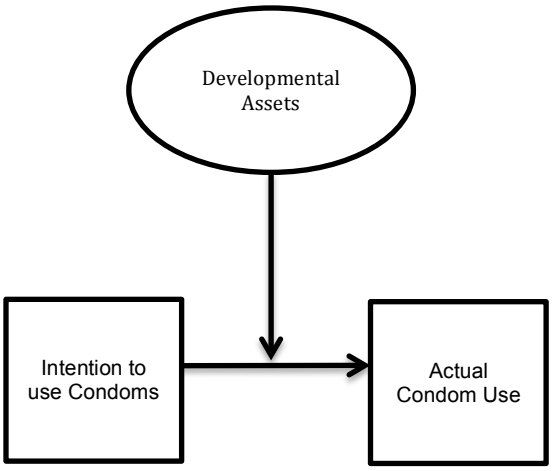

Figure 3-2 Hypothesized Moderated Logistic Regression Model

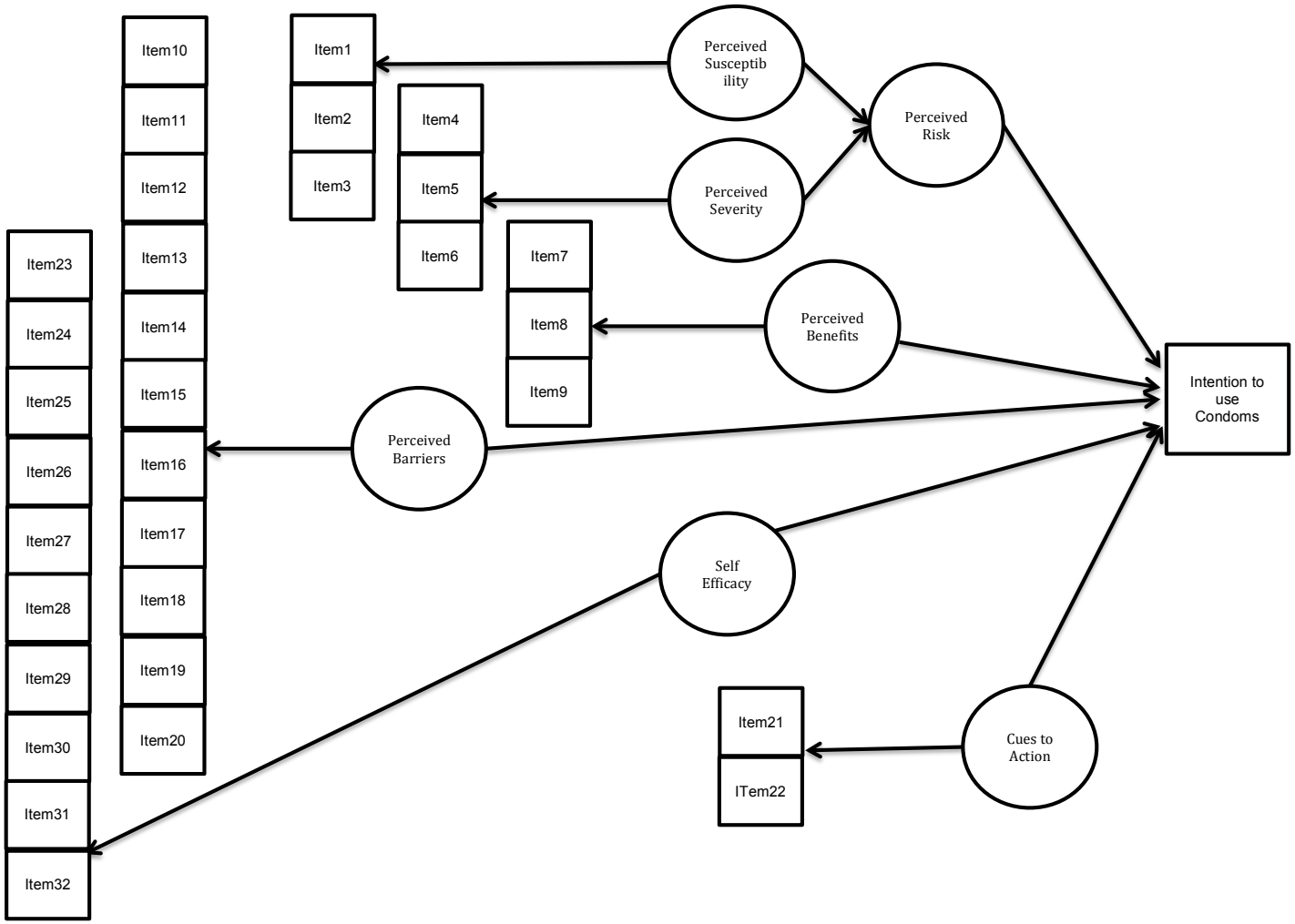

Figure 3-3 Hypothesized Full Latent Variable Structural Model Predicting Intentions to Use Condoms

Chapter 4

Results

Data Analysis

This chapter provides the results of the data analysis. A descriptive overview of the sample is provided followed by a summary of the results of the multivariate analyses, which took place in a series of three steps. Step 1 provides the results of the factor analyses. It is broken down into two subparts. Step 1a includes the results of the confirmatory factor analyses, while Step 1b includes the results of the exploratory factor analyses. Step 2 is broken down into three parts. Step 2a provides the findings from the regression models predicting intention to use condoms based on the EFA factors, while Step 2b provides the findings from the regression models predicting condom use behavior based on the EFA factors. Step 2c provides the findings from the logistic regression model using the intention item to predict condom use behavior. The chapter concludes with a write up of the third step of the multivariate analyses, the moderated logistic regression.

Sample

The original study provided had a limited number of participants (*n* = 34) enrolled in the primary evaluation study but failed to provide baseline data. For the purposes of this study, those participants were excluded from the sample; therefore, the original dataset included 1,174 participants who provided baseline data for the original study. After eliminating participants who were not sexually active (n = 262) and participants with questionable or extreme Developmental Asset scores (n = 158) the final sample included 754 participants. The complete sample was used for the CFAs and EFA, while a subsample (n = 565), representing participants who have been sexually active in the past three months, was used for the regression analyses.

Descriptive Analysis

Demographics

Males accounted for 52.8% (*n* = 398) of the sample demonstrating a fairly even number of males and females. More than a third of the sample identified as Black or African-American

(33.7%), while even more identified as Other/Not Reported (35.4%). This is likely due to the large proportion of participants who identified as Hispanic but did not designate a race. More than half of the participants identified their ethnicity as Hispanic (52.4%). The average age of the sample was 17.70 (*SD* = .649) with participants ranging in age from 17-19. The majority of participants were enrolled in 12th grade (56.8%, *n* = 428), while a large proportion were enrolled in 11th grade or below (42%, *n* = 317). A small proportion of participants were no longer in school at the time of survey (1.2%, *n* = 9) in spite of the eligibility requirements at the time of randomization in the original study. A summary of demographic characteristics is included in Table 4-1.

Sexual Health Characteristics

To be included in the sample participants must have engaged in sexual intercourse at some time in their lives. Three quarters of the sample (74.9%, *n* = 565) reported having sexual intercourse within the past three months. Of those currently sexually active participants, 62.7% (*n* = 354) reported having sexual intercourse without using a condom. More than a quarter (26.4%) of all participants had experienced a pregnancy or gotten someone pregnant. The number of pregnancies reported ranged from 1 – 5 with more than three quarters (*n* = 151) of participants reporting having only one pregnancy. Nearly 18% of the participants reporting pregnancies had two pregnancies, and a very small proportion of the overall sample reported 3 or more pregnancies (6%, *n* = 12). Half of the sample reported having never been tested for an STD (*n* = 374). Of the remaining half who had been tested, only 15.9% (*n* = 59) reported testing positive for an STD. A summary of sexual health characteristics is provided in Table 4-1.

Table 4-1 Sample Characteristics (*n* = 754)

Characteristic	*n* (%)	Characteristic	*n* (%)
***Gender* (*n* = 754)**		***In past 3 months, have you had sexual intercourse WITHOUT a condom? (*n* = 563)***	
Males	398 (52.8)	Yes	352 (62.5)
Females	256 (47.2)	No	211 (37.5)
***Race* (*n* = 754)**		***Have you ever been pregnant or gotten someone pregnant, even if no child was born? (*n* = 752)***	
American Indian/Alaska Native	40 (5.3)		
Asian	10 (1.3)		
Black or African American	254 (33.7)		

Table 4-1—*Continued*

Native Hawaiian or Other Pacific Islander	6 (0.8)
White	137 (18.2)
More than one race	40 (5.3)
Unknown/Not Reported	267 (35.4)
***Ethnicity* (*n* = 754)**	
Hispanic	395 (52.4)
Non Hispanic	359 (47.6)
***Grade* (*n* = 754)**	
9th	14 (1.9)
10th	72 (9.5)
11th	231 (30.6)
12th	428 (56.8)
Ungraded	3 (0.4)
College/Technical School	3 (0.4)
Not currently in school	3 (0.4)
In past 3 months, have you had sexual intercourse? (n = 753)	
Yes	565 (46.9)
No	188 (24.9)
Yes	199 (26.5)
No	553 (73.5)
How many times have you been pregnant or gotten someone pregnant? (n = 198)	
One	151 (76.3)
Two	35 (17.7)
Three or more	12 (6.0)
When was the last time you were tested for an STD? (n = 749)	
Never	374 (50.0)
Within the past 3 months	110 (14.7)
3-6 months ago	114 (15.2)
7-12 months ago	84 (11.2)
More than 1 year ago	67 (8.9)
Have you ever had an STD? (n = 374)	
Yes	59 (15.9)
No	312 (84.1)

Developmental Assets Characteristics

The interpretative ranges for internal, external, and total assets score included Low, Fair, Good, and Excellent. Nearly half of the participants reported having a "Fair" amount of developmental assets (44.8%, n = 338) indicating participants experienced "borderline assets…[of which] some are experienced, but many are weak and/or infrequent" (Search Institute, 2005, p.58). Participants with "Fair" asset scores had asset areas where substantial improvement could be made across multiple areas (Search Institute, 2005). Nineteen percent of the sample (n = 143) reported having a "Low" amount of overall assets, while nearly a third (30.2%, n = 228) reported a "Good" amount of overall assets, both of which have varying degrees of potential improvement. Very few participants reported an "Excellent" amount of overall assets (6%, n = 45). The ranges for internal and external assets reflected a similar pattern (see Table 4-2) as expected due to the way the total score is calculated.

Table 4-2 Sample Developmental Assets Interpretative Ranges

	Internal Assets		External Assets		Total Assets	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Low	n = 100	13.3%	n = 179	23.7%	n = 143	19%
Fair	n = 356	47.2%	n = 357	47.3%	n = 338	44.8%
Good	n = 215	28.5%	n = 193	25.6%	n = 228	30.2%
Excellent	n = 83	11.0%	n = 25	3.3%	n = 45	6.0%
Total	n = 754	100%	n = 754	100%	n = 754	100%

Scores for each of the subscales were also calculated and exhibited ranges from 0 – 30 across each subscale. Extremely low scores (<10) were rare in this population with less than 4% of the sample having these scores on all scales except Constructive use of Time (14.5%). The mean scores for Support, Empowerment, Boundaries and Expectations, Commitment to Learning, Positive Values, Social Competencies, and Positive Identity subscales ranged between 18.38 and 19.93 (see Table 4.3 for a summary breakdown of each subscale). The subscale Constructive Use of Time was the only scale to have a dramatically lower average score with a mean of 13.00 due to the higher rate of participants reporting extremely low scores on this subscale.

Table 4-3 Sample Developmental Assets Subscales Characteristics

	Subscale	Frequency	Mean	Mode	Std. Deviation	Range
External Asset Categories	Support	n = 754	19.29	20.00	5.90	2-30
	Empowerment	n = 754	19.49	20.00	5.33	0-30
	Boundaries & Expectations	n = 754	19.20	20.00	5.44	2-30
	Constructive Use of Time	n = 754	13.00	13.00	6.29	0-30
Internal Asset Categories	Commitment to Learning	n = 754	19.93	19.00	5.56	3-30
	Positive Values	n = 754	18.38	15.00	4.66	6-30

Table 4-3 —*Continued*

	Social Competencies	**n = 754**	**18.91**	**20.00**	**4.86**	**5-30**
	Positive Identity	n = 754	20.44	20.00	5.57	2-30

Missing Data Analysis.

An analysis of missing data on the selected dataset indicated there was very little missing data on any of the items being used to measure the constructs. None of the items had missing values greater than 2% and all missing values were determined to be *Missing Completely at Random* (MCAR) based on Little's test (Little, 1998; Little & Rubin, 1987). Missing data patterns were assessed and found 488 complete cases with no missing data. Only two variables demonstrated patterns of missing data greater than 1% cases (Item9, *n* = 9 and Behavior *n* = 160). Since missing data was less than 10% across all variables included in the analysis and was found to be MCAR, missing data were ignored and no data imputation method was employed. Complete case analysis was utilized due to the large sample size and the nature of the missing data (Hair et al., 2006; He, 2010). The item measuring behavior did have a large amount of missing data (25.1%, n = 189); however, this was to be expected due to the question only applying to youth who were currently sexually active (*n* = 565). Analyses related to behavior were conducted on a subsample of participants, specifically, those who reported sexually activity in the past three months. Missing data analysis on this subsample revealed no missing cases.

Multivariate Analysis Results

There were three primary steps of the multivariate analysis. First, factor analyses were conducted to identify the best fitting model. Confirmatory factor analyses were conducted in order to assess the validity of each hypothesized construct individually and assess the fit of the full latent variable structural model representing the Health Belief Model. This step was followed by a series of exploratory factor analyses in order to identify a better fitting data driven model. The second step was to assess the relationship between intentions and condom use behaviors, as well as the ability of the factors identified in the EFA to predict both outcomes. The final step was

to assess the moderating effect of the developmental assets on the relationship between intentions and condom use behavior. Results from these analyses are listed below.

Step 1a: Confirmatory Factor Analyses Results

A total of 754 cases were read into Mplus for the purpose of assessing the individual factors and the full latent-variable factor model. Due to the complex nature of the hypothesized full factor model, each factor was assessed independently prior to attempting to test the full model. The items to be used for the factors were considered ordered categorical, or ordinal, due to scores ranging from 1 to 5, with the exception of two items being used to represent Cues to Action. These items were dichotomous categorical with only two possible scores (i.e., yes or no). The data were examined for normality and were found to not have a normal distribution, as was expected due to the data being ordered categorical. The assumption that continuous variables be normally distributed was not met (Bentler, 2004). In order to account for this violation, a weighted least squares estimator is recommended because of the robust nature of the test when data is not normally distributed. There were no out of area skewness values (+/- 2) or kurtosis values (+/- 7) outside of the acceptable range (West, Finch, & Curran, 1995).

Perceived Susceptibility Model

Three items about youth sexual attitudes were utilized to assess the construct of Perceived Susceptibility, or the youth's perception of the likelihood he/she will experience a negative consequence from not engaging in the health promoting behavior of using a condom. Participants rated how much they agree or disagree with the following statements, which were rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly.

- Item1: If I have sex, I will get AIDS.
- Item2: If I have sex, I will get an STD.
- Item3: If I have sex, I will get pregnant.

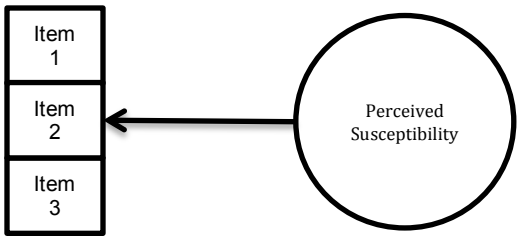

Figure 4-1 Hypothesized Perceived Susceptibility Model

The hypothesized Perceived Susceptibility model had three items and fit the three-indicator rule that states that a model will be identified if the latent construct is associated with at least three measures (Kline, 2011). The model met the requirements that the degrees of freedom be 0 or greater and the latent variable be assigned a metric; however, upon testing the model it was not able to calculate the statistics and was found to be empirically underidentified. It is unclear what was the source of the underidentification. One possible reason for this is extreme multicollinearity; however, collinearity statistics did not indicate this was a problem for Item1 – Item3 (VIF = 1.219, 3.567, and 3.792 respectively). Another possible explanation is that an estimate of one of the paths is extremely low or high; however, this is more difficult to detect (Kline, 2011). In spite of having positive degrees of freedom, it is not possible to generate valid estimates due to insufficient covariance information in a portion of the model (Newsome, 2012). The model indicated an issue with Item3; however, if this item were removed the model would no longer fit the three-indicator rule and thus be underidentified. Since model respecification was allowed, the dataset was reviewed for additional items to add to the model in order to eliminate the issue of model underidentification; however, no items were found that theoretically appropriate to add to the model. As a result, it was not possible to test this factor as it was hypothesized.

Perceived Severity Model

Three items about youth sexual attitudes were utilized to assess the construct of perceived severity, or the magnitude of the negative consequence from not engaging in the health promoting behavior of using a condom. Participants rated how much they agree or

disagree with the following statements, which were rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly.

- Item4: If I have sex and my parents find out, then they will be angry with me.
- Item5: If I have sex during my teen years, then I am less likely to graduate from high school.
- Item6: If I have sex during my teen years, then I am less likely to have the career I am hoping for.

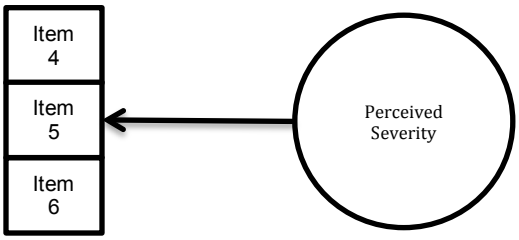

Figure 4-2 Hypothesized Perceived Severity Construct

The hypothesized Perceived Severity model had three items and fit the three-indicator rule that states that a model will be identified if the latent construct is associated with at least three measures (Kline, 2011). The model met the requirements that the degrees of freedom be 0 or greater and the latent variable be assigned a metric; however, upon testing the model it was not able to calculate the statistics and was found to be empirically underidentified. Multicollinearity statistics were calculated for Item4 – Item6 and found multicollinearity was not present (VIF = 1.028, 1.925, and 1.848 respectively). The model indicated an issue with Item4 and Item5; however, if these items were removed the model would no longer fit the three-indicator rule and thus be underidentified. Since model respecification was allowed, the dataset was reviewed for additional items to add to the model in order to eliminate the issue of model underidentification; however, no items were found that theoretically appropriate to add to the model. As a result, it was not possible to test this factor as it was hypothesized.

Perceived Threat Model

Perceived threat was hypothesized as a second order factor composed of the first order factors Severity and Susceptibility. There were no individual items being used to assess this construct.

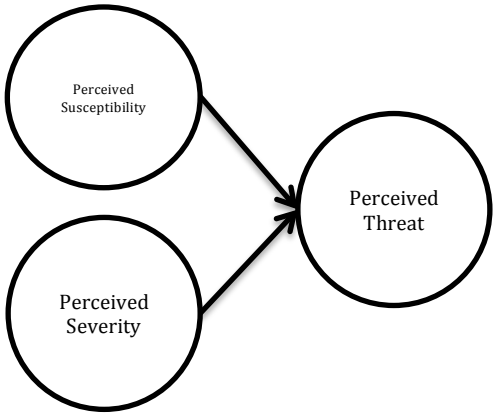

Figure 4-3 Hypothesized Second Order Factor for Perceived Threat

This model was hypothesized to be a representation of the Susceptibility and Severity constructs. Since the Susceptibility and Severity constructs were empirically underidentified it was not possible to assess this construct as hypothesized. As an alternative, all six items from the hypothesized Susceptibility and Severity factors were input into one model to assess the construct of Threat as a six-item construct rather than a two-factor construct. The model was not able to run and indicated an identification issue and recommended removing Item3. After removing this item, the model was run again. This revised model also exhibited issues with identification and recommended removing Item2. This item was removed and the model was run again with Item1 and Item4 – Item6. This revised model exhibited poor fit $\chi 2$ (2, N = 754) = 10.402, $p < .005$; RMSEA = .075; CFI = .937; TLI =.811; WRMR = 0.539, suggesting that this model did not adequately represent the observed data. Attempts to improve the model fit through removal of additional items would result in an empirically underidentified model. As a result, this factor was not found to fit the data even once respecified.

Perceived Benefit Model

Three items about sexual attitudes were utilized to assess the construct of perceived benefits, or the youth's perception of the benefits of engaging in the health promoting behavior of

utilizing a condom. Participants rated how much they agree or disagree with the following statements, which were rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly. Participants are instructed to try and answer the questions even if they are not sexually active or have never used condoms.

- Item7: Condoms help prevent pregnancy.
- Item8: Condoms help prevent STDs.
- Item9: Condoms help prevent AIDS.

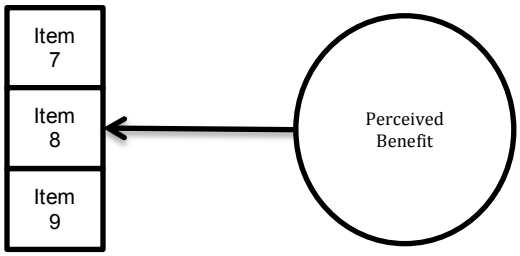

Figure 4-4 Hypothesized Perceived Benefit Construct

The hypothesized Perceived Benefit model had three items and fit the three-indicator rule that states that a model will be identified if the latent construct is associated with at least three measures (Kline, 2011). The model met the requirements that the degrees of freedom be 0 or greater and the latent variable be assigned a metric; however, upon testing the model it was not able to calculate the statistics and was found to be empirically underidentified. Multicollinearity statistics were calculated for Item7 – Item9 and found high multicollinearity was not present, but two of the variables were cause for concern (VIF = 1.541, 4.776, and 4.564 respectively). A Pearson correlation coefficient was computed to assess the relationship between Item7, Item8 and item9 (Table 4-5). A strong positive correlation existed between Item8 (Condoms help prevent STDs.) and Item9 (Condoms help prevent AIDS.) ($r = .882$, $N = 739$, $p < .01$) indicating possible collinearity. A moderate positive correlation existed between Item7 and Item8 ($r = .586$, $n = 753$, $p = .01$), as well as between Item7 and Item9 ($r = .558$, $n = 740$, $p < .01$). The model indicated an issue with Item7 and Item8, which is expected based on the collinearity of the two items; however, if one of these items were removed the model would no longer fit the three-

indicator rule and thus be underidentified. Since model respecification was allowed, the dataset was reviewed for additional items to add to the model in order to eliminate the issue of model underidentification after removing one of the correlated items; however, no items were found that theoretically appropriate to add to the model. As a result, it was not possible to test this factor as it was hypothesized.

Table 4-4 Perceived Benefits Correlation Matrix

		Item7: Condoms help prevent pregnancy.	Item8: Condoms help prevent STDs.	Item9: Condoms help prevent AIDS.
Item7: Condoms help prevent pregnancy.	Pearson Correlation	1	.586*	.558*
	Sig. (2-tailed)		.000	.000
	N	754	753	740
Item8: Condoms help prevent STDs.	Pearson Correlation	.586*	1	.882*
	Sig. (2-tailed)	.000		.000
	N	753	753	739
Item9: Condoms help prevent AIDS.	Pearson Correlation	.558*	.882*	1
	Sig. (2-tailed)	.000	.000	
	N	740	739	740

* Correlation is significant at the 0.01 level (2-tailed).

Perceived Barriers Model

11 items about sexual attitudes were utilized to assess the construct of perceived barriers, or the youth's perception of the barriers preventing him/her from engaging in the health promoting behavior of utilizing a condom. Participants rate how much they agree or disagree with the following statements, which are rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly. Participants are instructed to try and answer the following questions even if they were are not sexually active or have never used condoms. Items with asterisks were reverse scored.

- Item10: If my partner or I used a condom, sex would NOT feel as good.*
- Item11: Sex feels unnatural when a condom is used.*
- Item12: Condoms are embarrassing to use.*
- Item13: Condoms make you NOT want to have sex because you have to stop to put it on.*

Participants are further instructed to try to answer the following questions even if they did not have a sexual partner.

- Item14: Saying we have to use a condom would make my sexual partner think I am having sex with other people.*
- Item15: Saying we have to use a condom is like saying to my sexual partner, “I don’t trust you.”*
- Item16: My sexual partner is likely to break up with me if I said we had to use a condom.*
- Item17: If I had a condom with me, my sexual partner would not like it.*
- Item18: Condoms cost too much.*
- Item19: It is hard for me to get condoms.*
- Item20: I cannot talk to my sexual partner about using condoms.

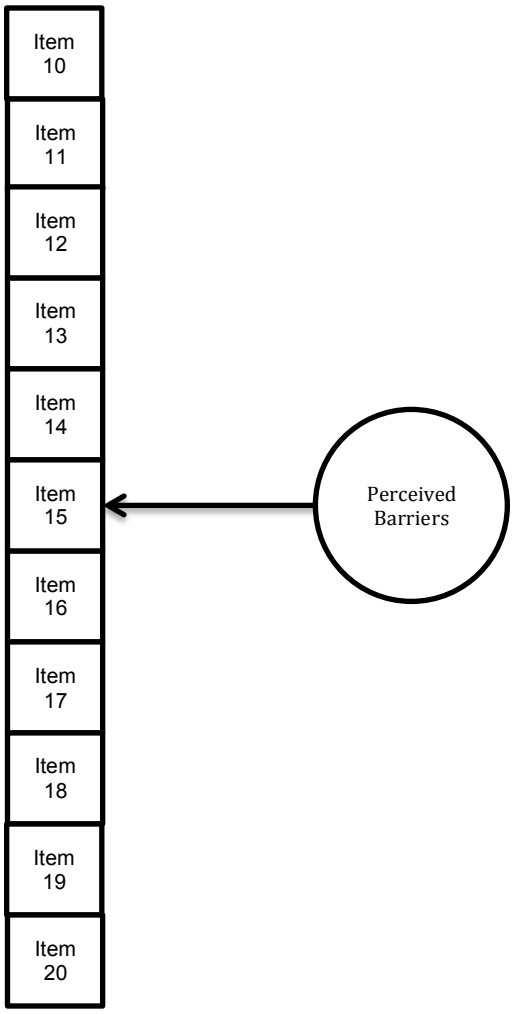

Figure 4-5 Hypothesized Perceived Barriers Construct

The hypothesized Perceived Barriers model was represented by 11 items and therefore fit the three-indicator rule that states that a model will be identified if the latent construct is associated with at least three measures (Kline, 2011). The model was overidentified and thus is identified with fewer free parameters than observations. The degrees of freedom are greater than 0 and the latent variables are assigned a metric meeting the general requirements for identification. This model exhibited poor fit on χ^2 (44, n = 754) = 1702.485, p < .05; CFI = .764, TLI = .704; WRMR = 3.597; RMSEA = .224 suggesting that this model did not adequately represent the observed data. Examination of the standardized factor loadings found all items to be significant. Item15, Item16, and Item17 demonstrated standardized factor loadings to be high

(-0.82, - 0.79, and -0.74, respectively). The correlation matrix (Appendix E) shows a moderately strong correlation between Item15 (Saying we have to use a condom would make my partner think I am having sex with other people.) and Item16 (Saying we have to use a condom is like saying to my sexual partner "I don't trust you.") (r = .655, *n* = 740, *p* <.01). A moderately strong correlation between Item10 (If my partner or I used a condom sex would NOT feel as good.) and Item11 (Sex feels unnatural when a condom is used.) (r = .625, *n* = 740, *p* <.01). Respecification of the model removed Item15 and item10. This model was run again and exhibited similar results of poor fit on χ^2 (27, *n* = 754) = 1356.04, *p* < .05; CFI = .712; TLI = .616; WRMR = 3.719; RMSEA = .256 suggesting that this model did not adequately represent the observed data.

The parameter estimates were reviewed and found several items with poor fit (R^2 <.4). Item19 (It is hard to get condoms.) and Item20 (I cannot talk to my sexual partner about using condoms.) were the weakest and exhibited R^2 values of .219 and .292, respectively. Item11 (Sex feels unnatural when a condom is used.) was also weak (R^2 = .371). The model was subsequently respecified by removing these two items and assessed for model fit. This model was run again and demonstrated some improvement but continued to exhibit results of poor fit on χ^2 (9, *n* = 754) = 349.525, *p* < .05; CFI = .879; TLI = .798; WRMR = 2.248; RMSEA = .224 suggesting that this model did not adequately represent the observed data.

Another review of the parameter estimates found Item12 (Condoms are embarrassing to use.) to have a very poor fit (R^2 = .183). The model was respecified by removing this item and assessed for model fit and continued to exhibit poor fit on χ^2 (5, *n* = 754) = 310.731, *p* < .05; CFI = .881; TLI = .762; WRMR = 2.257; RMSEA = .285. While further model respecification was possible it would no longer be theoretically driven and therefore was deemed inappropriate to continue. As a result, it was not possible to test this factor as it was hypothesized.

Cues to Action Model

Two items that have the potential to activate readiness to engage in the health promoting behavior of using a condom will be utilized to assess the construct of cues to action. While these two items are not considered all-inclusive representations of cues to action, it is believed that

these cues may play a significant role and were therefore included. Both items are dichotomous variables in which the participant answers yes or no to the following questions: “Have you ever been pregnant or gotten someone pregnant, even if no child was born?” and “Have you ever had a Sexually Transmitted Disease (STD)?” and were designated Item21 and Item22 respectively.

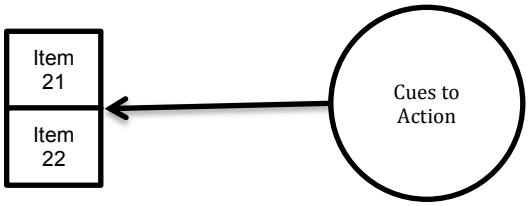

Figure 4-6 Hypothesized Cues to Action Construct

The hypothesized Cues to Action model was represented by two items and therefore did not fit the three-indicator rule that states that a model will be identified if the latent construct is associated with at least three measures (Kline, 2011). As a result, it was not possible to test this factor as hypothesized independent of the complete model. The model can still be identified with two-item factors if there are two or more factors in the model; however, due to the poor fit of all the remaining factors in this model it was not possible to test this factor as it was hypothesized even as part of the overall model.

Efficacy Model

Seven items from the sexual attitudes section of the survey were utilized to assess the construct of self-efficacy, or the youth’s perception of their own ability to be able to use a condom. Participants rate how much they agree or disagree with the following statements, which are rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly. Participants were instructed to try and answer the questions even if they are not sexually active or have never used condoms.

- Item23: I can get condoms.
- Item24: It is easy for me to have a condom with me all of the time.
- Item25: I can get my sexual partner to agree to use a condom, even if he/she doesn’t want to.

- Item26: I can say to my sexual partner that we should use a condom.
- Item27: Before we are ready to have sex, I can talk to my sexual partner about using a condom.
- Item28: I can put a condom on without turning my sexual partner off.
- Item29: I am sure that I can use a condom if I have sex.
- Item30: If I am sexually aroused, I can stop before sex to use a condom.
- Item31: I can say no to sex if my sexual partner and I do not have a condom.
- Item32: I can stop sex to get a condom, if I do not have one.

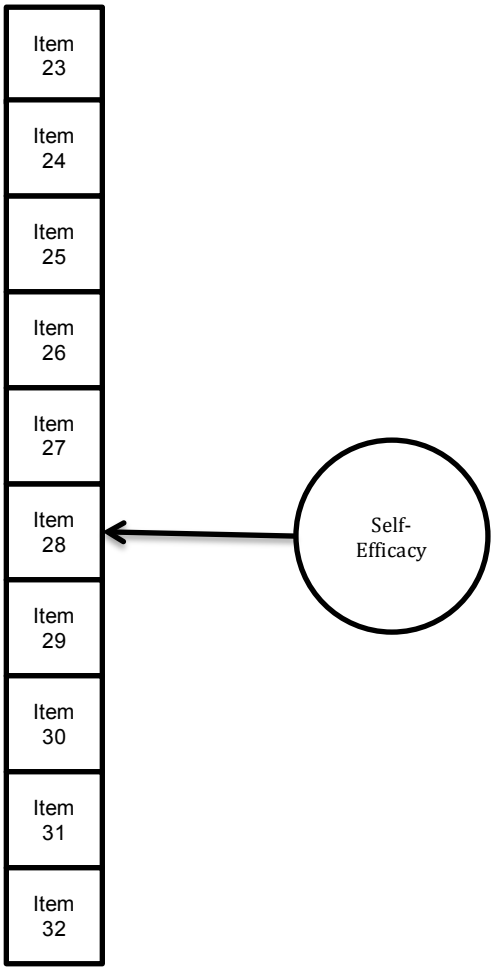

Figure 4-7 Hypothesized Self-Efficacy Construct

The hypothesized Efficacy model was represented by 10 items and fit the three-indicator rule that states that a model will be identified if the latent construct is associated with at least three measures (Kline, 2011). The model met the requirements that the degrees of freedom be 0 or greater and the latent variable be assigned a metric; however, upon testing the model it was not able to calculate the statistics and was found to be empirically underidentified. Multicollinearity statistics were calculated for Item23 – Item32 and found high multicollinearity was not present (VIF < 3.00 for all items). A Pearson correlation coefficient was computed to assess the relationship between each of the items (Appendix F). A strong positive correlation existed between Item26 (I can say to my sexual partner that we should use a condom.) and Item27 (Before we have sex, I can talk to my sexual partner about using a condom.) (r = .740, N = 748, p < .01) indicating possible collinearity in spite of the low VIF values. Moderate positive correlations existed between Item31 and Item32 (r = .632, n = 746, p < .01), as well as between Item25 and Item26 (r = ..641, n = 739, p <.01). Item26 and Item31 were removed from the model to address potential multicollinearity. Since model respecification was allowed, the dataset was reviewed for additional items to add to the model in order to eliminate the issue of model underidentification and three additional items were added to the model: Item34 – I can use a condom even if the room is dark.; Item35 – I can get my sexual partner to agree to use a condom without turning him/her off.; Item36 – I will try to get my sexual partner to agree to use condoms if we have sex in the next 3 months.

The respecified model demonstrated was able to run but exhibited poor fit on χ^2 (44, n = 754) = 863.604, p < .05; CFI = .919; TLI = .898; WRMR = 2.274; RMSEA = .157 suggesting that this model did not adequately represent the observed data. Examination of the standardized factor loadings found all items except Item23 (.061, p = .202) to be significant. The model was respecified and this item was removed; however, this did not improve the model fit χ^2 (35, n = 754) = 882.00, p < .05; CFI = .913; TLI = .888; WRMR = 2.391; RMSEA = .179. A review of the standardized coefficient estimates found Item24, Item25, Item32, and Item 34 to all have weak factor loadings (R^2 = .437, .393, .478, and -.429, respectively). The model was respecified

removing these four items and found to have improved, but still exhibited a poor fit $\chi 2$ (9, n = 754) = 441.27, p < .05; CFI = .946; TLI = .909; WRMR = 2.094; RMSEA = .252. Further review found no theoretically supported modifications that would support further respecification of the model indicating that the data does not fit the model well as hypothesized.

Since none of the individual hypothesized factors resulted in models with good fit, it was determined that testing the full latent variable model with all of these factors was not appropriate. Rather, an exploratory factor analysis was conducted in order to determine if there was an underlying factor structure among the variables not being represented in the hypothesized model.

Step 1b: Exploratory Factor Analysis Results

Since the items selected for the CFA did not demonstrate good fit, the next step was to perform an exploratory factor analysis in order to determine if there were any underlying factors represented by the current dataset that were not being picked up in the hypothesized CFAs. The aim of the exploratory factor analyses was three-fold: (1) identify good items and remove poor items from the original hypothesized model, (2) calculate item-total correlations and coefficient alphas, (3) identify the best fitting factor model for this dataset. This was done in SPSS by inputting 30 of 32 items from the original hypothesized 7-Factor HBM model (see Figure 3-3) and conducting an EFA. Two items, hypothesized to represent Cues to Action in the original model, were excluded (i.e., Item 21 - Have you ever had a Sexually Transmitted Disease (STD)? and Item22 - Have you or your partner ever been pregnant, even if not child was born?) due to the items being categorical (Stevens, 1946). Guided by theory, the original dataset was reviewed again and five additional items were included resulting in a total 35 items to be included in the EFA (Appendix G). Participants rated how much they agree or disagree with the following statement, which were rated on a 5-point Likert scale of 1-Disagree Strongly, 2-Disagree, 3-In the Middle, 4-Agree, and 5-Agree Strongly, similar to the rest of the items. Participants are instructed to try and answer the following questions even if they were are not sexually active or have never used condoms. Two of the items added were reverse scored and are indicated below with an asterisk.

- Item33: it is too much trouble to carry around condoms.*
- Item34: I can use a condom even if the room is dark.
- Item35: I can get my sexual partner to agree to use a condom without turning him/her off.
- Item36: I will try to get my sexual partner to agree to use condoms if we have sex in the next 3 months.
- Item37: A lot of times condoms break when you are using them.*

The appropriateness of factor analysis was further assessed based on several guidelines. First, the sample included more observations than variables and met the criteria of at least 10 observations per variable (Hair, Black, Babbin, Anderson, & Tatham, 2006). While there are different guidelines regarding total sample size needed for an EFA ranging from 100 (Gorsuch, 1983) to 500 or more (Comrey & Lee, 1992), the complete sample was utilized for the EFA to maximize sample since what constitutes a sufficient sample size is unknown until after analysis is complete (Henson and Roberts, 2006; MacCallum, Widaman, Zhang, & Hong, 1999). Inspection of the correlation matrix for all items to be included indicated there was a substantial number of correlations greater than .30, which also supports the appropriateness of factor analysis (Hair, et al., 2006). Prior to proceeding with the EFA, Bartlett test of sphericity ($p \leq .05$) and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA > .50) further assessed the appropriateness of factor analysis for the selected dataset (Field, 2013). The KMO statistic of .843 is considered great indicating the sample size is adequate for factor analysis (Hutcheson & Sofroniou, 1999). Barlett's test was significant X^2 (595) = 9896.07, $p < .001$, indicating the correlation matrix is significantly different from an identity matrix and are appropriate for factor analysis (Field, 2013).

Determination of which factors to retain in the overall model was based on several considerations including factors with eigenvalues greater than 1.0, enough factors to explain 60% or higher of the overall variance, and factors before the inflection point on the scree plot (Hair, et al., 2006). A multi-step process was conducted in order to interpret the factors. First, the

unrotated factor matrix factor loadings were reviewed. The model assumed the factors were uncorrelated; therefore, a VARIMAX orthogonal factor rotation with Kaiser Normalization was utilized in order to improve interpretation and factors were identified based on items with high loadings on a single factor. Secondly, significant loadings were assessed across all factors. Items that loaded on more than one factor were deleted unless there was theoretical justification for keeping the item. Next, communalities of the items were assessed. Items that took into account at least half of the variance in each item were retained in the analysis (i.e., communalities greater than .50) were retained in the analysis, while items with communalities less than .50 were assessed for possible deletion. Finally, model respecification was allowed through the deletion of items that did not meet the minimum criteria for inclusion. Once an acceptable factor solution was obtained the factors were conceptually labeled based on the items loading on each factor.

The results of the initial EFA were difficult to determine due to different findings between the scree plot and eigenvalue-greater than one rule. The scree plot indicated six factors, while the eigenvalue-greater-than-one rule identified 9 factors. The rotated component matrix indicated nine factors explaining 63.50% (*n* = 670) of the total variance in the original variables. Three items exhibited communalities explaining less than 50% of the variance in the original variable (< .50) indicating these items may need to be excluded from the analysis. Item4 – If I have sex and my parents find out they will be angry with me (.440), Item20 - I cannot talk to my sexual partner about condoms (.408), and Item37 – A lot of times condoms break when you are using them (.433) were all removed from the model. A review of the factor loadings in the rotated component matrix found two items to have similar factor loadings across multiple factors (Item12 – Condoms are embarrassing to use and Item30 – If I am sexually aroused, I can stop before sex to use a condom). It was unclear where these items best fit, therefore, all three items were removed and the analysis was conducted again.

The second iteration of the EFA resulted in a slightly improved overall model. The scree plot still indicated six factors, while the eigenvalue-greater-than-one rule identified eight factors. These eight factors explained 65.90% (*n* = 671) of the total variance in the original variables. A

review of the factor loadings indicated two factors with only two items each. While the factor loadings for the items that loaded on Factor8 and the items that loaded on Factor9 were high (ranging from .771 - .882), these items were removed from the model due to the limited number of items for each factor. This choice reduced resulted in the final 6-factor, 26-item model (Table 4-7).

The third and final iteration of the EFA reduced the number of factors to six factors explaining 62.82% (*n* = 679). The scree plot indicated six factors, which is in alignment with the Eigenvalue-greater-than-one rule, which also identified six factors. A 6-factor solution with 26-items was determined to provide the best interpretation of the data (Table 4-5). The six factors appeared to be conceptually grouped and reflected aspects of the originally hypothesized Health Belief Model. Factor 1 included 8-items relating to the participant's ability to use a condom with a strong emphasis on the role of his/her partner resulting in this grouping of items being labeled Partner Efficacy. All but one of these items (i.e. Item36 – I will try to get my sexual partner to agree to use condoms if we have sex in the next three months) were included in the original Efficacy CFA model. Item36 was an additional item added prior to the EFA. Factor 2 included 4-items conceptualized as potential interpersonal barriers to condom use. The items comprising this factor relate specifically to the trust between partners (e.g. Saying we have to use a condom is like saying to my sexual partner, "I don't trust you"). Subsequently, this factor was labeled Barriers – Partner Trust. These items were originally part of the Barriers CFA model. Factor 3 included 5-items which also represented barriers to condom use. Specifically, this grouping of items conceptually represented accessibility to condoms; therefore, this factor was labeled Structural Barriers – Accessibility. Some of these items were originally part of the Barriers CFA model, while other items were originally hypothesized to be part of the Efficacy CFA model. Factor 4 is a 3-item model reflecting sexual health related benefits. This factor is identical in structure to the Benefits CFA model that was empirically underidentified; therefore, this factor retained the same label of Benefits. Factor 5 is a 3-item model reflecting a fear of possible sexual health related outcomes. This factor mirrors the Susceptibility factor in the original Health Belief

Model and was subsequently labeled Susceptibility. Factor 6 is comprised of 3-items that were also originally part of the Barriers CFA for the Health Belief Model; however, this grouping of barriers represent barriers specifically relating to the comfort and feel of condoms resulting in this factor being labeled Barriers – Comfort. The complete rotated factor matrix is available in Appendix H.

Table 4-5 Factor Loadings and Communalities Based on a Maximum Likelihood Extraction Analysis with VARIMAX Rotation for the Six Retained Factors (n = 679)

Factor	Item	Question	Loading	Communality	Internal Consistency
Factor 1: Partner Efficacy*	ITEM35	I can get my sexual partner to agree to use a condom without turning him/her off.	0.793	0.688	α = .880
	ITEM29	I am sure that I can use a condom if I have sex.	0.780	0.644	
	ITEM26	I can say to my sexual partner that we should use a condom.	0.767	0.678	
	ITEM27	Before we are ready to have sex, I can talk to my sexual partner about using a condom.	0.718	0.573	
	ITEM36	I will try to get my sexual partner to agree to use condoms if we have sex in the next 3 months.	0.691	0.587	
	ITEM28	I can put a condom on without turning my sexual partner off.	0.682	0.522	
	ITEM25	I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.	0.677	0.534	
	ITEM34	I can use a condom, even if the room is dark.	0.657	0.496	
Factor 2: Interpersonal Barrier – Partner Trust	ITEM15	Saying we have to use a condom is like saying to my sexual partner, I don't trust you.	0.808	0.688	α = .782
	ITEM14	Saying we have to use a condom would make my sexual partner think I am having sex with other people.	0.791	0.709	
	ITEM16	My sexual partner is likely to break up with me if I said we had to use a condom.	0.701	0.595	
	ITEM17	If I had a condom with me, my sexual partner would not like it.	0.646	0.494	

Table 4-5 —*Continued*

Factor 3: Structural Barrier – Accessibility	ITEM19	It is hard for me to get condoms.	0.842	0.733	**α = .717**
	ITEM23	I can get condoms.	0.705	0.565	
	ITEM33	It is too much trouble to carry around condoms.	0.604	0.481	
	ITEM24	It is easy for me to have a condom with me all of the time.	0.602	0.435	
	ITEM18	Condoms cost too much.	0.59	0.402	
Factor 4: Benefits	ITEM8	Condoms help prevent STDs.	0.937	0.88	α = .864
	ITEM9	Condoms help prevent AIDS.	0.926	0.86	
	ITEM7	Condoms help prevent pregnancy.	0.77	0.613	
Factor 5: Susceptibility	ITEM2	If I have sex, I will get a sexually transmitted disease (STD).	0.926	0.872	α = .806
	ITEM1	If I have sex, I will get AIDS.	0.907	0.833	
	ITEM3	If I have sex during my teen years, my partner or I will get pregnant.	0.718	0.548	
Factor 6: Physical Barrier – Comfort	ITEM10	If my partner or I used a condom sex would NOT feel as good	0.847	0.745	α = .703
	ITEM11	Sex feels unnatural when a condom is used	0.828	0.725	
	ITEM13	Condoms make you NOT want to have sex because you have to stop to put one on.	0.473	0.435	
Factor 7 & Factor 8 (Note: These were removed from the final model due to insufficient items.)	ITEM6	If I have sex during my teen years, then I am less likely to have the career that I am hoping for.	0.882	0.822	
	ITEM5	If I have sex during my teen years, then I am less likely to graduate from high school.	0.870	0.816	
	ITEM31	I can say no to sex if my sexual partner and I do not have a condom.	0.784	0.720	
	ITEM32	I can stop sex to get a condom, if I do not have one.	0.771	0.767	

* Total scale including Factor 1 – Factor 6 demonstrated α = .808.

Internal consistency of all 26 items (α = .808), as well as for each of the factors individually, was calculated using Cronbach's alpha. Interpersonal Barrier - Partner Trust subscale (α = .782), Structural Barrier - Accessibility (α = .717), and Barrier – Comfort (α = .703) demonstrated acceptable reliability based on established convention (α ≥ 0.7) (Henson, 2001). Partner-Efficacy subscale (α = .880), Benefits subscale (α = .864), and Susceptibility subscale (α = .806) all demonstrated acceptable reliability. Reliability was further assessed through item-to-total correlations and inter-item correlations based on the established convention for item-to-total

correlations be greater than 0.50 and inter-item correlations to be greater than .30 (Hair, et al., 2006). Each of the subscales met this criterion except the Structural Barrier - Accessibility subscale. Item-to-total correlations for the Structural Barrier - Accessibility Subscale ranged from r = .643 to .802 ($p < .05$) and inter-item correlations ranged from r = .144 - .501 ($p < .05$) indicating certain items should be reviewed for potential deletion prior to CFA to confirm the final structure of this scale (Netemeyer, Bearden, & Subhash, 2003). Specifically, Item18: "Condoms cost too much" and Item24 – "It is easy for me to have a condom with me all of the time" demonstrated a significant correlation; however, it fell outside the acceptable range ($r = .144$, $p < .05$). The remaining item-to total correlations and inter-item correlations fell within the acceptable range. Item-to-total correlations for the Partner Efficacy Subscale ranged from .700 to .825 ($p < .05$) and inter-item correlations ranged from r = .341 - .816 ($p < .05$). Item-to-total correlations for the Interpersonal Barrier - Partner Trust Subscale ranged from r = .693 to .842 ($p < .05$) and inter-item correlations ranged from r = .420 - .655 ($p < .05$). Item-to-total correlations for the Benefits Subscale ranged from .783 to .938 ($p < .05$) and inter-item correlations ranged from r = .558 - .882 ($p < .05$). Item-to-total correlations for the Susceptibility Subscale ranged from r = .753 to .911 ($p < .05$) and inter-item correlations ranged from α = .425- .848 ($p < .05$). Item-to-total correlations for the Physical Barrier - Comfort ranged from r = .688 to .847 ($p < .05$) and inter-item correlations ranged from r = .335 - .625 ($p < .05$).

Table 4-6 Correlation Ranges for Factors

Factor	Item-to-Total Correlation Range	Inter-Item Correlation Range
Partner Efficacy	.700 - .825	.341 - .816
Interpersonal Barrier – Partner Trust	.693 - .842	.420 - .655
Benefits	.783 - .938	.558 - .882
Susceptibility	.753 - .911	.425 - .848
Physical Barrier – Comfort	.688 - .847	.335 - .625
Structural Barrier - Accessibility	.643 - .802	.144 - .501*

Step 2a: Logistic Regression Model Results for Intention (IV) on Condom Use Behavior (DV)

A single-predictor logistic model was fitted to the data to test the hypothesis that the relationship between the likelihood that at-risk youth will use a condom and intentions to use a condom. The logistic regression model was statistically significant, $\chi^2(1) = 72.562$, $p < .001$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to not be statistically significant ($p = .731$) suggesting a good fit. The model explained 16.5% (Nagelkerke R^2) of the variance in condom use behavior. The model correctly classified 66.2% of cases, which was an improvement over the model with no independent variables included. Sensitivity was 71.8%, specificity was 56.9%, positive predictive value was 45.2%, and negative predictive value was 4.8%. The predictor variable in the equation variable was statistically significant indicating that Intention does have a significant impact on the likelihood that participants would use a condom. Increasing the likelihood to intend to use a condom is associated with a higher likelihood to actually use a condom. Specifically, the odds of a participant using a condom increase more than two times for every level of increase of intentions to use a condom. This indicates a youth reporting greater intentions to use a condom are 123% more likely to report using a condom in the past three months.

Table 4-7 Regression Output Physical Barrier - Comfort (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Intention	.800	.106	56.913	1	.000	2.225
Constant	-3.775	.457	68.139	1	.000	.023
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			72.562	1	.000	
Hosmer & Lemeshow			.626	2	.731	
Variance Explained						
Cox & Snell R Square		.121				
Nagelkerke R Square		.165				

Step 2b: Ordinal Regression Model Results for Factors (IV) on Intention (DV)

The third step of the multivariate analysis was to examine the relationship between intentions to use condoms and condom use behavior. This was done through a series of regressions. The first series of regressions investigated the relationship between the identified EFA factors (independent variables) and intentions to use condoms (ordinal dependent variable). Each EFA factor (i.e. Partner Efficacy, Interpersonal Barrier - Partner Trust, Structural Barrier - Accessibility, Benefits, Physical Barrier - Comfort, and Susceptibility) was tested independently.

Model fit for Partner Efficacy shows a significantly high reduction in the chi-square statistics ($p < .05$) demonstrating a significant improvement of the model over the intercept only model. The Pearson goodness-of-fit test indicated that the model was not a good fit to the observed data, $\chi^2(91) = 214.252$, $p < .001$. This should be interpreted with caution due to the high number of cells with zero frequencies (33 cells, 27.5%) since this test is often considered unreliable if there are many cells with zero frequencies. The final model statistically significantly predicted the condom use intentions over and above the intercept-only model, $\chi^2(1) = 219.266$, $p < .001$. A one point increase in Partner Efficacy was associated with an increase in the odds of intending to use a condom, with an odds ratio of 1.273 (95% CI, 1.237 to 1.326), Wald $\chi^2(1) = 194.310$, $p < .001$. For every point increase in Partner Efficacy, the odds of agreeing strongly to intend to use a condom increased by 28% over the odds of remaining outcome group categories. The Test of Parallel Lines was significant ($\chi^2(3) = 46.952$, $p < .001$) indicating the proportional odds assumption was violated, requiring additional models be run to determine the relationship between each pair of outcome groups.

Table 4-8 Regression Output for Partner Efficacy (IV) on Intention to Use a Condom (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Partner	.247	.018	194.310	1	.000	1.281

Test	-2 Log Likelihood	*Likelihood Ratio* χ^2	*df*	*p*

Table 4-8 —*Continued*

Overall model evaluation				
Likelihood-ratio				
Intercept Only	549.261			
Final	329.995	219.266	1	.000
Goodness-of-fit Test				
Pearson		214.252	91	.000
Deviance		154.369	91	.000

Model fit for Interpersonal Barrier - Partner Trust shows a significantly high reduction in the chi-square statistics ($p < .05$) demonstrating a significant improvement of the model over the intercept only model. The Pearson goodness-of-fit test indicated that the model was not a good fit to the observed data, $\chi^2(91) = 214.252$, $p < .001$. This should be interpreted with caution due to the high number of cells with zero frequencies (17 cells, 21.3%) since this test is often considered unreliable if there are many cells with zero frequencies. The final model statistically significantly predicted the condom use intentions over and above the intercept-only model, $\chi^2(1) = 84.871$, $p < .001$. A one point increase in Interpersonal Barrier - Partner Trust was associated with an increase in the odds of intending to use a condom, with an odds ratio of 1.241 (95% CI, 1.185 to 1.299), Wald $\chi^2(1) = 84.488$, $p < .001$. Higher scores indicate greater levels of partner trust. For every point increase in Interpersonal Barrier - Partner Trust, the odds of agreeing strongly to intend to use a condom increased by 24.1% over the odds of remaining outcome group categories. The Test of Parallel Lines was significant ($\chi^2(3) = 25.621$, $p < .001$) indicating the proportional odds assumption was violated, requiring additional models be run to determine the relationship between each pair of outcome groups.

Table 4-9 Regression Output for Interpersonal Barrier - Partner Trust (IV) on Intention to Use a Condom (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Interpersonal Barrier - Partner Trust	.216	.023	84.488	1	.000	1.241

Test	-2 Log Likelihood	Likelihood Ratio χ^2	*df*	*p*

Table 4-9 —*Continued*

Overall model evaluation				
Likelihood-ratio				
Intercept Only	336.133			
Final	251.263	84.871	1	.000
Goodness-of-fit Test				
Pearson		117.920	59	.000
Deviance		106.619	59	.000

Model fit for Structural Barrier - Accessibility shows a significantly high reduction in the chi-square statistics ($p < .05$) demonstrating a significant improvement of the model over the intercept only model. The Pearson goodness-of-fit test indicated that the model was not a good fit to the observed data, $\chi^2(71) = 112.255$, $p < .001$. This should be interpreted with caution due to the high number of cells with zero frequencies (23 cells, 24.2%) since this test is often considered unreliable if there are many cells with zero frequencies. The final model statistically significantly predicted the condom use intentions over and above the intercept-only model, $\chi^2(1) = 17.901$, $p < .001$. A one point increase in Structural Barrier - Accessibility was associated with an increase in the odds of intending to use a condom, with an odds ratio of 1.086 (95% CI, 1.046 to 1.128), Wald $\chi^2(1) = 18.592$, $p < .001$. Higher scores indicate greater levels of accessibility to condoms. For every point increase in Structural Barrier - Accessibility, the odds of agreeing strongly to intend to use a condom increased by 8.6% over the odds of remaining outcome group categories. The Test of Parallel Lines was significant ($\chi^2(3) = 16.008$, $p < .001$) indicating the proportional odds assumption was violated, requiring additional models be run to determine the relationship between each pair of outcome groups.

Table 4-10 Regression Output for Structural Barrier - Accessibility (IV) on Intention to Use a Condom (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Structural Barrier - Accessibility	.083	.019	18.592	1	.000	1.086

Test	-2 Log Likelihood	Likelihood Ratio χ^2	*df*	*p*

Table 4-10 —*Continued*

Overall model evaluation					
Likelihood-ratio					
Intercept Only	309.537				
Final	291.636	17.901	1	.000	
Goodness-of-fit Test					
Pearson		112.255	71	.001	
Deviance		123.508	71	.000	

Model fit for Benefits shows a small reduction in the chi-square statistics ($p < .05$) demonstrating a significant improvement of the model over the intercept only model. The Pearson goodness-of-fit test indicated that the model was not a good fit to the observed data, $\chi^2(43) = 94.988$, $p < .001$. This should be interpreted with caution due to the high number of cells with zero frequencies (9 cells, 15.0%) since this test is often considered unreliable if there are many cells with zero frequencies. The final model statistically significantly predicted the condom use intentions over and above the intercept-only model, $\chi^2(1) = 22.068$, $p < .001$. A one point increase in Benefits was associated with an increase in the odds of intending to use a condom, with an odds ratio of 1.128 (95% CI, 1.075 to 1.184), Wald $\chi^2(1) = 23.889$, $p < .001$. For every point increase in Benefits, the odds of agreeing strongly to intend to use a condom increased by 12.8% over the odds of remaining outcome group categories. The Test of Parallel Lines was not significant ($\chi^2(3) = 2.518$, $p = .472$) indicating the proportional odds assumption was not violated. This suggests relationship between each pair of outcome groups are the same.

Table 4-11 Regression Output Benefits (IV) on Intention to Use a Condom (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Benefits	.121	.025	23.889	1	.000	1.128

Test	-2 Log Likelihood	Likelihood Ratio χ^2	*df*	*p*
Overall model evaluation				
Likelihood-ratio				
Intercept Only	246.809			
Final	224.741	22.068	1	.000
Goodness-of-fit Test				
Pearson		94.988	43	.000
Deviance		94.197	43	.000

Model fit for Susceptibility shows a small reduction in the chi-square statistics; however, this change was not significant (p = .069) demonstrating a there was not a significant improvement of the model over the intercept only model. This contradicts the Pearson goodness-of-fit test, which indicated that the model was a good fit to the observed data, $\chi^2(47) = 53.241$, p = .247. The final model did not significantly predict the condom use intentions over and above the intercept-only model, $\chi^2(1) = 3.307$, p = .069. A change in Susceptibility was not significantly associated with a change in the odds of intending to use a condom, Wald $\chi^2(1) = 3.386$, p = .066.

Table 4-12 Regression Output Susceptibility (IV) on Intention to Use a Condom (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Susceptibility	-.047	.025	3.386	1	.066	1.003

Test	-2 Log Likelihood	Likelihood Ratio χ^2	*df*	*p*
Overall model evaluation				
Likelihood-ratio				
Intercept Only	206.197			
Final	203.610	3.307	1	.069
Goodness-of-fit Test				
Pearson		53.241	47	.247
Deviance		59.444	47	.105

Model fit for Physical Barrier - Comfort shows a significantly large reduction in the chi-square statistics (p < .05) demonstrating a significant improvement of the model over the intercept only model. The Pearson goodness-of-fit test indicated that the model was not a good fit to the observed data, $\chi^2(47) = 102.479$, p < .001. This should be interpreted with caution due to the high number of cells with zero frequencies (9 cells, 13.8%) since this test is often considered unreliable if there are many cells with zero frequencies. The final model statistically significantly predicted the condom use intentions over and above the intercept-only model, $\chi^2(1) = 132.910$, p < .001. A one point increase in Barrier – Comfort, meaning fewer barriers associated with comfort, was associated with an increase in the odds of intending to use a condom, with an odds ratio of 1.399 (95% CI, 1.320 to 1.483), Wald $\chi^2(1) = 126.572$, p < .001. For every point increase in Barrier – Comfort, the odds of agreeing strongly to intend to use a condom increased by 39.9%

over the odds of remaining outcome group categories, making this the strongest predictor of the factors examined. The Test of Parallel Lines was significant ($\chi^2(3) = 9.883$, $p < .05$) indicating the proportional odds assumption was violated, requiring additional models be run to determine the relationship between each pair of outcome groups.

Table 4-13 Regression Output Physical Barrier - Comfort (IV) on Intention to Use a Condom (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Physical Barrier - Comfort	.336	.030	126.572	1	.000	1.399

Test	-2 Log Likelihood	Likelihood Ratio χ^2	*df*	*p*
Overall model evaluation				
Likelihood-ratio				
Intercept Only	358.705			
Final	225.795	132.910	1	.000
Goodness-of-fit Test				
Pearson		102.479	47	.000
Deviance		87.421	47	.000

Step 2c: Logistic Regression Model Results for Factors (IV) on Condom Use Behavior (DV)

The next set of regressions investigated the relationship between the identified EFA factors (independent variables) and condom use behavior (binary categorical dependent variable). Each EFA factor (i.e. Partner Efficacy, Interpersonal Barrier - Partner Trust, Structural Barrier - Accessibility, Benefits, Physical Barrier - Comfort, and Susceptibility) was tested independently.

A logistic regression was performed to ascertain the effects of Partner Efficacy on the likelihood that participants would use a condom. The logistic regression model was statistically significant, $\chi^2(1) = 3.841$, $p < .05$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to not be statistically significant ($p = .909$) suggesting a good fit; however, the model explained less than 1% (Nagelkerke R^2) of the variance in condom use behavior and correctly classified 63.2% of cases, which is no improvement over the model with no independent variables included. The p-value for the predictor variable in the equation is .053 which is marginally higher than the level of significance ($p = .05$) indicating that partner efficacy

may have some impact on the likelihood that participants would use a condom. Nonetheless, it is not significant and indicates that Partner Efficacy is not a significant predictor of condom use behavior for this sample.

Table 4-14 Regression Output Partner Efficacy (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Partner Efficacy	.038	.020	3.744	1	.053	1.039
Constant	-1.657	.587	7.973	1	.005	.191
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			3.841	1	.050	
Hosmer & Lemeshow			2.116	6	.909	
Variance Explained						
Cox & Snell R Square		.007				
Nagelkerke R Square		.009				

A logistic regression was performed to ascertain the effects of Interpersonal Barrier - Partner Trust on the likelihood that participants would use a condom. The logistic regression model was difficult to interpret due to conflicting results. The model was statistically significant, $\chi^2(1) = 12.081$, $p < .05$. The model explained only 3.9% (Nagelkerke R^2) of the variance in condom use behavior and correctly classified 63.6% of cases, which is no improvement over the model with no independent variables included. The Hosmer and Lemeshow test is statistically significant ($p < .05$) indicating the model is a poor fit. Interpersonal Barrier - Partner Trust as a predictor variable was statistically significant indicating that this factor does have a significant impact on the likelihood that participants would use a condom. Higher scores on Interpersonal Barrier - Partner Trust, meaning fewer barriers associated with partner trust, was associated with an increased likelihood of using a condom. This indicates for every point increase on the Interpersonal Barrier - Partner Trust scale, there is a 13% increase in the likelihood of condom use in the previous three months.

Table 4-15 Regression Output Interpersonal Barrier - Partner Trust (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Interpersonal Barrier - Partner Trust	.118	.030	15.401	1	.000	1.126
Constant	-2.501	.518	23.266	1	.000	.082
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			16.518	1	.000	
Hosmer & Lemeshow			12.081	5	.034	
Variance Explained						
Cox & Snell R Square		.029				
Nagelkerke R Square		.039				

A logistic regression was performed to ascertain the effects of Structural Barrier - Accessibility on the likelihood that participants would use a condom. The logistic regression model was statistically significant, $\chi^2(1) = 10.399$, $p < .05$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to not be statistically significant ($p = .504$) suggesting a good fit; however, the model explained only 2.6% (Nagelkerke R^2) of the variance in condom use behavior. The predictor variable in the equation variable was statistically significant indicating that Structural Barrier - Accessibility does have a significant impact on the likelihood that participants would use a condom. Increasing scores on Structural Barrier - Accessibility, meaning fewer structural barriers, was associated with an increased likelihood of using a condom. Specifically, participants odds of using a condom increased by 1.083 times for every one point change on the Structural Barrier - Accessibility scale. This indicates for every point increase on the Barrier-Structural scale, there is an 8% increase in the likelihood of condom use in the previous three months.

Table 4-16 Regression Output Structural Barrier - Accessibility (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Structural Barrier - Accessibility	.079	.025	10.000	1	.002	1.083
Constant	-2.075	.511	16.512	1	.000	.126

Table 4-16 —*Continued*

Test	R^2	χ^2	*df*	*p*
Overall Model Evaluation				
Omnibus Tests of Model Coefficients		10.399	1	.001
Hosmer & Lemeshow		7.304	8	.504
Variance Explained				
Cox & Snell R Square	.019			
Nagelkerke R Square	.026			

A logistic regression was performed to ascertain the effects of Benefits on the likelihood that participants would use a condom. The logistic regression model was not statistically significant, $\chi^2(1) = .128$, $p = .720$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to not be statistically significant ($p = .918$) suggesting a good fit; however, the model explained only 0% (Nagelkerke R^2) of the variance in condom use behavior. The predictor variable in the equation variable was not statistically significant indicating that Benefits does not have a significant impact on the likelihood that participants would use a condom.

Table 4-17 Regression Output Benefits (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Benefits	.011	.032	.128	1	.721	1.011
Constant	-.668	.390	2.936	1	.087	.513
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			.128	1	.720	
Hosmer & Lemeshow			.946	4	.918	
Variance Explained						
Cox & Snell R Square		.000				
Nagelkerke R Square		.000				

A logistic regression was performed to ascertain the effects of Susceptibility on the likelihood that participants would use a condom. The logistic regression model was statistically significant, $\chi^2(1) = 9.320$, $p < .05$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to not be statistically significant ($p = .516$) suggesting a good fit; however, the model explained only 2.3% (Nagelkerke R^2) of the variance in condom use

behavior. The predictor variable in the equation variable was statistically significant indicating that Susceptibility does have a significant impact on the likelihood that participants would use a condom. Increasing scores on Susceptibility, meaning more perceived susceptibility to negative health consequences, was associated with a decreased likelihood of using a condom. Specifically, for every one point increase on the Susceptibility scale, participants odds of using a condom in the past three months decrease by .098 times. For every point increase on the Susceptibility scale, there is an associated 10% decrease in the likelihood of youth using a condom versus not using a condom.

Table 4-18 Regression Output Susceptibility (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Susceptibility	-.103	.034	9.066	1	.003	.902
Constant	.235	.258	.831	1	.362	1.265
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			9.320	1	.002	
Hosmer & Lemeshow			5.222	6	.516	
Variance Explained						
Cox & Snell R Square		.017				
Nagelkerke R Square		.023				

A logistic regression was performed to ascertain the effects of Physical Barrier - Comfort on the likelihood that participants would use a condom. The logistic regression model was statistically significant, $\chi^2(1) = 49.378$, $p < .001$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to be statistically significant ($p < .05$) suggesting a poor fit. The model explained only 1.2% (Nagelkerke R^2) of the variance in condom use behavior. The predictor variable in the equation variable was statistically significant indicating that Physical Barrier - Comfort does have a significant impact on the likelihood that participants would use a condom. Increasing scores on Physical Barrier - Comfort, meaning fewer perceived comfort issues, was associated with an increased likelihood of using a condom. Specifically, participant's odds of using a condom increase 1.283 times for every one point increase on the Physical Barrier

- Comfort scale. This indicates for every point increase on the Barrier-Comfort scale, there is a 28% increase in the likelihood of condom use in the previous three months.

Table 4-19 Regression Output Physical Barrier - Comfort (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Barrier – Comfort	.249	.038	43.562	1	.000	1.283
Constant	-3.150	.415	57.695	1	.000	.043
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			49.378	1	.000	
Hosmer & Lemeshow			21.030	7	.004	
Variance Explained						
Cox & Snell R Square		.085				
Nagelkerke R Square		.116				

Step 3: Logistic Regression with Moderator Results

A single-predictor logistic model was fitted to the data to test the hypothesis that the developmental assets have a moderating impact on the relationship between intentions and the likelihood an at risk youth will use a condom. The logistic regression model was not statistically significant, $\chi^2(1) = .042$, $p = .838$. Model fit was further assessed using Hosmer and Lemeshow goodness of fit test and was found to be statistically significant ($p < .05$) suggesting a poor fit. The model explained 0% (Nagelkerke R^2) of the variance in condom use behavior. The model correctly classified 62.6% of cases, which was not an improvement over the model with no independent variables included. The predictor variable in the equation was not statistically significant indicating that moderating effect of developmental assets on intention does not have a significant impact on the likelihood that participants would use a condom.

Table 4-20 Regression Output Developmental Asset Moderator (IV) on Condom Use Behavior (DV)

Predictor	β	SE β	Wald's χ^2	*df*	*p*	e^{β}
Intention	.002	.009	.042	1	.838	1.002
Constant	-.517	.088	34.769	1	.000	.597
Test		R^2	χ^2	*df*	*p*	
Overall Model Evaluation						
Omnibus Tests of Model Coefficients			.042	1	.838	
Hosmer & Lemeshow			.23.498	8	.003	

Table 4-20 —*Continued*

Variance Explained	
Cox & Snell R Square	.000
Nagelkerke R Square	.000

Chapter 5

Discussion

The purpose of this study was to apply the Health Belief Model (HBM) to condom use among a sample of adolescents at high risk for dropping out of high school. Guided by the Health Belief Model, factor analyses were conducted in order to identify the best fitting model for this dataset resulting in a strong model with predictive capabilities. This chapter reviews these analyses with a detailed discussion of the strengths of the existing model and areas for improvement for each identified factors. This study further identified significant relationships between several of the factors identified through factor analysis, intentions to use condoms, and condom use behavior. Limitations that impacted the study are also discussed. The chapter concludes with implications for social work policy, practice and future research in the field of adolescent sexual health based on the significant findings from this study.

Discussion of Confirmatory Factor Analyses

The purpose of this study was to apply the Health Belief Model to assess sexually active adolescents' intentions to use condoms. Careful examination of the dataset prior to analysis suggested that the data contained sufficient questions to adequately represent the constructs, which is why CFA was chosen as the analytic method to assess this model. While the Health Belief Model has been used as a framework to assess condom use with other populations (Mahoney, Thombs, & Ford, 1995; Volk, & Koopman, 2001; Winfield & Whaley, 2002), applying the model to this subset of adolescents has not been previously tested. In retrospect, taking this approach may have been overly ambitious since the questions that were selected appeared to represent these constructs at face value; however, they had not been thoroughly tested prior to attempting to conduct the CFA. An alternative strategy recommended by Muthén and Muthén (2008) is to conduct a series of small pilot studies using EFAs and a preliminary CFA prior to conducting a large scale CFA, as was attempted in this study. Unfortunately, due to research limitations associated with time and resources, this was not possible. Since the sample size was fairly large, a better strategy for this study might have been to randomly split the sample, conduct

an EFA on half of the participants, and follow up with a CFA to confirm those findings with the other half of the sample.

Unfortunately, most of the individual CFAs were unable to provide results due to being empirically underidentified. In factor analysis, model identification is a set of rules that helps to determine "whether it is theoretically possible for the computer to derive a unique set of model parameter estimates" (Kline, 2011, p. 124). One rule that is required, but does not ensure a model is identified, is termed by some as the counting rule (Kaplan, 2009) or T-Rule (Bollen, 1999), which requires that the degrees of freedom in the model be greater than or equal to 0. While these models appeared to meet this demand superficially, empirically, they were not able to withstand the test. This is likely due to several hypothesized factors that contained only three items, the minimum necessary to run confirmatory factor analysis. If there were issues with even one item (e.g., multicollinearity), requiring the removal of an item, the model was immediately underidentified and subsequently unable to be tested. While it was believed that these items were strong enough to adequately represent the factors, it would have been a stronger design to have more items per construct in order to allow for removal of items and still maintain a model without underidentification issues. While multicollinearity did not present as a dramatic effect (VIF > 10), some research has indicated that VIF values as low as 2.5 can present issues if the model is weak (Menard, 2001). Due to the limitations of this model as hypothesized, VIF values ranging from 3.5 – 4.8 on several models may have created more significant issues than originally believed to be present, preventing the full adequate testing of the hypothesized constructs. Again, having more items for each factor could have alleviated this issue and led to different results.

Of the CFAs that could be tested (i.e., *Self-Efficacy* and *Barriers*), findings from the data provided by this group of adolescents suggested that the Health Belief Model framework as hypothesized was not a strong fit. This could be interpreted in two ways. First, this may suggest the HBM does not apply to intentions to use condoms and should be thrown out completely; however, caution should be taken before taking this radical stance. The HBM framework was selected because of its proven success in predicting health promoting behaviors such as condom

use (e.g., Boone, & Lefkowitz, 2004; Laraque et al., 1997). Suggesting that it has no application is extreme and highly unlikely and may be a reflection of the skewed sample rather than a deficiency of the model. The sample used in this study is extreme with the majority of youth demonstrating few developmental assets. Perhaps a sample with a greater distribution of assets would should a stronger effect. It is also likely that the aforementioned question limitations were a significant contributor to the subsequent results. Perhaps the selected questions did not adequately represent the hypothesized factors with this particular population. While the large number of questions to select from in the original study made it possible to test the HBM, the questions that were asked were also its greatest limitation. Some of the published studies that assessed the HBM did not provide the actual questions used for assessment, which made it difficult to make comparisons between the studies (e.g., Laraque, et al., 1997). Other studies did provide a listing of questions used to measure various constructs (e.g., Rahman, Berenson, & Herrera, 2013; Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003); however, there was a lack of consistency across studies making it difficult to identify the most appropriate items to include. Nonetheless, while comparisons to these studies were made in order to place items in the appropriate factor for the CFA, this particular study remained limited to the questions included in the previously collected data.

An alternative interpretation of these findings is that the HBM framework does not apply to this population in the manner in which it was hypothesized. The HBM may be an appropriate model with strong predictive capability for other populations; however, perhaps it does not apply to adolescents, particularly those at high risk for dropping out of high school, in the same way it would for other populations. In general, adolescents in this stage of development are transitioning from childhood to adulthood and are in process of forming their own identities (Kroger, 2006). Perceptions of self are still developing, which may result in shifting perspectives and perceptions of the various aspects comprising the HBM. Furthermore, it is clear from research that adolescents at high risk for dropping out of high school are often faced with numerous other issues on a daily basis (Cornell, Gregory, Huang, & Fan, 2013; Suhyun, Suh, & Houston, 2007).

Their lives are constantly changing and what is deemed important and necessary may vary from one day to the next. For example, the construct of perceived severity, while unable to be tested, may have been inherently flawed by the nature of the questions for this particular population. Questions such as “If I have sex during my teen years, then I am less likely to graduate from high school” and “if I have sex during my teen years, then I am less likely to have the career I am hoping for” imply that these are obtainable goals regardless of the youth’s sexual activity. However, this population is struggling academically and already has a diminished likelihood to graduate from high school. Career opportunities are likely limited due to potential lack of educational attainment, thus, the consequences of engaging in unprotected sex that represent severity for this population are likely to vary from youth that are on track to graduate and have intentions to pursue higher education.

In spite of the limitations encountered during the confirmatory factor analyses, understanding condom use intentions with the HBM as a guide has merit and should continue to be explored. The exploratory factor analyses conducted, as part of this study, were able to identify constructs that better represented this dataset while still building on the framework of the Health Belief Model. A discussion of the findings from the EFA is below.

Discussion of Exploratory Factor Analysis

The findings of the EFA reinforce the notion that the Health Belief Model has merit when assessing youths’ intentions to use condoms. The results of the EFA were interesting in that several constructs that could not be fully assessed through the CFA were still clearly present in the subsequent analysis. Results supported the use of the HBM with some of the constructs aligning perfectly with the previously hypothesized HBM constructs. Other constructs appeared to improve upon the existing HBM by providing more distinct constructs that better reflected the perspectives of this population. Newly constructed factor sets seemingly identified nuances in the dataset providing a stronger representation of the HBM with distinct factors. This was demonstrated by some of the hypothesized HBM factors were broken down into multiple smaller factors representing different aspects of the overall HBM construct. A discussion of how each of

the identified factors relate to the Health Belief Model and is supported by the literature, along with recommendations for improvement is provided in the next section.

Factor 1: Partner Efficacy

In the CFA, *Perceived Self-Efficacy* was hypothesized to include items related not only to having access to a condom, but being able to use it in a variety of situations. Several of these items loaded on the first factor, *Partner Efficacy.* This was the strongest factor, representing 24% of the total variance in the model. Upon review of these items, efficacy was clearly a prominent theme; however, these particular items tended to emphasize the role of the partner. Adolescents' perceptions of being able to ultimately use a condom relied heavily on their perception of their partners' supportive role. This is not surprising since peer relationships play such a significant role in condom use decision-making for adolescents and further supports the evidence that youth are more likely to engage in condom use if their peers support condom use (DiClemente, 1991; Kapadia, Frye, Bonner, Emmanuel, & Samples, 2012; Potard, Courtois, & Rusch, 2008).

Interestingly, items relating to having the confidence to take action and get a condom irrespective of a youth's partner did not load on this factor; however, they did group together in another subsequent factor not included in the final model due to having too few items. One conclusion is that this is an important concept to this population that represents some other facet of efficacy. Baele, Dusseldorp, and Maes (2003) found condom use self-efficacy to be a multidimensional construct, which further supports the idea that there is more to self-efficacy than is represented in this particular construct. Building on this two-item factor with the addition of items directed toward this concept, and other forms of efficacy may result in a more-encompassing generalized efficacy factor or additional independent factors altogether. The weakest item on this scale ("I can use a condom, even if the room is dark.") is the only item that does not specifically mention the term "partner" and thus supports this notion. Inclusion of items that describe a youth's ability to use a condom without mention of a sexual partner may be of benefit to providing a more complete model.

Factor 2: Interpersonal Barrier – Partner Trust

In the HBM, the hypothesized factor of *Perceived Barriers* contained a broad range of potential barriers. While a complete factor representing all barriers did not factor out in the EFA, there were several subsets of barriers that did present as individual factors. The second factor, *Barrier – Partner Trust,* was the strongest representation of barriers in the dataset accounting for nearly 10% of the variance in the model. Each of the barriers in this factor is related to the relationship and perceptions of the youth's partner, specifically, levels of trust in the relationship. This factor as a specific barrier is not surprising given this is an adolescent population and peer relationships are pivotal in decision-making about risky behaviors (Gardner & Steinberg, 2005). The roles peers play in decision making is critical to adolescents. One might conclude that *Partner Efficacy* and *Interpersonal Barrier – Partner Trust* reflect opposite sides of the spectrum. Namely, partner efficacy refers to the confidence a youth has to use a condom given support of their partner, while this barrier construct represents the challenges that arise if a youth perceives a partner as not supporting condom use. This aligns with the idea that given the dynamics of an intimate relationship, a partner can pose a significant barrier if he/she does not want to use a condom (Tschann, Adler, Millstein, Gurvey, & Ellen, 2002).

Some of the questions associated with this factor imply the youth is in a committed relationship (e.g., "My sexual partner is likely to break up with me if I said we had to use a condom."), which may impact the emphasis of this factor by leaving out key components that may be more applicable to casual sexual encounters. The ambiguous nature of several questions allows for different interpretations for different types of relationships, which strengthens the applicability of this factor. Partner perception appears to be pivotal for this group of adolescents, thus inclusion of additional items that encompass the concept of partner trust from the perspective of alternate types of sexual relationships could help improve the strength of this factor.

This factor appears to hone in on a more specified concept of trust, namely, how a partner might perceive condom use and how those perceptions may impact the partner's trust in

the youth. Other research has focused in on a different aspect of trust and describe how condom use can be affected depending on the level of trust an adolescent has in their partner (Mustanski, DuBois, Prescott, & Ybarra, 2014). This may suggest that partner trust is merely one facet to a more encompassing definition of trust. Expanding on this notion of partner trust, additional items that represent the levels of trust youth have in their partner may strengthen this factor or present an additional factor for consideration.

Factor 3: Structural Barrier –Accessibility

The third factor, *Structural Barrier – Accessibility,* is another subset of barriers that was particularly relevant to this population. This grouping of barriers is the only factor that combined items hypothesized to be from multiple constructs in the HBM, namely *Barriers* and *Self-Efficacy*. Interpretation of items that originally were thought to reflect the level of confidence in youths' ability to access a condom and subsequently use it were in fact the opposite and presented as barriers (e.g., "I can get condoms." and "It is easy for me to have a condom with me all of the time.") indicating that accessibility to condoms is more than just having the financial means to purchase them.

In alignment with the literature, which has shown that cost is often a barrier to condom use (Cohen, Scribner, Bedimo, & Farley, 1999; Sarkar, 2008), this factor did not focus heavily on items that point toward accessibility being solely a cost-related issue. This suggests that accessibility is not limited to cost, but to other potential limitations to accessibility, such as convenience ("It is too much trouble to carry around condoms.") and availability ("I can get condoms."). While this factor appears to be well-rounded and encompasses a variety of accessibility options, adding in supplementary items that reflect accessibility issues that are related to cultural or familial norms that appear to be lacking and may ultimately strengthen this factor. For example, some youth may have other points of access that make obtaining a condom easier, such as a parent or friend. Conversely, youth that lack access due to parental restrictions or cultural norms may face different types of accessibility issues that are not fully captured in this factor.

It is important to note that this was the only factor that demonstrated low inter-item correlations between variables, which, according to Netermeyer, Bearden, and Sharma (2003), may be more appropriate if the aim is to measure a broad construct. In particular, the items "Condoms cost too much." and "It is easy for me to have a condom with me all of the time." demonstrated a significant correlation that fell outside of the generally accepted guidelines (r = .144, $p < .05$), which may lead to the conclusion that structural barriers are actually a more general construct that encompasses more than merely monetary cost and physical accessibility. Additional investigation into this area may result in a stronger generalized factor.

Factor 4: Benefits – Prevention of Negative Health Outcomes

The fourth factor identified as *Benefits – Prevention of Negative Health Outcomes* aligned well with the HBM and matched the hypothesized *Benefits* factor with very strong factor loadings on two of the three items. This finding was anticipated since the included items reflect the most common perceived benefits of condom use by youth, namely pregnancy and STI prevention (Laraque, McLean, Brown-Peterside, Ashton, & Diamond, 1997; Widdice, Cornell, Liang, & Halpern-Felsher, 2006), and thus represents a strong focus on prevention of the negative consequences resulting from risky sexual behavior.

Each of the included items maintained emphasized key health outcomes as potential benefits. While these benefits are important and a critical piece in the overall picture, this model was limited to three items and only accounted for approximately 7% of the variance in the model, indicating it may not fully encompass all of the potential health benefits of condom use perceived by youth. To say the only perceived benefits for condom use are STI and pregnancy prevention is shortsighted. Looking at benefits as a broader concept that is inclusive of different types of benefits may improve this factor or result in subsequent factors. This is supported by the presence of a 7th factor, not included in this final model due to having only two items, that grouped together items related to educational and career goals. Further exploration of these is warranted with the inclusion of more specific items linked to these particular types of benefits. Given the strong emphasis of the partner role found in other factors (i.e., *Partner Efficacy* and

Barrier: Partner Trust) and expected influence of the youth's peer group, additional items related to the benefits that result from the perception of being more accepted by one's peer group would be appropriate to investigate further. Inclusion of items representing both interpersonal benefits (e.g. "My partner would be happier if we used a condom." or "My parents would be proud of me if I used a condom.") and educational benefits (e.g., "I am more likely to graduate from high school if I use a condom during intercourse.") might capture a more comprehensive factor representing perceived advantages to condom use among adolescents.

Factor 5: Susceptibility

In the HBM, three items were hypothesized to represent *Susceptibility*; however, it was unable to be tested due to identification issues. Results of the EFA found these same three items to load together on the same factor, thus retaining this aspect of the HBM with this sample population. Since this factor had fewer items than other constructs and explained approximately 7% of the variance in the model, there is potential room for improvement.

Similar to the *Benefits* construct, one might conclude that unwanted pregnancy and contraction of an STI are not the only perceived risks for adolescents who are engaging in risky sexual behavior. While it was previously suggested that two items that loaded onto the 7th factor, not included in the final model, might fit well with benefits, it is possible that slightly revised versions of these items might reflect something more to do with a broader definition of susceptibility that extends beyond health risks (e.g., "If I get pregnant from having sex without a condom, then I am less likely to have the career I hope for." or "If I get pregnant during my teen years, then I am less likely to graduate from high school."). Further investigation and inclusion of additional items such as these may result in additional susceptibility related factors or a more generalized susceptibility factor.

Factor 6: Physical Barriers – Comfort

The final factor included in this model included three items from the originally hypothesized HBM construct *Barriers*. Two of the three items clearly related to physical comfort and had the strongest factor loadings, while the third item ("Condoms make you not want to have

sex because you have to stop to put one on.") did not provide the same emphasis on physical comfort that would be expected. Nonetheless, this factor was identified to be a subset of barriers and was subsequently identified as *Physical Barriers – Comfort*.

Condom comfort as a barrier is widely discussed in the literature in terms of reducing sexual pleasure and subsequently diminishing condom use (Brown, DiClemente, Crosby, Fernandez, Pugatch, Cohn, Lescano, et al., 2008; Hensel, Stupiansky, Herbenick, Dodge, & Reece, 2012); thus, identifying this factor as such seemed appropriate in spite of the third item not quite fitting with the model in the way expected. This factor needs further assessment to ensure it is appropriately labeled and strengthened overall. Additional questions regarding how condoms feel during intercourse may assist in achieving this goal and may ultimately result in the removal of the third weaker item. Another possibility is that these items were prematurely labeled and represent some other construct not fully developed with these three items. Either way, additional focus should be given to these questions and investigation into improving this factor should be explored.

Exploratory Factor Analysis Summary

Using the Health Belief Model as a guide, the exploratory factor analysis conducted in this study was able to identify 26 items that fit into six factors explaining 67% of the variance in the model. This means that almost a third of the variance can be explained by either other independent constructs (e.g., different types of efficacy), or by stronger versions of the current factors (e.g., enhanced versions of susceptibility). As discussed in the previous section, many of these factors have room for improvement and should be investigated further. Enhancing the factors through the addition of new items, removal of weaker items, or rewording of existing items has the potential to strengthen the model identified in this analysis and ultimately explain a greater amount of the variance explaining adolescents' intentions to use condoms. While this dataset did not present with an identical match to the HBM, elements were clearly present reinforcing the strength of the HBM and its use as a guiding theoretical framework. This should not be an indication that the findings were weak; rather, it provides a firm foundation to guide

additional research on which to develop an even stronger model. Additional EFAs should be conducted on smaller samples in order to refine the model before a CFA is employed to confirm the structure of a final model to be used to predict intentions to use condoms among adolescents. Specific interest should be applied to addressing components of the HBM not present (i.e., *Perceived Severity, Perceived Threat*, and *Cues to Action*). Once the factors were determined, an assessment of the relationship between each individual factor and two items measuring intentions to use condoms and condom use behavior were explored.

Discussion of Relationship Between Factors, Condom Use Intentions and Condom Use Behavior

While the previous section focused on the many different opportunities for enhancing and improving the identified factors, it is important to investigate the strength of these factors, as they currently exist. Identifying which factors influence condom use intentions and behavior for this population reinforces the appropriateness of the HBM framework and has the added benefit of reinforcing which factors should be addressed for possible limitations as well.

Each factor was run independently to avoid potential issues with interaction effects; however, future studies should investigate the relationships between the factors in greater detail. It is important to note that although the Proportional Odds Assumption was violated for all of the regressions assessing the relationship of each factor to intentions. This is common for ordinal regression with larger sample sizes. It is common to proceed with interpretation of the findings; however, such results should be interpreted with caution (Williams, 2006). Additional analyses using multinomial logistic regression as an alternative approach to deal with this violation are recommended.

As anticipated, all of the factors in the model, with the exception of *Susceptibility,* were significant predictors of intentions to use condoms (See Figure X.X), further emphasizing there is merit in using the Health Belief Model as a framework to guide the development of an instrument to predict condom use intentions in academically at-risk adolescents. Four of the six factors were significant predictors of condom use behavior, while *Partner Efficacy* and *Susceptibility* were not (See Figure X.X). Unfortunately, it is difficult to compare these findings to other research due to

the broad range of definitions for different constructs, which is often considered a limitation of the Health Belief Model. In spite of this weakness, these findings are promising suggesting that certain factors may have an impact on more than just intentions.

Factor 1: Partner Efficacy

Partner Efficacy is one of two factors that predicted intentions, but not behavior. It was difficult to compare this factor to the literature due to the various definitions and types of efficacy found in studies investigating condom use intentions and behavior. One particular study reported findings from six different self-efficacy scales, as well as a global self-efficacy scale, which when combined explained 51% of the variance in intention to use a condom (Baele, Dusseldorp, & Maes, 2001). This speaks to the complex nature of efficacy and suggests that while the factor identified in this study, *Partner Efficacy,* only explained 24% of the variance in this model; this factor is likely a critical component. *Partner Efficacy* may be conceptualized in the literature under a different construct name; however, it has been difficult to identify. This is a very promising finding since there is the potential that efficacy presents in a new form not previously investigated for this population. Especially in light of the fact that other forms of efficacy (e.g., self-efficacy) have also been associated with condom use intentions (Ozakinci & Winman, 2006).

Factor 2: Interpersonal Barrier – Partner Trust

The factor *Interpersonal Barrier – Partner Trust* was a significant predictor of both intentions to use condoms, as well as behavior. For every unit change in *Interpersonal-Barrier – Partner Trust* scale, there was a greater percentage of change on intentions than on behavior. While this finding speaks to the importance of peer group influences on both intentions and behavior, it suggests that the perception of how a youth is perceived by their sexual partner has greater influence over intentions than actual behavior. This could imply that if a youth believes their partner would approve of condom use, they are more likely to intend to use a condom out of a desire to please their partner, but if that may not translate into actual behavior as strongly as would be expected.

Factor 3: Structural Barrier - Accessibility

The factor *Structural Barrier – Accessibility* was the weakest of the significant predictors for both intentions and behavior. This could be the result of the factor not fully representing all types of accessibility barriers. Research has demonstrated mixed results regarding the role of this type of barrier. Parsons, Halkitis, Bimbi, and Borkowski (2000) found that the perceived costs were not predictors of condom use in older adolescents, which is contrast to the findings of Mustanski, et al. (2014), who found that adolescent gay and bisexual males reported cost as prohibitive. Since the majority of adolescents have access to and obtain condoms from a retail store (Klein, Rossbach, Nijher, Geist, Wilson, Cohn, Siegel, & Weitzman, 2001), it stands to reason that cost would continue to contribute to behavior.

Factor 4: Benefits

The factor *Benefits* is one of two factors that predicted intentions, but not behavior. One possible conclusion is that while perceived *Benefits* may lead youth to intend to use a condom, they are not strong enough to ensure a youth follows through with their behavior. This is interesting, and may be a reflection of the difficulty youth face in balancing the perceived benefits of using condom with the benefits of engaging in intercourse irrespective of the negative consequence that might arise if they do not use a condom. Interestingly, researchers have found that the benefits of not using a condom were stronger predictors of risky sexual behavior than the perceived benefits of using a condom (Parsons, Halkitis, Bimbi, & Borkowski, 2000). This perceived struggle is one possible explanation of the results obtained in this study and may suggest a possible correlation between *Benefits* and *Physical Barriers - Comfort*.

Factor 5: Susceptibility

Susceptibility is the only factor that was not determined to be a significant predictor of intention to use condoms; however, it was a significant predictor of condom use behavior. This finding is interesting due to the negative relationship between the factor and condom use behavior. Higher scores on the *Susceptibility* scale were related to approximately a 10% decrease in condom use behavior. One possible interpretation is that the poor wording of the

questions influenced the outcomes. Each of the items measuring *Susceptibility* implied that risky sexual behavior is related to susceptibility; however, the questions did not actual explicitly state that sex without a condom results in the negative outcome (e.g., “If I have sex, I will get AIDS.”). This factor was identified assuming that youth were interpreting these consequences to be the result of engaging in sex *without* a condom (e.g., “If I have sex *without a condom*, I will get AIDS.”); however, this may have been erroneous. Another possibility is that the items were interpreted without the implication that condoms were actually used (e.g., “If I have sex *with* a condom, I will get AIDS.”). The last interpretation would make the most sense of these results, indicating that youth believe that sex with a condom does not make them more susceptible. It is clear that these items need to be reworded for clarification purposes, which may result in a different relationship between this factor and both intentions and behavior. Given that these findings contradict other findings where perceived susceptibility was found to predict condom use skills and subsequent condom use (Kalichman, Stein, Malow, Averhart, Dévieus, Jennings, Prado, & Feaster, 2002), further investigation into this factor is warranted.

Another possible interpretation of these findings is that youth did interpret the items as implying risky sexual behavior and thus do not perceive these negative consequences as applicable to them. This is similar to the findings of Wulfert and Wan (1993) who found that in spite of being aware of the risks, college students did not perceive themselves to be vulnerable to the negative consequences associated with risky sexual behavior. Other studies have found that perceived invincibility, meaning youth are aware of the possibility of negative health outcomes, but believe they will not happen to them provides some insight into the mindset of teens (Mustanski, DuBois, Prescott, & Ybarra, 2014). Another study examining adolescent perception of invincibility, found that when adolescents believe the odds of a negative consequence is so remote that it could not possibly happen to them, then the benefits of taking the risk outweigh the potential consequences (Wickman, Anderson, & Greenberg, 2008). Further investigation to determine how “invincibility” may be influencing responses may provide additional insight into the predictive ability of this factor. It is interesting to note, that roughly half of the sample reported

having never been tested for an STD (*n* = 374). This further speaks to the notion of invincibility and offers further support that this particular population does not see themselves at risk and in need of testing, in spite of the fact that such a large proportion of them are reporting risky sexual behaviors.

Factor 6: Physical Barrier - Comfort

The factor *Physical Barrier – Comfort* was found to be a significant predictor of both intentions and condom use behavior. This was one of the strongest factors, demonstrating the greatest likelihood of increasing each outcome variable based on a one point increase on the *Physical Barrier – Comfort* scale (39.9% and 28%, respectively). This is in alignment with literature that emphasizes the commonly held belief that the use of condoms reduces sexual pleasure and subsequently negatively impacts the likelihood of condom use (Brown, et al., 2008; Randolf, Pinkerton, Bogart, Cecil, & Abramson, 2007). Some have even found not using a condom actually serves as a benefit by increasing pleasure (Widdice, Cornell, Liang, & Halpern-Felscher, 2006).

One may conclude that if the newly constructed 6-factor model has predictive capabilities in its current state, there is significant potential to become even stronger predictors by strengthening these factors. Nonetheless, with five out of six factors demonstrating significant results as predictors of intentions, the results are very promising and continue to reinforce the strength of the HBM as a guiding model. The fact that not all of the items predicted behavior is slightly discouraging, especially since the items that did present as predictors explained so little of the variance in the model. This suggests that the reasons a youth will choose to use a condom are more complex and are explained by things other than the factors presented in this model.

Relationship Between Intentions and Condom Use Behavior

Perhaps the most impactful finding relates to the relationship between intentions and behavior. Adolescents in this sample who report greater intentions to use a condom were more than twice as likely to report actually using a condom. This matches previous work that found relationships between intentions and behavior with other adolescent populations (Brown,

Diclemente, & Park, 1992). This model only accounted for a relatively low amount of the variance in the model (16.5%), which means there are other factors at play that inform why a youth actually uses a condom that should be investigated. This predictor is clearly a critical component; however, further work should be done to determine what other factors contribute to condom use behavior.

Discussion of Role of Developmental Assets

Developmental assets did not have a moderating impact on the relationship between intentions and behavior as hypothesized. Knowing that developmental assets reflect the strengths youth have to navigate adolescence (Benson, 1997) it was expected that they would demonstrate a stronger impact. Surprisingly, they had no impact at all as hypothesized. Since no studies to date have looked at developmental assets as a moderator of this relationship, it is difficult to assess this in relation to the literature; however, since support has been provided that assets are associated with risky sexual behavior (Evans, Sanderson, Griffin, Reininger, Vincent, Parra-Medina, Valois, & Taylor, 2004), it can be concluded that assets may not modify the strength of the relationship between intention and behavior, but have a different role. Perhaps assets are an additional outside factor that when used in conjunction with aspects of the HBM provide stronger predictive capability. Further testing is required in order to assess this possibility.

One limitation to this analysis was due to using total assets as the only measure to assess the moderating effects. While it is expected that overall assets would provide the broadest picture, perhaps the moderating effects are more nuanced. Assessing specific categories of assets could provide a clearer picture as to the impact of developmental assets on this relationship. Certain categories appear to be more applicable, such as *Social Competencies*, which includes items such as “I avoid things that are dangerous or unhealthy.” and “I resist bad influences.” in contrast to categories such as *Commitment to Learning*, which includes items such as “I enjoy reading.” and “I enjoy learning.”. By using the total score in the analysis, subtle findings on various sub-categories of assets may have been diffused and subsequently lost in the analysis using the overall asset score.

The distribution of assets for this population may have also contributed to the lack of findings. Nearly three quarters of the sample fell into either the Fair or Good category, meaning there are varying levels of room for improvement. This significantly skewed the sample even once the variables were centered. With so few having higher or lower asset levels, this variable really did not provide the amount of variability necessary to fully assess how having more assets could impact the relationship between intentions and behavior.

Limitations

The limitations of this study are primarily related to the instruments and measures used to develop the constructs. Since this was a secondary analysis of data, there was not an opportunity to review the questions ahead of time and ensure that the number and type of questions being asked was adequate and complete. Specifically, the phrasing on some of the questions was ambiguous and could allow for multiple interpretations. Replicating questions that had been used in previous studies examining condom use in the framework of the Health Belief Model would have been ideal, but this was not feasible since the data collection was already complete. In addition, while many questions were hypothesized to fit the proposed models, the items for each construct were not exhaustive and were often found to be lacking enough items to adequately represent the construct being measured.

While the Developmental Assets framework has been used extensively across a variety of populations and subpopulations, its focus has been primarily with youth age 12 – 18. Although the application of the Developmental Assets framework has begun to be explored with older adults (Pashak, Hagne, Allen, & Selley, 2014), there is still work to be done to confirm the application of the framework with older populations. Youth enrolled in this study are age 17-19, which places some outside the age range supported by the literature. The Developmental Assets framework likely still has merit and should be explored, even with older adolescents; however, the possibility that some of the assets are not as applicable to older youth should be considered as a potential limitation.

The cross-sectional nature of the data presents another limitation to the current study. Carpenter (2011) emphasizes the importance of longitudinal studies in drawing conclusions about the predictive validity of the Health Belief Model. He cites Rosenstock's (1966) concerns about changing perceptions regarding a behavior since the person first adopted that behavior, suggesting that a person may change their perceptions to better fit the behavior they are engaging in. He hypothesizes the potential for "inaccurately strong estimates of the relationships between the HBM variables and behavioral adoption for the target preventative behavior" (Carpenter, 2011, p. 662). In contrast, Janz and Becker (1984) suggest the opposite, in which a person who has already adopted the health behavior (e.g., condom use) may perceive themselves as less susceptible to negative effects (e.g., getting pregnant). The same is true for severity if the target behavior reduces the severity of the negative outcome (Janz & Becker, 1984). If a person engages in the health promoting behavior and finds the barriers are not as severe, perceptions of existing barriers may also change (Janz & Becker, 1984). Despite these limitations, this study provided insight into the factors predicting condom use in sexually active adolescents through a model rooted in the foundations of the Health Belief Model and can serve as a springboard to future longitudinal studies.

Threats to Internal and External Validity

Threats to both the internal and external validity of a study can have a significant impact on the findings and subsequent conclusions. Due to the cross-sectional nature of this study, many common threats to internal validity are not applicable. One potential threat to the internal validity was maturation. Due to the length of the survey it is possible that participants experienced fatigue and as a result did not provide accurate responses. This is particularly important to the current study since the Developmental Assets Profile (DAP) is the final set of questions on the survey. A large portion of the original study sample was excluded due to incomplete data responses for the DAP, which may also account for the lack of significant findings testing the moderating effect of the developmental assets.

Sample selection biases posed another threat to the internal validity of this study, which may be due to the way in which participants were targeted for the original study. Participants targeted for recruitment were age 17-19; however, younger participants (17 year olds) required parental consent in addition to student assent. This made it more difficult to get completed paperwork in order to allow participant participation. At the start of the original study a noticeable skewness in the age of participants was identified due to this issue. Additional refresher training was provided to recruitment staff in order to prevent this from continuing to occur, nonetheless, this may have impacted the overall findings.

Another threat to the internal validity of this study relates to instrumentation. While all participants were provided the same survey, the means by which the data was collected varied. The majority of participants took the survey in an online format; however, in rare instances technology failed and it became necessary to complete the survey in a paper/pencil format. The method by which the surveys were administered also varied between participants with some participants taking the survey in a computer lab at their home school campus alongside other participants and others taking the survey individually outside of the school setting. For surveys administered in person, a trained survey administrator was present regardless of the format of the survey or how it was administered; therefore, the impacts of these differences in instrumentation should have been minimal.

Due to the cross-sectional nature of this study, it is difficult to achieve external validity and generalize the findings to a larger population. The targeted participant selection does not allow for generalizability beyond the population under investigation. Further replication of this study with diverse populations could address this issue.

Implications

In spite of the aforementioned limitations, this study has numerous promising findings and provides insight into condom use among adolescents. Additional research is needed; however, this study provides a springboard for policy makers and practitioners who are working in

the field of adolescent sexual health to better target resources and programming to meet the needs of the today's youth.

Implications for Social Work Policy

While there has been a decline in adolescent pregnancy in recent years, the teen pregnancy rate remains high. The progress that has been made may be partially attributed to some of the policies put forth to address the needs of adolescents. Specifically, the development of the Office of Adolescent Health, an entire agency dedicated to addressing the health needs of youth, suggests that policy makers are on the right track when addressing this issue. Nonetheless, as policymakers continue to address the challenges of adolescent sexual health, it is essential that policies be put into place that promote rigorous scientific investigation in this area and provide adequate funding to ensure quality research is conducted. Policymakers should continue to fund programs aimed at improving adolescent sexual health through improving condom use among at risk youth. It may be necessary to return to the basics in trying to better understand the motivations for different groups of youth. Knowing that intentions are such a strong predictor of behavior, more support towards finding what influences intentions is vital to increasing condom use behavior among sexually active youth.

Federal, state, and local policies that encourage comprehensive sexual health programs are imperative. While abstinence is the most effective way to prevent unwanted pregnancy or STIs, the success of 'abstinence-only' programs to reduce risky sexual behavior and the subsequent outcomes has not been demonstrated (Kohler, Manhart, & Lafferty, 2008). Nonetheless, policies remain that require abstinence be the primary focus of sexual health education programs (Guttmacher Institute, 2015). It is clear from this sample that there is a large portion of the adolescent population that are sexually active and need adequate education and resources in order to become fully informed. Policies that support education of youth on proper condom usage are critical to ensuring youth have the knowledge, skills, and accessibility to resources to adequately protect themselves from the negative consequences of risky sexual behavior.

Another policy implication of this study is that there is a great need to identify and document what is effective when working with this population. Anecdotal evidence suggests that there may be numerous programs currently in place throughout the United States that are generating positive results among their adolescent populations; however, they lack the resources and skills to be able to document and disseminate these findings. Providing funding that is contingent on ensuring a rigorous evaluation is conducted is imperative; however, adequate resources need to be available to educate and support programs attempting to do such. Dissemination of these findings should also be encouraged in order to inform other communities working with at-risk adolescents and further inform the field.

Implications for Social Work Practice

From a clinical perspective, this study is unique in that it provides some insight into a very difficult-to-reach population with which there has been little previous research, specifically older adolescents that are at high risk for dropping out of high school. The transient nature of this population makes them difficult to reach, and while they are still considered adolescents, they are in a transition period to adulthood. This presents a different range of challenges as compared to younger populations. The youth in this study are rarely studied due to the implicit difficulty associated with working with high-risk older adolescents. Basic descriptive characteristics of this population provided by this study can inform practitioners of the needs of this group of adolescents. Not only are the overwhelming majority of these adolescents sexually active, most are not using condoms consistently, if at all. Targeting interventions for these youth at an earlier age might have lasting impacts that could carry through as adolescents age and move into young adulthood. In addition, this study can help inform interventions targeting the reduction of risky sexual behavior with at-risk youth. The factors that have been identified to have predictive ability towards intentions to use condoms should be built into programming in order to enhance the effects to ultimately change behavior.

Lastly, the strongest contribution this study brings to practice is providing a foundation to develop a complete scale that could be used to predict adolescent intentions to use condoms.

Developing a valid and reliable psychometric instrument has far-reaching implications in the field of adolescent sexual health. A standardized instrument would not only allow for consistency across practitioners attempting to measure adolescent intentions, but would also allow for comparisons to be made between different communities and populations. This would provide practitioners with an invaluable resource to objectively assess the needs of the youth in their community and better target interventions, which could ultimately impact outcomes related to unwanted pregnancy and contraction of STIs in this population.

Implications for Future Research

While this study has provided insight into a population that has not been investigated in the past, there are numerous other at-risk adolescent populations that should be examined in future research. A significant gap in the literature exists for various subpopulations of adolescents including Lesbian, Gay, Bisexual, Transgender and Questioning (LGBTQ) youth and pregnant/parenting youth. While some of the participants in this study may identify with one or more of the aforementioned categories, the impact of belonging to that subgroup on the overall findings was not explored. Continued investigation into the needs of these groups is important to meeting the needs of these underserved and often overlooked populations.

Additional investigation into possible modifying variables is critical. Examining the types of relationships in which youth are engaging can provide valuable information to better inform research into condom use intentions. Youth engaged in casual sexual encounters may have differing perceptions regarding condom use compared to youth engaged in long-term committed relationships. Gender differences, pregnant/parenting status, and academic statuses (e.g., dropouts compared to youth on target for graduation) are also likely to have a significant impact on perceptions and subsequent behaviors. Socioeconomic status should also be considered. None of these variables were considered as part of this study, yet merit further investigation.

There should continue to be rigorous program evaluations utilizing randomized control trials to evaluate new and innovative practices being implemented with youth in order to contribute to the evidence base. *Cues to Action*, a factor in the HBM, is noticeably missing from

this study, as well as other studies that have been conducted under the HBM framework. This is due to the difficult nature of quantifying this factor; however, properly managed evaluations can provide great insight into program effects that may be representative of this missing factor. Building on the findings of this study, findings from program evaluations may assist in providing a more complete picture of what influences youth to intend to use condoms.

Lastly, the results of this study have shown the factors that contribute to the likelihood youth will use condoms are more complex than originally hypothesized. Researchers should continue to incorporate a variety of methodologies to ensure a complete picture of adolescent sexual health is captured. Using validated instruments as representations of the factors could allow for more consistency across studies and allow for replication. Assessing factors quantitatively in conjunction with semi-structured interviews or focus groups may aid in extrapolating a more thorough understanding of meaning behind the factors identified.

Conclusion

The overarching purpose of this study was to gain insight into what motivates youth to intend to use a condom and subsequently actually use a condom during sexual intercourse. The aim was to verify that the Health Belief Model was an appropriate framework for assessing this relationship and to investigate the impact of developmental assets on that relationship. When it was discovered that this could not be adequately tested via CFA, it became necessary to approach the analyses differently in order to achieve the overall goal of the study. A subsequent EFA determined that a six-factor model comprised of 26-items provided the best representation of this dataset. Characteristics of the originally hypothesized HBM were clearly still present, which provides support for the effectiveness of the HBM in predicting condom use intentions with this group of academically at-risk adolescents. Additionally, new factors emerged that appeared to represent distinct aspects of HBM constructs, ultimately providing a more complete picture for predicting condom use intentions. Subsequent analyses found that all but one of these factors were strong predictors of intentions to use condoms. Several factors also demonstrated predictive abilities of condom use behavior. Findings indicated that youth that intended to use a condom

were more than twice as likely to actually use a condom, which reinforces the need to identify what motivates youth to intend to use a condom. While the developmental assets did not show to have a moderating effect on this relationship, it should be investigated further to ascertain what impact, if any, they have on condom use intentions and behavior. This study has resulted in a data driven model with strong theoretical foundation. In spite of the potential limitations, the findings have demonstrated that the model has predictive abilities and has laid the groundwork upon which to more fully understand what factors influence youths' intentions to use a condom and ultimately make the decision to actually use one rather than to engage in risky sexual behavior.

Appendix A

Sample Informed Consent Forms for Original Study

UNIVERSITY OF TEXAS ARLINGTON

INFORMED CONSENT

PRINCIPAL INVESTIGATOR NAME:
Dr. Diane Mitschke, University of Texas at Arlington

TITLE OF PROJECT
Evaluation of Arlington Independent School District's *Crossroads* Pregnancy Prevention Program

INTRODUCTION
You are being asked to participate in a research study. Your participation is voluntary. Please ask questions if there is anything you do not understand.

PURPOSE:
We are inviting you to be part of an evaluation of Arlington Independent School District's *Crossroads* Pregnancy Prevention Program. This research study is being done by the University of Texas at Arlington and is paid for by funding received from the Office of Adolescent Health. This study will involve more than 1000 youths in Arlington, TX. The purpose of the study is to learn information about how to prevent teen pregnancy and promote high school graduation or GED completion. You were selected because you are enrolled in the Arlington Independent School District's Dropout Prevention Program.

DURATION:
If selected to participate in the evaluation, you will be asked to complete up to three surveys over the course of a 6-month period. Each of the surveys may be completed online via a secure Internet connection and can be completed in 30 minutes.

PROCEDURES:
Participation in the evaluation is voluntary. You do not have to agree to participate in the study in order for you to get services through the AISD Dropout Prevention Program.

If you agree to participate you *may* be randomly selected to take part in the evaluation. If selected to participate in the evaluation you will be randomly assigned to either Group A or Group B. Group A participants will attend the *Crossroads* 3-Day Pregnancy Prevention Program, an Arlington Independent School District sponsored field trip taking place from 7:15 – 2:45 over the course of three days. During these three days you will learn about pregnancy and HIV prevention strategies, educational resources and community resources. School absences will be excused for participation in the 3-Day Program. If you are assigned to Group B you will continue to receive drop out prevention services and work with a graduation coach.

If you are assigned to either Group A or B, you will be asked to complete an online survey about your academic and career goals, sexual activity, method(s) to prevent pregnancy and sexually transmitted diseases, knowledge about sexually transmitted disease transmission, and your sense of involvement in school and community life. Answering questions should take about 30 minutes. Questions are a combination of multiple choice and true/false. This is not a test and there are no right or wrong answers. If you prefer, you can have the questions read to you instead of reading the questions yourself. You may skip any questions on the survey you do not want to answer or you may stop the survey at any time.

A member of the research team will administer all surveys. This may take place in a group setting or on an individual basis. If you take the survey with a group the research team will make sure you have privacy and that no one can see what your answers are while you are taking the survey. If you take the survey by yourself the research team will make sure you have a private area to complete the survey.

Your graduation coach or a member of the research team will contact you again to schedule up to two follow-up surveys. These surveys will be given at 3 and 6 months after the first survey. All of the answers you provide are confidential. We will not include any information with these surveys that will allow anyone outside the UTA program evaluation staff to know which answers are yours.

POSSIBLE BENEFITS:
There are no direct benefits to you for taking part in this study; however, the survey could help teachers and counselors learn about ways to improve services for you and other students like you.

COMPENSATION:
You will receive a $20.00 gift card to Wal-Mart for trying any part of the survey. You will receive a $20.00 gift card each time you take a follow-up survey. You may also be offered a raffle opportunity to win an MP3 player or digital camera at the end of the study.

POSSIBLE RISKS/DISCOMFORTS:
Some of the questions may seem personal or make you feel uncomfortable. If the survey is upsetting, you may stop taking the survey at any time. There will be UTA and AISD staff available to talk with you if requested at the time of the survey.

If it feels like the survey is taking too long, you are getting tired, or if for any other reason you wish to stop, you may do so at any time.

The survey is confidential. We may want to share the results of the survey with the funding agency. There will not be any information letting anyone outside the UTA program evaluation staff know which answers are yours.

ALTERNATIVE PROCEDURES/TREATMENTS:
If you do not wish to participate in this study, you will still be able to receive services from a graduation coach at AISD. Participating in the survey will not affect the services you receive.

WITHDRAWAL FROM THE STUDY:
Whether or not you participate in this evaluation is your choice. You can decide to stop participating in the study after it starts. Participating in the study will not affect your services at AISD or anywhere else.

If you have any questions about this study, you can contact the Project Evaluator, Dr. Diane Mitschke, at 817-272-3181. If you have any questions about protecting your privacy on this survey, please call the Chairman of the University of Texas at Arlington Institutional Review Board at 817-272-3723. Phone calls to area codes outside your own may involve toll charges.

NUMBER OF PARTICIPANTS: We expect 1440 participants to enroll in this study.

CONFIDENTIALITY:

UNIVERSITY OF TEXAS ARLINGTON

All of the answers that you give as part of this evaluation will be kept private. They will only be available to people involved with the project, except when required by law. There are two exceptions: 1) if you reveal that you are a danger to yourself or others; or 2) if you reveal abuse committed against a child. In either of these cases, we must report it to the appropriate authorities. This includes if you are being hurt or not taken care of, if a friend of yours is being hurt or not taken care of, or if you are hurting or not taking care of a child you are responsible for.

All information shared as part of this evaluation will be stored in a way that keeps your identity separate from the answers you give on the surveys.

If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, then The University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law. Your research records will not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with it, or with your participation in any study.

The Office of Adolescent Health will also have the legal right to review your research records. If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.

CONTACT FOR QUESTIONS:
Questions about this research or your rights as a research subject may be directed to Dr. Diane Mitschke at (817) 272-3181. You may contact the chairperson of the UT Arlington Institutional Review Board at (817)-272-3723 in the event of a research-related injury to the subject.

AUG 11 2014
APPROVED
AUG 11 2015
Institutional Review Board

UNIVERSITY OF TEXAS ARLINGTON

ASSENT SIGNATURES:

As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:

SIGNATURE OF PRINCIPAL INVESTIGATOR OR PERSON OBTAINING CONSENT DATE

PRINTED NAME OF PRINCIPAL INVESTIGATOR OR PERSON OBTAINING CONSENT

By signing below, you confirm that you have read or had this document read to you. You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. You understand that since you are under 18 years of age that your parent(s)/legal guardian(s) have consented for your participation.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

SIGNATURE OF PARENT / LEGAL GUARDIAN DATE

SIGNATURE OF MINOR PARTICIPANT DATE
(PARTICIPANT MUST BE UNDER 18 YEARS OF AGE)

PRINTED NAME OF MINOR PARTICIPANT

AUG 11 2014
APPROVED
AUG 11 2015
Institutional Review Board

UNIVERSITY OF TEXAS ARLINGTON

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SIGNATURE OF PARTICIPANT DATE
(PARTICIPANT MUST BE 18 YEARS OF AGE OR OLDER)

PRINTED NAME OF PARTICIPANT

AUG 11 2014
APPROVED
AUG 11 2015
Institutional Review Board

UNIVERSITY OF TEXAS ARLINGTON

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Dr. Diane Mitschke, University of Texas at Arlington

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The Office of Adolescent Health will also have the legal right to review your research records. If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.

CONTACT FOR QUESTIONS:
Questions about this research or your rights as a research subject may be directed to Dr. Diane Mitschke at (817) 272-3181. You may contact the chairperson of the UT Arlington Institutional Review Board at (817)-272-3723 in the event of a research-related injury to the subject.

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ASSENT SIGNATURES (UNACCOMPANIED MINORS ONLY):

As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:

SIGNATURE OF PRINCIPAL INVESTIGATOR OR PERSON OBTAINING CONSENT DATE

PRINTED NAME OF PRINCIPAL INVESTIGATOR OR PERSON OBTAINING CONSENT

By signing below, you confirm that you have read or had this document read to you. You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

SIGNATURE OF PARTICIPANT DATE
(PARTICIPANT MUST BE 17 YEARS OF AGE AND BE CONSIDERED AN UNACCOMPANIED MINOR)

PRINTED NAME OF PARTICIPANT

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CONSENTIMIENTO INFORMADO

NOMBRE DEL INVESTIGADOR PRINCIPAL:
Dr. Diane Mitschke, University of Texas at Arlington

TÍTULO DEL PROYECTO
Evaluación del programa de prevención de embarazo de *Crossroads* del Distrito Escolar Independiente de Arlington

INTRODUCCIÓN
Usted está siendo invitado a participar en un estudio de investigación. Su participación es voluntaria. Por favor, pregunte si hay algo que no entiende.

PROPÓSITO:
Le estamos invitando a ser parte de una evaluación del programa *Crossroads* de Prevención del Embarazo del Distrito Escolar Independiente de Arlington. Este estudio de investigación es realizada por la Universidad de Texas en Arlington y es financiado por fondos recibidos de la Oficina de salud de los adolescentes. En este estudio participarán más de 1,000 jóvenes en Arlington, TX. El propósito del estudio es conocer la información acerca de cómo prevenir el embarazo adolescente y promover la graduación de escuela secundaria o la finalización del GED. Usted ha sido seleccionado por que está inscrito en el programa escolar del Distrito de Arlington para la prevención de deserción escolar.

DURACIÓN:
Si es seleccionado para participar en la evaluación, se le pedirá completar tres encuestas en un período de 6 meses. Cada una de las encuestas se puede completar en el Internet a través de una conexión segura y se puede completar en 30 minutos.

PROCEDIMIENTOS:
Participación en la evaluación es voluntaria. No tiene que participar en el estudio con el fin de obtener servicios a través del programa de prevención de deserción escolar de AISD.

Si usted acepta participar, puede ser seleccionado al azar para tomar parte en la evaluación. Si es seleccionado para participar en la evaluación, será seleccionado al azar a un grupo A o un grupo B. Los participantes de Grupo A asistirán a una conferencia de tres dias del programa *Crossroad* y Prevención del Embarazo, una excursión patrocinado por el Distrito Escolar Independiente de Arlington de las 7:15 – 2:45. Durante estos tres días, aprenderá sobre estrategias de prevención del embarazo y la sida, recursos educativos y recursos de la comunidad. Absentismo escolar será excusado por participar en el programa por 3 días. Si se le asigna al Grupo B, seguirá recibiendo servicios de prevención de deserción escolar y seguirá trabajando con un entrenador de la graduación.

Si se asignan a cualquier grupo, A o B, se le pedirá que complete una encuesta en el Internet acerca de sus metas académicas y profesionales, la actividad sexual, el método(s) para prevenir el embarazo y enfermedades de transmisión sexual, el conocimiento de enfermedades de transmisión sexual, y su sentido de la participación en la escuela y la vida comunitaria. Respondiendo a las preguntas debería tomar unos 30 minutos. Las preguntas son una combinación de preguntas de

opción múltiple y de verdadero/falso. Esto no es una prueba y no hay respuestas correctas o incorrectas. Si lo prefiere, puede tener las preguntas leidas a usted, en lugar de leer las preguntas usted mismo. Puede omitir cualquier preguntas de la encuesta que no desea contestar o puede dejar el estudio en cualquier momento.

Un miembro del equipo de investigación administrará todas las encuestas. Esto puede llevarse a cabo en un ambiente de grupo o de forma individual. Si usted toma la encuesta con un grupo, el equipo de investigación se asegurará de que tenga privacidad y que nadie puede ver lo que son sus respuestas mientras que tome la encuesta. Si usted toma la encuesta por sí mismo el equipo de investigación se asegurará de que tenga un área privada para completar la encuesta.

Su entrenador de graduación o un miembro del equipo de investigación se comunicará con usted para programar dos encuestas de seguimiento. Estas encuestas se le dará a los 3 y 6 meses después de la primera encuesta. Todas las respuestas que usted proporcione son confidenciales. No se incluirá información de las encuestas que permitirá a cualquier persona ajena al saber qué respuestas son suyas. Sólo las personas de el programa de evaluación de UTA sabrán cuales respuestas son suyas.

POSIBLES BENEFICIOS:
No hay beneficios directos para usted por participar en este estudio, sin embargo, la encuesta podría ayudar a los maestros y consejeros de aprender sobre las maneras de mejorar los servicios para usted y para otros estudiantes.

COMPENSACIÓN:
Usted recibirá una tarjeta de regalo de $ 20.00 a Wal-Mart para intentar cualquier parte de la encuesta. Usted recibirá una tarjeta de regalo de $ 20.00 cada vez que tome una encuesta de seguimiento. También se puede ofrecer una oportunidad de rifa para ganar un reproductor MP3 o cámara digital al final del estudio.

POSIBLES RIESGOS / MOLESTIAS:
Algunas de las preguntas pueden parecer personal o pueda que se sienta incómodo. Si la encuesta es molesto, puede dejar de tomar la encuesta en cualquier momento. Habrá personal de UTA y AISD disponible para hablar con usted si lo solicita en el momento de la encuesta.

Si se siente como si la encuesta está tomando demasiado tiempo, usted se está cansando, o si por cualquier otra razón desea dejar, puede hacerlo en cualquier momento.

La encuesta es confidencial. Puede que queramos compartir los resultados de la encuesta con el organismo de financiación. No habrá ninguna información que personas fuera el personal de evaluación del programa de UTA sabra cuales respuestas son suyos.

PROCEDIMIENTOS ALTERNATIVOS / TRATAMIENTOS:
Si no desea participar en este estudio, aún podrá recibir servicios de un entrenador de graduación en AISD. Participaron en la encuesta no afectará los servicios que recibe.

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RETIRADA DEL ESTUDIO:
Si o no participa en esta evaluación es su elección. Puede decidir dejar de participar en el estudio después de iniciarse. Participando en el estudio no afectará a los servicios en AISD o en cualquier otro lugar.

Si usted tiene alguna pregunta acerca de este estudio, puede comunicarse con la evaluadora del proyecto, la Dra. Diane Mitschke, al 817-272-3181. Si usted tiene alguna pregunta acerca de su privacidad en esta encuesta, por favor llame al Presidente de la Universidad de Texas en Arlington Junta de Revisión Institucional al 817-272-3723. Las llamadas telefónicas a los códigos de área fuera de su propia pueden incluir tarifas.

NÚMERO DE PARTICIPANTES: Esperamos que 1440 participantes se inscriban en este estudio.

CONFIDENCIALIDAD:
Todas las respuestas que dan como parte de esta evaluación serán confidenciales. Sólo estará disponibles para las personas involucradas con el proyecto, excepto cuando requerido por la ley. Hay dos excepciones: 1) si se revelan que son un peligro para sí mismo o a otros; o 2) si se revelan abusos cometidos contra un niño. En cualquiera de estos casos, debemos informar a las autoridades competentes. Esto incluye si usted se lo estan lastimando o no se atiende, si un amigo tuyo lo están lastimando o no se atiende, o si usted le está haciendo daño a un niño o no cuidar de un niño que se hace encargo.

Toda la información compartida como parte de esta evaluación serán almacenados de tal manera que mantiene su identidad separada de las respuestas que dan en las encuestas.

Si en el improbable caso de que sea necesario para que la Junta de Revisión Institucional revise los expedientes de la investigación, entonces la Universidad de Texas en Arlington, protegerá la confidencialidad de los registros en la medida permitida por la ley. Sus registros de la investigación no será divulgada sin su consentimiento, a menos requerido por la ley o una orden judicial. Los datos resultantes de su participación puede ser puesto a disposición de otros investigadores en el futuro con fines de investigación que no se detallan en este formulario de consentimiento. En estos casos, los datos no contienen información de identificación que podría asociarse con él, o con su participación en cualquier estudio.

La Oficina de Salud de los Adolescentes también tienen el derecho legal a revisar sus expedientes de investigación. Si los resultados de esta investigación son publicados o presentados en reuniones científicas, su identidad no será revelada.

CONTACTO PARA PREGUNTAS:
Las preguntas sobre esta investigación o de sus derechos como sujeto de investigación puede ser dirigida a la Dr. Diane Mitschke al (817) 272-3181. Usted puede comunicarse con el presidente de la Junta de Revisión Institucional de UT Arlington al (817) -272-3723 en el caso de una lesión relacionada con el participante durante la investigación.

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FIRMAS DE APROBACIÓN:

Como representante de este estudio, he explicado el propósito, los procedimientos, los beneficios y los riesgos implicados en este estudio de investigación:

FIRMA DEL INVESTIGADOR PRINCIPAL O PERSONA OBTENIENDO CONSENTIMIENTO **FECHA**

NOMBRE IMPRESO DEL INVESTIGADOR PRINCIPAL O PERSONA OBTENIENDO CONSENTIMIENTO

Al firmar abajo, usted confirma que ha leído o tuvo este documento leído a usted. Han sido informado sobre el propósito de este estudio, procedimientos, posibles beneficios y riesgos, y han recibido una copia de este formulario. Se le ha dado la oportunidad de hacer preguntas antes de firmar, y le han dicho que usted puede hacer otras preguntas en cualquier momento. Usted entiende que, dado que es menor de 18 años, su padre (s) / tutor (s) han dado su consentimiento para su participación.

Usted acepta voluntariamente participar en este estudio. Al firmar este formulario, no renuncia a ninguno de sus derechos legales. No elejir a participar en este estudio, no supone ninguna sanción o pérdida de beneficios a los cuales usted tiene derecho, y usted puede terminar su participación en cualquier momento sin sanción o pérdida de beneficios.

FIRMA DE PADRE/TUTOR **FECHA**

FIRMA DE EL PARTICIPANTE MENOR DE EDAD **FECHA**
(PARTICIPANTE TIENE QUE SER MENOR DE 18 AÑOS)

NOMBRE IMPRESO DEL PARTICIPANTE MENOR DE EDAD

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FIRMAS DE CONSENTIMIENTO:

Como representante de este estudio, he explicado el propósito, los procedimientos, los beneficios y los riesgos implicados en este estudio de investigación:

FIRMA DEL INVESTIGADOR PRINCIPAL O PERSONA OBTENIENDO CONSENTIMIENTO **FECHA**

NOMBRE IMPRESO DEL INVESTIGADOR PRINCIPAL O PERSONA OBTENIENDO CONSENTIMIENTO

Al firmar abajo, usted confirma que ha leído o tuvo este documento leído a usted. Han sido informado sobre el propósito de este estudio, procedimientos, posibles beneficios y riesgos, y han recibido una copia de este formulario. Se le ha dado la oportunidad de hacer preguntas antes de firmar, y le han dicho que usted puede hacer otras preguntas en cualquier momento.

Usted acepta voluntariamente participar en este estudio. Al firmar este formulario, no renuncia a ninguno de sus derechos legales. No elejir a participar en este estudio, no supone ninguna sanción o pérdida de beneficios a los cuales usted tiene derecho, y usted puede terminar su participación en cualquier momento sin sanción o pérdida de beneficios.

FIRMA DE EL PARTICIPANTE **FECHA**
(PARTICIPANTE TIENE QUE SER MAYOR DE 18 AÑOS)

NOMBRE IMPRESO DEL PARTICIPANTE

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AUG 11 2015
Institutional Review Board

Appendix B

IRB Approval Letter

UNIVERSITY OF TEXAS ARLINGTON
OFFICE OF RESEARCH ADMINISTRATION
REGULATORY SERVICES

July 11, 2014

Dr. Diane Mitschke
School of Social Work
The University of Texas at Arlington
Box 19129

IRB/Submission Number: 2011-0578

Title: *Evaluation of Arlington Independent School District's Crossroads Pregnancy Prevention Program*

FULL BOARD CONTINUING REVIEW WITH MODIFICATION APPROVAL

The University of Texas at Arlington Institutional Review Board (IRB) reviewed and approved the status of *continuing/revised* for the above study for a period not to exceed one year, effective **August 11, 2014** [45 CFR 46.109(e)]. **The approved number of participants for this study is 1440**(Do not exceed without prior IRB approval)

The approved protocol modifications are as follows:

- Increasing the total number of participants to 1440 to reflect the additional estimated number of students enrolled in the Crossroads program being evaluated
- Update the follow up duration from 12 months to 6 months due to the timing of the end of the grant
- Update informed consent document to reflect this change

MODIFICATION TO AN APPROVED PROTOCOL:
Pursuant to Title 45 CFR 46.103(b)(4)(iii), investigators are required to, "promptly report to the IRB ***any*** proposed changes in the research activity, and to ensure that such changes in approved research, during the period for which IRB approval has already been given, are **not initiated without prior IRB review and approval** except when necessary to eliminate apparent immediate hazards to the subject." Modifications include but are not limited to: Changes in protocol personnel, number of approved participants, and/or updates to the protocol procedures or instruments and must be submitted via the electronic submission system. Failure to obtain approval for modifications is considered an issue of non-compliance and will be subject to review and deliberation by the IRB which could result in the suspension/termination of the protocol.

ANNUAL CONTINUING REVIEW:
In order for the research to continue beyond the first year, a Continuing Review must be completed via the online submission system within 30 days preceding the date of expiration indicated above. Full Board protocols require approval during the convened meeting. A reminder notice will be forwarded to the attention of the Principal Investigator (PI) 30 days prior to the expiration date, however, this date does not reflect when the IRB meeting will be held. The PI is responsible for submitting a continuing review

request no later than 1 week prior to the IRB meeting scheduled prior to the study expiration date to ensure adequate review time and approval determination. Continuing review of the protocol serves as a progress report and provides the researcher with an opportunity to make updates to the originally approved protocol. Failure to obtain approval for a continuing review will result in automatic ***expiration of the protocol*** all activities involving human subjects must cease immediately. The research will not be allowed to commence by any protocol personnel until a new protocol has been submitted, reviewed, and approved by the IRB. Per federal regulations and UTA's Federalwide Assurance (FWA), there are no exceptions and no extensions of approval granted by the IRB. The continuation of study procedures after the expiration of a protocol is considered to be an issue of non-compliance and a violation of federal regulations. Such violations could result in termination of external and University funding and/or disciplinary action.

ADVERSE EVENTS:
Please be advised that as the principal investigator, you are required to report local adverse (unanticipated) events to The UT Arlington Office of Research Administration; Regulatory Services within 24 hours of the occurrence or upon acknowledgement of the occurrence.

TRAINING
All investigators and key personnel identified in the protocol must have filed an annual Conflict of Interest Disclosure (COI) and have documented *Human Subjects Protection (HSP)* training on file with this office prior to protocol approval. HSP training certificates are valid for 2 years from completion date.

COLLABORATION:
If applicable, approval by the appropriate authority at a collaborating facility is required prior to subject enrollment. If the collaborating facility is *engaged in the research*, an OHRP approved Federalwide Assurance (FWA) may be required for the facility (prior to their participation in research-related activities). To determine whether the collaborating facility is engaged in research, go to: http://www.hhs.gov/ohrp/humansubjects/assurance/engage.htm

CONTACT FOR QUESTIONS:
The UT Arlington Office of Research Administration; Regulatory Services appreciates your continuing commitment to the protection of human research subjects. Should you have questions or require further assistance, please contact Robin Dickey at robind@uta.edu or Regulatory Services at regulatoryservices@uta.edu or 817-272-2105.

Sincerely,

Maria Martinez-Cosio, Ph.D.
Associate Professor
UT Arlington IRB Chair

REGULATORY SERVICES | The University of Texas at Arlington, Center for Innovation
202 E. Border Street, Ste. 201, Arlington, Texas 76010, Box#19188
(T) 817-272-3723 (F) 817-272-5808 (E) regulatoryservices@uta.edu (W) www.uta.edu/rs

Appendix C

Developmental Asset Profile

40 DEVELOPMENTAL ASSETS

This chart shows eight areas of human development and groups the 40 developmental assets by these categories. The percentages of young people who report experiencing each asset were gathered from the administration of the *Search Institute Profiles of Student Life: Attitudes and Behaviors* survey in 318 communities and 33 states.

	asset type	*asset name and definition*	
EXTERNAL ASSETS	SUPPORT	1. **Family support** — Family life provides high levels of love and support.	70%
		2. **Positive family communication** — Young person and her or his parent(s) communicate positively, and young person is willing to seek advice and counsel from parent(s).	30%
		3. **Other adult relationships** — Young person receives support from three or more nonparent adults.	45%
		4. **Caring neighborhood** — Young person experiences caring neighbors.	40%
		5. **Caring school climate** — School provides a caring, encouraging environment.	29%
		6. **Parent involvement in schooling** — Parent(s) are actively involved in helping young person succeed in school.	34%
	EMPOWERMENT	7. **Community values youth** — Young person perceives that adults in the community value youth.	25%
		8. **Youth as resources** — Young people are given useful roles in the community.	28%
		9. **Service to others** — Young person serves in the community one hour or more per week.	51%
		10. **Safety** — Young person feels safe at home, at school, and in the neighborhood.	51%
	BOUNDARIES & EXPECTATIONS	11. **Family boundaries** — Family has clear rules and consequences and monitors the young person's whereabouts.	48%
		12. **School boundaries** — School provides clear rules and consequences.	53%
		13. **Neighborhood boundaries** — Neighbors take responsibility for monitoring young people's behavior.	49%
		14. **Adult role models** — Parent(s) and other adults model positive, responsible behavior.	30%
		15. **Positive peer influence** — Young person's best friends model responsible behavior.	65%
		16. **High expectations** — Both parent(s) and teachers encourage the young person to do well.	49%
	CONSTRUCTIVE USE OF TIME	17. **Creative activities** — Young person spends three or more hours per week in lessons or practice in music, theater, or other arts.	20%
		18. **Youth programs** — Young person spends three or more hours per week in sports, clubs, or organizations at school and/or in the community.	58%
		19. **Religious community** — Young person spends one or more hours per week in activities in a religious institution.	63%
		20. **Time at home** — Young person is out with friends "with nothing special to do" two or fewer nights per week.	52%
INTERNAL ASSETS	COMMITMENT TO LEARNING	21. **Achievement motivation** — Young person is motivated to do well in school.	67%
		22. **School engagement** — Young person is actively engaged in learning.	61%
		23. **Homework** — Young person reports doing at least one hour of homework every school day.	53%
		24. **Bonding to school** — Young person cares about her or his school.	54%
		25. **Reading for pleasure** — Young person reads for pleasure three or more hours per week.	23%
	POSITIVE VALUES	26. **Caring** — Young person places high value on helping other people.	50%
		27. **Equality and social justice** — Young person places high value on promoting equality and reducing hunger and poverty.	52%
		28. **Integrity** — Young person acts on convictions and stands up for her or his beliefs.	68%
		29. **Honesty** — Young person "tells the truth even when it is not easy."	67%
		30. **Responsibility** — Young person accepts and takes personal responsibility.	63%
		31. **Restraint** — Young person believes it is important not to be sexually active or to use alcohol or other drugs.	47%
	SOCIAL COMPETENCIES	32. **Planning and decision making** — Young person knows how to plan ahead and make choices.	30%
		33. **Interpersonal competence** — Young person has empathy, sensitivity, and friendship skills.	47%
		34. **Cultural competence** — Young person has knowledge of and comfort with people of different cultural/racial/ethnic backgrounds.	42%
		35. **Resistance skills** — Young person can resist negative peer pressure and dangerous situations.	42%
		36. **Peaceful conflict resolution** — Young person seeks to resolve conflict nonviolently.	45%
	POSITIVE IDENTITY	37. **Personal power** — Young person feels he or she has control over "things that happen to me."	44%
		38. **Self-esteem** — Young person reports having a high self-esteem.	52%
		39. **Sense of purpose** — Young person reports that "my life has a purpose."	59%
		40. **Positive view of personal future** — Young person is optimistic about her or his personal future.	74%

Appendix D

Complete Survey Questionnaire from Original Study

Crossroads Survey (PRINT COPY)

Introduction to Survey

Form Approved

OMB No. 0990-0392

Exp. Date 5/31/2015

This survey is part of the evaluation of the Crossroads Pregnancy Prevention Program. The survey is made up of questions about your knowledge, behaviors and attitudes about sexual activity, method(s) to prevent pregnancy and sexually transmitted diseases, about your academic and career goals, and your sense of involvement in school and community life.

This study is sponsored by the Department of Health and Human Services, Office of Adolescent Health. (Grant #:TP2AH000011)

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0990-0392. The time required to complete this information collection is estimated to average 40 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have comments concerning the accuracy o the time estimate(s) or suggestions for improving this form, please write to: U.S. Department of Health & Human Services, OS/OCIO/PRA, 200 Independence Ave., S.W., Suite 336-E, Washington D.C. 20201, Attention: PRA Reports Clearance Officer.

Printed Survey Copy as of 8/26/13

Login ID

***1. Please enter your unique ID number. This should have been provided by the survey administrator.**

Office of Adolescent Health (OAH) Demographic Questions

Crossroads Survey (PRINT COPY)

***2. In what month and year were you born?**
(MARK (X) ONE MONTH AND ONE YEAR)

- ○ January
- ○ February
- ○ March
- ○ April
- ○ May
- ○ June
- ○ July
- ○ August
- ○ September
- ○ October
- ○ November
- ○ December

***3. Year born**

- ○ 2002
- ○ 2001
- ○ 2000
- ○ 1999
- ○ 1998
- ○ 1997
- ○ 1996
- ○ 1995
- ○ 1994
- ○ 1993
- ○ 1992
- ○ 1991

OAH Demographic Questions

Crossroads Survey (PRINT COPY)

***4. What grade are you in? (If you are currently on vacation between grades, please indicate the grade you will be in when you go back to school).**

MARK (X) ONE ANSWER

- ○ 6th
- ○ 7th
- ○ 8th
- ○ 9th
- ○ 10th
- ○ 11th
- ○ 12th
- ○ Ungraded
- ○ College/Technical school
- ○ Not currently in school

***5. Are you male or female?**
MARK (X) ONE ANSWER

- ○ Male
- ○ Female

OAH Demographic Questions

***6. Are you Hispanic or Latino?**
MARK (X) ONE ANSWER

- ○ Yes
- ○ No

Crossroads Survey (PRINT COPY)

***7. What is your race?**

YOU MAY MARK (X) MORE THAN ONE ANSWER

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African-American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Some other race (please specify):

***8. When you are at home or with your family, what language or languages do you usually speak?**

YOU MAY MARK (X) MORE THAN ONE ANSWER

- ☐ English
- ☐ Spanish
- ☐ Chinese language such as Mandarin or Cantonese
- ☐ Some other language:

OAH Participant-level Behavioral Questions

The (next/first) questions are about sexual intercourse. By sexual intercourse, we mean a male putting his penis into a female's vagina.

9. Have you ever had sexual intercourse?

- ○ Yes
- ○ No (If you select no, skip to Q18)

OAH Participant-level Behavioral Questions

10. To the best of your knowledge, have you ever been pregnant or gotten someone pregnant, even if no child was born?

- ○ Yes
- ○ No (If you select no, skip to Q12).

Crossroads Survey (PRINT COPY)

11. To the best of your knowledge, how many times have you been pregnant or gotten someone pregnant?

# of times

12. Now please think about the past 3 months. In the past 3 months, have you had sexual intercourse, even once?

- Yes
- No (If you select no, skip to Q14.)

13. In the past 3 months, how many TIMES have you had sexual intercourse?

# of times

14. In the past 3 months, have you had sexual intercourse WITHOUT you or your partner using a condom?

- Yes
- No (If you select no, skip to Q16)

15. In the past 3 months how many TIMES have you had sexual intercourse WITHOUT using a condom?

# of times

16. In the past 3 months, have you had sexual intercourse WITHOUT you or your partner using any of these methods of birth control?

*** Condoms**
*** Birth control pills**
*** The shot (Depo Provera)**
*** The patch**
*** The ring (NuvaRing)**
*** IUD (Mirena or Paragard)**
*** Implant (Implanon)**

- Yes
- No (If you select no, skip to Q18)

17. In the past 3 months, how many TIMES have you had sexual intercourse WITHOUT using any of these methods of birth control?

# of times

Crossroads Survey (PRINT COPY)

18. Do you intend to have sexual intercourse in the next year, if you have the chance?

- ○ Yes, definitely
- ○ Yes, probably
- ○ No, probably not
- ○ No, definitely not

19. If you have sexual intercourse in the next year, do you intend to use (or have your partner use) a condom?

- ○ Yes, definitely
- ○ Yes, probably
- ○ No, probably not
- ○ No, definitely not

20. If you have sexual intercourse in the next year, do you intend to use (or have your partner use) any of these methods of birth control?

*** Condoms**
*** Birth control pills**
*** The shot (Depo Provera)**
*** The patch**
*** The ring (NuvaRing)**
*** IUD (Mirena or Paragard)**
*** Implants (Implanon)**

- ○ Yes, definitely
- ○ Yes, probably
- ○ No, probably not
- ○ No, definitely not

Supplemental Questions: Educational Attainment

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21. What is your current school status?

- In high school or GED program
- Graduated from high school or completed GED, NOT attending college or technical school (If selected, skip to Q28)
- Graduated from high school or obtained GED, CURRENTLY attending college or trade school (If selected, skip to Q30)
- Dropped out of school
- Other (Describe)

22. Do you think you will finish high school or obtain a GED?

- Yes
- No
- Maybe

23. Do you WANT to go to college or a technical school?

- Yes
- No
- Maybe
- Currently attending college or technical school

24. Do you THINK you will go to college or a technical school in the future?

- Yes
- No
- Maybe
- Currently attending college or technical school

Sexual Attitudes

The following questions ask how you feel about different behaviors. Please indicate how good or bad an idea it is to do the following, whether others would approve or disapprove of the behavior, and whether you plan to do these behaviors in the next 3 months (90 days). Check the ANSWER that best describes your feelings. Sexual intercourse referss to the sexual act of a male putting his penis in a female's vagina. (Try to answer the questions even if you have not had sexual intercourse or never used condoms).

25. How do you feel about having sexual intercourse in the next 3 months?

- Very Bad Idea
- Bad Idea
- In the Middle
- Good Idea
- Very Good Idea

26. Please indicate whether others would approve or disapprove of the behavior.

	Disapprove Strongly	Disapprove	In the Middle	Approve	Approve Strongly
Would most people who are important to you approve or disapprove of you having sexual intercourse in the next 3 months?					
Would your sexual partner approve or disapprove of having sexual intercourse with you in the next 3 months?					
Would your mother approve or disapprove of you having sexual intercourse in the next 3 months?					
Would your father approve or disapprove of you having sexual intercourse in the next 3 months?					
Would your friends approve or disapprove of you having sexual intercourse in the next 3 months?					

27. Please indicate whether you plan to do the following behaviors in the next 3 months. Check the number that best describes your feelings.

	Very Unlikely	Unlikely	In the Middle	Likely	Very Likely
How likely is it that you will decide to have sexual intercourse in the next 3 months?					

Try to answer the following questions even if you have not had sex or have never used condoms.

28. The following questions ask how you feel about different behaviors. Please indicate how good or bad an idea it is to do the following.

	Very Bad Idea	Bad Idea	In the Middle	Good Idea	Very Good Idea
How do you feel about using a condom if you have sex in the next 3 months?					

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29. Please indicate whether others would approve or disapprove of the behavior.

	Disapprove Strongly	Disapprove	In the Middle	Approve	Approve Strongly
Would most people who are important to you approve or disapprove of you using a condom if you have sex in the next 3 months?	○	○	○	○	○
Would your sexual partner approve or disapprove of you using a condom if the two of you have sex in the next 3 months?	○	○	○	○	○
Would your mother approve or disapprove of you using a condom if you have sex in the next 3 months?	○	○	○	○	○
Would your father approve or disapprove of you using a condom if you have sex in the next 3 months?	○	○	○	○	○
Would your friends approve or disapprove of you using a condom if you have sex in the next 3 months?	○	○	○	○	○

30. Please indicate whether you plan to do the following behaviors in the next 3 months. Check the number that best describes your feelings.

	Very Unlikely	Unlikely	In the Middle	Likely	Very Likely
How likely is it that you will decide to use a condom if you have have sex in the next 3 months?	○	○	○	○	○

Try to answer the following questions even if you do not have a partner at this moment.

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31. How much do you agree or disagree with each of the following statements about you having sex?

	Disagree Strongly	Disagree	In the Middle	Agree	Agree Strongly
If I have sex, then I will be more popular with the boys.	○	○	○	○	○
If I have sex, then I will be more popular with the girls.	○	○	○	○	○
If I have sex, I will get a bad reputation.	○	○	○	○	○
If I have sex, I will get AIDS.	○	○	○	○	○
If I have sex, I will get a sexually transmitted disease (STD).	○	○	○	○	○
If I have sex during my teen years, my partner or I will get pregnant.	○	○	○	○	○
If I have sex during my teen years, then my parents will find out.	○	○	○	○	○
If I have sex, and my parents find out, then they will be angry at me.	○	○	○	○	○
If I have sex before I am married, then God is likely to be angry at me.	○	○	○	○	○
If I have sex during my teen years, then I am less likely to graduate from high school.	○	○	○	○	○
If I have sex during my teen years, then I am less likely to have the career that I am hoping for.	○	○	○	○	○
I plan to have sex in the next 3 months.	○	○	○	○	○

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32. The following questions concern NOT having sex, also known as practicing abstinence. How much do you agree or disagree with each of the following statements about you NOT having sex?

	Disagree Strongly	Disagree	In the Middle	Agree	Agree Strongly
If I do NOT have sex, people will call me names.	○	○	○	○	○
If I do NOT have sex, boys/girls will not want to go out with me.	○	○	○	○	○
If I do NOT have sex with my boyfriend/girlfriend, then he/she will break up with me.	○	○	○	○	○
If I do NOT have sex, my parents will be proud of me.	○	○	○	○	○
If I do NOT have sex during my teenage years, I will be proud of myself.	○	○	○	○	○
Not having sex will help me further my education.	○	○	○	○	○
Not having sex will help me focus on getting a good job.	○	○	○	○	○
I will NOT have sex in the next 3 months.	○	○	○	○	○

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33. Now, we would like to ask you some questions about you using condoms. How much do you agree or disagree with each of the following statements about condoms? (Try to answer the questions even if you have not had sex or have never used condoms.)

	Disagree Strongly	Disagree	In the Middle	Agree	Agree Strongly
Condoms help prevent pregnancy.	○	○	○	○	○
Condoms help prevent STDs.	○	○	○	○	○
Condoms help prevent AIDS.	○	○	○	○	○
A lot of times condoms break when you are using them.	○	○	○	○	○
When a condom is used, sex still feels good.	○	○	○	○	○
When a condom is used, sex is more fun.	○	○	○	○	○
If my partner or I used a condom, sex would NOT feel as good.	○	○	○	○	○
Sex feels UNnatural when a condom is used.	○	○	○	○	○
Condoms are embarrassing to use.	○	○	○	○	○
Condoms make you NOT want to have sex because you have to stop to put on on.	○	○	○	○	○

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34. Now we would like you to answer questions about how your boyfriend or sexual partner might react to you wanting to use condoms. Try to answer the following questions even if you do not have a sexual partner.

	Disagree Strongly	Disagree	In the Middle	Agree	Agree Strongly
Saying we have to use a condom would make my sexual partner think I am having sex with other people.	○	○	○	○	○
Saying we have to use a condom is like saying to my sexual partner, "I don't trust you."	○	○	○	○	○
My sexual partner is likely to break up with me if I said we had to use a condom.	○	○	○	○	○
If I had a condom with me, my sexual partner would not like it.	○	○	○	○	○
My sexual partner would be happier if we used a condom.	○	○	○	○	○
Condoms cost too much.	○	○	○	○	○
It is hard for me to get condoms.	○	○	○	○	○
It is too much trouble to carry around condoms.	○	○	○	○	○
I can get condoms.	○	○	○	○	○
It is easy for me to have a condom with me all of the time.	○	○	○	○	○

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35. Try to answer the following questions even if you do not have a sexual partner.

	Disagree Strongly	Disagree	In the Middle	Agree	Agree Strongly
I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.	○	○	○	○	○
I can say to my sexual partner that we should use a condom.	○	○	○	○	○
Before we are ready to have sex, I can talk to my sexual partner about using a condom.	○	○	○	○	○
I can put a condom on without turning my sexual partner off.	○	○	○	○	○
I cannot talk to my sexual partner about using condoms.	○	○	○	○	○
If I am sexually aroused, I can stop before sex to use a condom.	○	○	○	○	○
I can say no to sex if my sexual partner and I do NOT have a condom.	○	○	○	○	○
I can stop sex to get a condom, if I do NOT have one.	○	○	○	○	○

36. Try to answer the following questions even if you do not have a sexual partner.

	Disagree Strongly	Disagree	In the Middle	Agree	Agree Strongly
I can use a condom, even if the room is dark.	○	○	○	○	○
I can get my sexual partner to agree to use a condom without turning him/her off.	○	○	○	○	○
I am sure that I can use a condom if I have sex.	○	○	○	○	○
I will try to get my sexual partner to agree to use condoms if we have sex in the next 3 months.	○	○	○	○	○
I plan to use condoms if I have sex in the next 3 months.	○	○	○	○	○

HARD OR EASY?

37. Sometimes we want to do something, but it's hard to do it. For the statements below, select the response that best expresses how easy or hard it would be for you to do each of the things listed.

	Very Hard	Hard	In the Middle	Easy	Very Easy
How easy or hard would it be for you to NOT have sex in the next 3 months?	○	○	○	○	○
How easy or hard would it be for you to get your sexual partner to use condoms during sex, even if he/she didn't want to?	○	○	○	○	○
How easy or hard would it be to use condoms when you have sex?	○	○	○	○	○

Supplemental Questions: Importance of Others

38. Select the response that best describes your feelings.

	Extremely Unimportant	Moderately Unimportant	In the Middle	Moderately Important	Extremely Important
In general, how important to you are your sexual partner's opinion about what you do?	○	○	○	○	○
In general, how important to you are your mother's opinion about what you do?	○	○	○	○	○
In general, how important to you are your father's opinion about what you do?	○	○	○	○	○
In general how important to you are your friend's opinions about what you do?	○	○	○	○	○

Supplemental Questions: Sexual Behavior

The following questions ask you about different sexual behaviors you may or may not ever have done. There is always an answer that lets you tell us when you have not done things, as well as when you have done them. Sexual intercourse refers to the sexual act of a male putting his penis in a female's vagina. Please be honest.

39. Have you EVER had sexual intercourse (a boy's penis in a girl's vagina)?

- ○ No (If you select no, skip to Q52)
- ○ Yes

Supplemental Questions: Sexual Behavior

40. The FIRST TIME you had sexual intercourse, did you use a condom?

- I have NEVER had sexual intercourse.
- No
- Yes

41. The LAST TIME you had sexual intercourse, did you use a condom?

- I have NEVER had sexual intercourse.
- No
- Yes

Supplemental Questions: Sexual Behavior

The following questions ask you about the LAST TIME you had sexual intercourse.

42. The LAST TIME you had sexual intercourse, were you high on alcohol or drugs?

- I have never had sexual intercourse.
- No
- Yes

43. The LAST TIME you had sexual intercourse, did you have a couple of drinks and/or any drugs before having sexual intercourse?

- I have NEVER had sexual intercourse.
- No
- Yes

Supplemental Questions: Sexual Behavior

The following questions ask about your activities in the PAST 3 MONTHS (90 days). Please use the calendar provided to help you answer these questions. Where appropriate, if your answer is "zero" or "none" write the number 0.

44. In the PAST 3 MONTHS, did you have sexual intercourse?

- No
- Yes

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45. When you had sexual intercourse in the PAST 3 MONTHS, how often were condoms (rubbers) used?

- ○ I have NEVER had sexual intercourse.
- ○ I did NOT have sexual intercourse in the past 3 months.
- ○ Never
- ○ Sometimes
- ○ Often
- ○ Almost every time
- ○ Every time

46. In the PAST 3 MONTHS, how many times did you have sexual intercourse.

times

47. In the PAST 3 MONTHS, how many times did you use a condom when you had sexual intercourse?

- ○ I have NEVER had sexual intercourse.
- ○ I did NOT have sexual intercourse in the past 3 months.
- ○ # times

48. In the PAST 3 MONTHS, how many partners have you had sexual intercourse with?

Partners

49. In the PAST 3 MONTHS, on how many days did you get high on alcohol or another drug and then have sexual intercourse?

- ○ I have NEVER had sexual intercourse
- ○ I did NOT have sexual intercourse in the past 3 months
- ○ # Days

50. In the PAST 3 MONTHS, on how many of those days when you got high on an alcoholic drink or another drug and then you had sex, did you have sexual intercourse WITHOUT using a condom?

- I have NEVER got high and had sexual intercourse
- I did NOT get high and have sexual intercourse in the past 3 months
- # Days

51. With whom do you have sexual intercourse?

- I have never had sex
- Guys only
- Girls only
- Both girls and guys

Supplemental Questions: Sexual Behavior (A)

The following questions ask you about different sexual behaviors you may or may not ever have done. There is always an answer that lets you tell us when you have not done things, as well as when you have done them.

Anal sex refers to the sexual act of a male putting his penis in another person's anus/behind. Please be honest.

52. Have you EVER had anal sex (a boy's penis in another person's anus/bottom)?

- No (If you select no, skip to Q65)
- Yes

Supplemental Questions: Sexual Behavior (A)

53. The FIRST TIME you had anal sex, did you use a condom?

- I have NEVER had anal sex.
- No
- Yes

Supplemental Questions: Sexual Behavior (A)

The following questions ask you about the LAST TIME you had anal sex.

54. The LAST TIME you had anal sex, did you use a condom?

- I have NEVER had anal sex.
- No
- Yes

55. The LAST TIME you had anal sex, were you high on alcohol or drugs?

- I have never had anal sex.
- No
- Yes

56. The LAST TIME you had anal sex, did you have a couple of drinks and/or any drugs before having anal sex?

- I have NEVER had anal sex.
- No
- Yes

Supplemental Questions: Sexual Behavior (A)

The following questions ask about your activities in the PAST 3 MONTHS (90 days). Please use the calendar provided to help you answer these questions. Where appropriate, if your answer is "zero" or "none" write the number 0.

57. In the PAST 3 MONTHS, did you have anal sex?

- No
- Yes

58. When you had anal sex in the PAST 3 MONTHS, how often were condoms (rubbers) used?

- I have NEVER had anal sex.
- I did NOT have anal sex in the past 3 months.
- Never
- Sometimes
- Often
- Almost every time
- Every time

59. In the PAST 3 MONTHS, how many times did you have anal sex.

times

60. In the PAST 3 MONTHS, how many times did you use a condom when you had anal sex?

- I have NEVER had anal sex
- I did NOT have anal sex in the past 3 months.
- # times

61. In the PAST 3 MONTHS, how many sexual partners have you had anal sex with?

Partners

62. In the PAST 3 MONTHS, on how many days did you get high on alcohol or another drug and then have anal sex?

- I have NEVER had anal sex
- I did NOT have anal sex in the past 3 months
- # Days

63. In the PAST 3 MONTHS, on how many of those days when you got high on an alcoholic drink or another drug and then you had sex, did you have anal sex WITHOUT using a condom?

- I have NEVER got high and had anal sex
- I did NOT get high and have anal sex in the past 3 months
- # Days

64. With whom do you have anal sex?

- I have never had anal sex
- Guys only
- Girls only
- Both girls and guys

Supplemental Questions: Sexual Behavior (O1)

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The following questions ask you about different sexual behaviors you may or may not ever have done. There is always an answer that lets you tell us when you have not done things, as well as when you have done them.

Oral sex refers to the sexual act of a person putting his/her mouth on a female's vagina or a male's penis. Please be honest.

The following questions are about the first time you did oral sex to another person.

65. Have you EVER done oral sex to another person?

- ○ No (If you select no, skip to Q78)
- ○ Yes

Supplemental Questions: Sexual Behavior (O1)

66. The FIRST TIME you did oral sex to another person, did you use a condom?

- ○ I have NEVER done oral sex to another person.
- ○ No
- ○ Yes

Supplemental Questions: Sexual Behavior (O1)

The following questions ask you about the LAST TIME you did oral sex to another person.

67. The LAST TIME you did oral sex to another person, did you use a condom?

- ○ I have NEVER done oral sex to another person.
- ○ No
- ○ Yes

68. The LAST TIME you did oral sex to another person, were you high on alcohol or drugs?

- ○ I have never done oral sex to another person.
- ○ No
- ○ Yes

69. The LAST TIME you did oral sex to another person, did you have a couple of drinks and/or any drugs before doing oral sex to that person?

- ○ I have NEVER done oral sex to another person.
- ○ No
- ○ Yes

Supplemental Questions: Sexual Behavior (O1)

The following questions ask about your activities in the PAST 3 MONTHS (90 days). Please use the calendar provided to help you answer these questions. Where appropriate, if your answer is "zero" or "none" write the number 0.

70. In the PAST 3 MONTHS, did you do oral sex to another person?

- ○ No
- ○ Yes

71. When you did oral sex to another person in the PAST 3 MONTHS, how often were condoms (rubbers) used?

- ○ I have NEVER done oral sex to another person.
- ○ I did NOT do oral sex to another person in the past 3 months.
- ○ Never
- ○ Sometimes
- ○ Often
- ○ Almost every time
- ○ Every time

72. In the PAST 3 MONTHS, how many times did you do oral sex to another person?

times

73. In the PAST 3 MONTHS, how many times did you do oral sex to another person?

- ○ I have NEVER done oral sex to another person.
- ○ I did NOT do oral sex to another person in the past 3 months.
- ○ # times

74. In the PAST 3 MONTHS, how many sexual partners have you done oral sex to?

Partners

75. In the PAST 3 MONTHS, on how many days did you get high on alcohol or another drug and then do oral sex to another person?

- ○ I have NEVER done oral sex to another person
- ○ I did NOT do oral sex to another person in the past 3 months
- ○ # Days

76. In the PAST 3 MONTHS, on how many of those days when you got high on an alcoholic drink or another drug and then you had sex, did you do oral sex to another person WITHOUT using a condom?

- ○ I have NEVER got high and did oral sex to another person
- ○ I did NOT get high and do oral sex to another person in the past 3 months
- ○ # Days

77. With whom do you do oral sex to?

- ○ I have never done oral sex to another person.
- ○ Guys only
- ○ Girls only
- ○ Both girls and guys

Supplemental Questions: Sexual Behavior (O2)

The following questions ask you about different sexual behaviors you may or may not ever have done. There is always an answer that lets you tell us when you have not done things, as well as when you have done them.

Oral sex refers to the sexual act of a person putting his/her mouth on a female's vagina or on a male's penis. Please be honest.

The following questions are about the first time someone else did oral sex to you.

78. Has someone else EVER done oral sex to you?

- ○ No (If you select no, skip to Q91)
- ○ Yes

Supplemental Questions: Sexual Behavior (O2)

79. The FIRST TIME someone did oral sex to you, did you use a condom?

- I have NEVER had oral sex done to me.
- No
- Yes

Supplemental Questions: Sexual Behavior (O2)

The following questions ask you about the LAST TIME someone else did oral sex to you.

80. The LAST TIME someone else did oral sex to you, did you use a condom?

- I have NEVER had oral sex done to me.
- No
- Yes

81. The LAST TIME someone else did oral sex to you, were you high on alcohol or drugs?

- I have NEVER had oral sex done to me.
- No
- Yes

82. The LAST TIME someone else did oral sex to you, did you have a couple of drinks and/or any drugs before someone else did oral sex to you?

- I have NEVER had oral sex done to me.
- No
- Yes

Supplemental Questions: Sexual Behavior (O2)

The following questions ask about your activities in the PAST 3 MONTHS (90 days). Please use the calendar provided to help you answer these questions. Where appropriate, if your answer is "zero" or "none" write the number 0.

83. In the PAST 3 MONTHS, did someone else do oral sex to you?

- No
- Yes

84. When someone else did oral sex to you in the PAST 3 MONTHS, how often were condoms (rubbers) used?

- I have NEVER had oral sex done to me.
- I did NOT had oral sex done to me in the past 3 months.
- Never
- Sometimes
- Often
- Almost every time
- Every time

85. In the PAST 3 MONTHS, how many times did someone else do oral sex to you?

times

86. In the PAST 3 MONTHS, how many times did you use a condom when someone else did oral sex to you?

- I have NEVER had oral sex done to me.
- I did NOT have oral sex done to me in the past 3 months.
- # times

87. In the PAST 3 MONTHS, how many sexual partners have done oral sex to you?

Partners

88. In the PAST 3 MONTHS, on how many days did you get high on alcohol or another drug and then have oral sex done to you?

- I have NEVER had oral sex done to me
- I did NOT have oral sex done to me in the past 3 months
- # Days

89. In the PAST 3 MONTHS, on how many of those days when you got high on an alcoholic drink or another drug and then you had sex, did you have oral sex done to you WITHOUT using a condom?

- ○ I have NEVER had oral sex done to me
- ○ I did NOT get high and have oral sex done to me in the past 3 months
- ○ # Days

90. Who does oral sex to you?

- ○ I have never had oral sex done to me.
- ○ Guys only
- ○ Girls only
- ○ Both girls and guys

Supplemental Questions: AIDS/STD True-False Items

TRUE or FALSE.

91. Some of the statements below are true; some are false. Please check TRUE for each statement you think is TRUE; check FALSE for each statement you think is FALSE; and check ? if you DO NOT KNOW whether the statement is true or false. The term STD means Sexually Transmitted Disease.

	TRUE	?	FALSE
1. A common symptom of STDs in a man is discharge (drip) from his penis.	○	○	○
2. Using Vaseline as a lubricant when you have sex lowers the chance of getting STDs and HIV/AIDS.	○	○	○
3. A common symptom of STDs is a sore on the penis or vagina.	○	○	○
4. A common symptom of STDs in a woman is discharge from her vagina that causes itching or burning.	○	○	○
5. You can not have a STD if you feel perfectly fine.	○	○	○
6. A woman who has a STD can get an infection in her uterus and tubes.	○	○	○
7. A pregnant woman who has a STD can give it to her baby.	○	○	○
8. If a person has a STD, the person's sexual partner probably has it too.	○	○	○
9. A person can have the HIV/AIDS virus and give it to other people even if the person does NOT look sick.	○	○	○
10. Having sex with a man who shoots drugs is a way many women get HIV/AIDS.	○	○	○
11. Having anal sex with a guy (i.e., his penis in your anus/behind) increases your chance of getting HIV/AIDS.	○	○	○

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Supplemental Questions: AIDS/STD True-False Items Continued

92. Some of the statements below are true; some are false. Please check TRUE for each statement you think is TRUE; check FALSE for each statement you think is FALSE; and check ? if you DO NOT KNOW whether the statement is true or false.

	TRUE	?	FALSE
12. A common symptom of STDs is burning with urination (peeing).	○	○	○
13. Having HIV/AIDS makes you more likely to get other diseases.	○	○	○
14. There is a good chance you will get HIV/AIDS if you share a sink, shower, or toilet seat with someone who has HIV/AIDS.	○	○	○
15. The HIV virus is present in blood, semen, and vaginal fluid.	○	○	○
16. The penis should be hard when the condom is put on it.	○	○	○
17. When a condom is placed on the penis, space should be left at the tip of the condom.	○	○	○
18. The condom should be completely unrolled before it is placed on the penis.	○	○	○
19. Storing or carrying condoms in a hot or warm place can destroy their effectiveness.	○	○	○
20. A girl can NOT get pregnant the first time she has sex.	○	○	○
21. If a girl washes herself out with a douche after she has sex, she won't become pregnant.	○	○	○
22. Even if a guy withdraws (removes his penis) from the woman's vagina before he reaches climax (comes, ejaculates) the woman can still become pregnant.	○	○	○
23. A girl who is taking birth control pills and does not take them one or two days in a row does NOT increase her chances of becoming pregnant.	○	○	○
24. The foam and jelly forms of birth control that a girl uses work better if the boy uses a condom.	○	○	○

Supplemental Questions: Pregnancy

Please answer the following questions concerning pregnancy.

93. Were you trying to become pregnant or get someone else pregnant in the past 3 months?

- ○ No
- ○ Yes

94. Do you plan to become pregnant or get someone else pregnant in the next 3 months?

- ○ No
- ○ Yes

Supplemental Questions: Knowledge of Resources

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95. Name one or more community resource(s) that you can access if you need assistance. You may list up to five (5) resources.

Resource 1:

Resource 2:

Resource 3:

Resource 4:

Resource 5:

96. When was the last time you were tested for an STD?

- Never, I am not sexually active
- Never, I am currently sexually active or have been sexually active in the past
- Within the past 3 months
- 3-6 months ago
- 7-12 months ago
- More than 1 year ago

97. Do you know where to go to get tested for an STD if you wanted to be tested?

- No
- Yes

98. Have you ever had a Sexually Transmitted Disease (STD)?

- No
- Yes

Supplemental Questions: Developmental Assets Profile

Below is a list of positive things that you might have in yourself, your family, friends, neighborhood, school, and community. For each item that describes you now or within the past 3 months, check if the item is true: Not At All or Rarely, Somewhat or Sometimes, Very or Often, or Extremely or Almost Always.

99. If you do not want to answer an item, leave it blank. But please try to answer all items as best you can.

	Not at All or Rarely	Somewhat or Sometimes	Very or Often	Extremely or Almost Always
1. I stand up for what I believe in.	○	○	○	○
2. I feel in control of my life and future.	○	○	○	○
3. I feel good about myself.	○	○	○	○
4. I avoid things that are dangerous or unhealthy.	○	○	○	○
5. I enjoy reading or being read to.	○	○	○	○
6. I build friendships with other people.	○	○	○	○
7. I care about school.	○	○	○	○
8. I do my homework.	○	○	○	○
9. I stay away from tobacco, alcohol, and other drugs.	○	○	○	○
10. I enjoy learning.	○	○	○	○

Supplemental Questions: Developmental Assets Profile

Below is a list of positive things that you might have in yourself, your family, friends, neighborhood, school, and community. For each item that describes you now or within the past 3 months, check if the item is true: Not At All or Rarely, Somewhat or Sometimes, Very or Often, or Extremely or Almost Always.

100. If you do not want to answer an item, leave it blank. But please try to answer all items as best you can.

	Not at All or Rarely	Somewhat or Sometimes	Very or Often	Extremely or Almost Always
11. I express my feelings in proper ways.	○	○	○	○
12. I feel good about my future.	○	○	○	○
13. I seek advice from my parents.	○	○	○	○
14. I deal with frustration in positive ways.	○	○	○	○
15. I overcome challenges in positive ways.	○	○	○	○
16. I think it is important to help other people.	○	○	○	○
17. I feel safe and secure at home.	○	○	○	○
18. I plan ahead and make good choices.	○	○	○	○
19. I resist bad influences.	○	○	○	○
20. I resolve conflicts without anyone getting hurt.	○	○	○	○

Supplemental Questions: Developmental Assets Profile

Crossroads Survey (PRINT COPY)

Below is a list of positive things that you might have in yourself, your family, friends, neighborhood, school, and community. For each item that describes you now or within the past 3 months, check if the item is true: Not At All or Rarely, Somewhat or Sometimes, Very or Often, or Extremely or Almost Always.

101. If you do not want to answer an item, leave it blank. But please try to answer all items as best you can.

	Not at All or Rarely	Somewhat or Sometimes	Very or Often	Extremely or Almost Always
21. I feel valued and appreciated by others.	○	○	○	○
22. I take responsibility for what I do.	○	○	○	○
23. I tell the truth even when it is not easy.	○	○	○	○
24. I accept people who are different from me.	○	○	○	○
25. I feel safe at school.	○	○	○	○
26. I am actively engaged in learning new things.	○	○	○	○
27. I am developing a sense of purpose in my life.	○	○	○	○
28. I am encouraged to try things that might be good for me.	○	○	○	○
29. I am included in family tasks and decisions.	○	○	○	○
30. I am helping to make my community a better place.	○	○	○	○

Supplemental Questions: Developmental Assets Profile

Below is a list of positive things that you might have in yourself, your family, friends, neighborhood, school, and community. For each item that describes you now or within the past 3 months, check if the item is true: Not At All or Rarely, Somewhat or Sometimes, Very or Often, or Extremely or Almost Always.

102. If you do not want to answer an item, leave it blank. But please try to answer all items as best you can.

	Not at All or Rarely	Somewhat or Sometimes	Very or Often	Extremely or Almost Always
31. I am involved in a religious group or activity.	○	○	○	○
32. I am developing good health habits.	○	○	○	○
33. I am encouraged to help others.	○	○	○	○
34. I am involved in a sport, club, or other group.	○	○	○	○
35. I am trying to help solve social problems.	○	○	○	○
36. I am given useful roles and responsibilities.	○	○	○	○
37. I am developing respect for other people.	○	○	○	○
38. I am eager to do well in school and other activities.	○	○	○	○
39. I am sensitive to the needs and feelings of others.	○	○	○	○
40. I am involved in creative things such as music, theater, or art.	○	○	○	○

Supplemental Questions: Developmental Assets Profile

Below is a list of positive things that you might have in yourself, your family, friends, neighborhood, school, and community. For each item that describes you now or within the past 3 months, check if the item is true: Not At All or Rarely, Somewhat or Sometimes, Very or Often, or Extremely or Almost Always.

103. If you do not want to answer an item, leave it blank. But please try to answer all items as best you can.

	Not at All or Rarely	Somewhat or Sometimes	Very or Often	Extremely or Almost Always
41. I am serving others in my community.	○	○	○	○
42. I am spending quality time at home with my parent (s).	○	○	○	○
43. I have friends who set good examples for me.	○	○	○	○
44. I have a school that gives students clear rules.	○	○	○	○
45. I have adults who are good role models for me.	○	○	○	○
46. I have a safe neighborhood.	○	○	○	○
47. I have parent(s) who try to help me succeed.	○	○	○	○
48. I have neighbors who care about me.	○	○	○	○
49. I have a school that cares about kids and encourages them.	○	○	○	○
50. I have teachers who urge me to develop and achieve.	○	○	○	○

Supplemental Questions: Developmental Assets Profile

Below is a list of positive things that you might have in yourself, your family, friends, neighborhood, school, and community. For each item that describes you now or within the past 3 months, check if the item is true: Not At All or Rarely, Somewhat or Sometimes, Very or Often, or Extremely or Almost Always.

104. If you do not want to answer an item, leave it blank. But please try to answer all items as best you can.

	Not at All or Rarely	Somewhat or Sometimes	Very or Often	Extremely or Almost Always
51. I have support from adults other than my parents.	○	○	○	○
52. I have a family that provides me with clear rules.	○	○	○	○
53. I have parent(s) who urge me to do well in school.	○	○	○	○
54. I have a family that gives me love and support.	○	○	○	○
55. I have neighbors who help watch out for me.	○	○	○	○
56. I have parent(s) who are good at talking with me about things.	○	○	○	○
57. I have a school that enforces rules fairly.	○	○	○	○
58. I have a family that knows where I am and what I am doing.	○	○	○	○

Crossroads Survey (PRINT COPY)

Thank You!

Thank you for taking the time to complete this survey! Please see the survey administrator to collect your gift card and update your contact information.

105. Any comments you wish to make about the questions on this survey are welcome:

Appendix E

Perceived Barriers Correlation Matrix

Perceived Barriers Correlation Matrix

		Item10: If my partner or I used a condom, sex would NOT feel as good.	Item11: Sex feels Unnatural when a condom is used.	Item12: Condoms are embarrassing to use.	Item13: Condoms make you NOT want to have sex because you have to stop to put one on.
Item10: If my partner or I used a condom, sex would NOT feel as good.	Pearson Correlation	1	.625**	.173**	.335**
	Sig. (2-tailed)		.000	.000	.000
	N	745	743	738	744
Item11: Sex feels Unnatural when a condom is used.	Pearson Correlation	.625**	1	.225**	.360**
	Sig. (2-tailed)	.000		.000	.000
	N	743	749	743	748
Item12: Condoms are embarrassing to use.	Pearson Correlation	.173**	.225**	1	.517**
	Sig. (2-tailed)	.000	.000		.000
	N	738	743	744	743
Item13: Condoms make you NOT want to have sex because you have to stop to put one on.	Pearson Correlation	.335**	.360**	.517**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	744	748	743	751
Item14: Saying we have to use a condom would make my sexual partner think I am having sex with other people.	Pearson Correlation	.206**	.249**	.298**	.347**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	743	747	742	749
Item15: Saying we have to use a condom is like saying to my sexual partner, "I don't trust you."	Pearson Correlation	.164**	.214**	.249**	.302**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	742	746	741	747
Item16: My sexual partner is likely to break up with me if I said we had to use a condom.	Pearson Correlation	.122**	.154**	.362**	.302**
	Sig. (2-tailed)	.001	.000	.000	.000
	N	742	746	741	748
Item17: If I had a condom with me, my sexual partner would not like it.	Pearson Correlation	.198**	.188**	.259**	.252**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	743	747	742	748
Item18: Condoms cost too much.	Pearson Correlation	.157**	.140**	.117**	.148**
	Sig. (2-tailed)	.000	.000	.001	.000
	N	739	743	738	745
Item19: It is hard for me to get condoms.	Pearson Correlation	.085*	.111**	.178**	.208**
	Sig. (2-tailed)	.021	.003	.000	.000
	N	736	740	735	742
Item20: I cannot talk to my sexual partner about using condoms.	Pearson Correlation	.095**	.144**	.257**	.232**
	Sig. (2-tailed)	.010	.000	.000	.000
	N	737	741	736	743

		Item14: Saying we have to use a condom would make my sexual partner think I am having sex with other people.	Item15: Saying we have to use a condom is like saying to my sexual partner, "I don't trust you."	Item16: My sexual partner is likely to break up with me if I said we had to use a condom.	Item17: If I had a condom with me, my sexual partner would not like it.
Item10: If my partner or I used a condom, sex would NOT feel as good.	Pearson Correlation	.206**	.164**	.122**	.198**
	Sig. (2-tailed)	.000	.000	.001	.000
	N	743	742	742	743
Item11: Sex feels Unnatural when a condom is used.	Pearson Correlation	.249**	.214**	.154**	.188**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	747	746	746	747
Item12: Condoms are embarrassing to use.	Pearson Correlation	.298**	.249**	.362**	.259**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	742	741	741	742
Item13: Condoms make you NOT want to have sex because you have to stop to put one on.	Pearson Correlation	.347**	.302**	.302**	.252**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	749	747	748	748
Item14: Saying we have to use a condom would make my sexual partner think I am having sex with other people.	Pearson Correlation	1	.655**	.484**	.453**
	Sig. (2-tailed)		.000	.000	.000
	N	752	750	751	751
Item15: Saying we have to use a condom is like saying to my sexual partner, "I don't trust you."	Pearson Correlation	.655**	1	.468**	.455**
	Sig. (2-tailed)	.000		.000	.000
	N	750	750	749	750
Item16: My sexual partner is likely to break up with me if I said we had to use a condom.	Pearson Correlation	.484**	.468**	1	.420**
	Sig. (2-tailed)	.000	.000		.000
	N	751	749	751	750
Item17: If I had a condom with me, my sexual partner would not like it.	Pearson Correlation	.453**	.455**	.420**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	751	750	750	751
Item18: Condoms cost too much.	Pearson Correlation	.110**	.083*	.174**	.121**
	Sig. (2-tailed)	.003	.024	.000	.001
	N	748	746	747	747
Item19: It is hard for me to get condoms.	Pearson Correlation	.155**	.137**	.242**	.130**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	745	743	745	744
Item20: I cannot talk to my sexual partner about using condoms.	Pearson Correlation	.217**	.205**	.296**	.208**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	743	741	742	742

		Item18: Condoms cost too much.	Item19: It is hard for me to get condoms.	Item20: I cannot talk to my sexual partner about using condoms.
Item10: If my partner or I used a condom, sex would NOT feel as good.	Pearson Correlation	.157**	.085*	.095**
	Sig. (2-tailed)	.000	.021	.010
	N	739	736	737
Item11: Sex feels Unnatural when a condom is used.	Pearson Correlation	.140**	.111**	.144**
	Sig. (2-tailed)	.000	.003	.000
	N	743	740	741
Item12: Condoms are embarrassing to use.	Pearson Correlation	.117**	.178**	.257**
	Sig. (2-tailed)	.001	.000	.000
	N	738	735	736
Item13: Condoms make you NOT want to have sex because you have to stop to put one on.	Pearson Correlation	.148**	.208**	.232**
	Sig. (2-tailed)	.000	.000	.000
	N	745	742	743
Item14: Saying we have to use a condom would make my sexual partner think I am having sex with other people.	Pearson Correlation	.110**	.155**	.217**
	Sig. (2-tailed)	.003	.000	.000
	N	748	745	743
Item15: Saying we have to use a condom is like saying to my sexual partner, "I don't trust you."	Pearson Correlation	.083*	.137**	.205**
	Sig. (2-tailed)	.024	.000	.000
	N	746	743	741
Item16: My sexual partner is likely to break up with me if I said we had to use a condom.	Pearson Correlation	.174**	.242**	.296**
	Sig. (2-tailed)	.000	.000	.000
	N	747	745	742
Item17: If I had a condom with me, my sexual partner would not like it.	Pearson Correlation	.121**	.130**	.208**
	Sig. (2-tailed)	.001	.000	.000
	N	747	744	742
Item18: Condoms cost too much.	Pearson Correlation	1	.501**	.079*
	Sig. (2-tailed)		.000	.033
	N	748	741	739
Item19: It is hard for me to get condoms.	Pearson Correlation	.501**	1	.087*
	Sig. (2-tailed)	.000		.018
	N	741	745	736
Item20: I cannot talk to my sexual partner about using condoms.	Pearson Correlation	.079*	.087*	1
	Sig. (2-tailed)	.033	.018	
	N	739	736	745

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix F

Perceived Efficacy Correlation Matrix

Perceived Efficacy Correlation Matrix

		Item23: I can get condoms.	Item24: It is easy for me to have a condom with me all of the time.	Item25: I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.	Item26: I can say to my sexual partner that we should use a condom.	Item27: Before we are ready to have sex, I can talk to my sexual partner about using a condom.
Item23: I can get condoms.	Pearson Correlation	1	.445**	.130**	.195**	.179**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	750	745	746	747	744
Item24: It is easy for me to have a condom with me all of the time.	Pearson Correlation	.445**	1	.141**	.174**	.150**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	745	746	743	744	741
Item25: I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.	Pearson Correlation	.130**	.141**	1	.641**	.576**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	746	743	750	749	746
Item26: I can say to my sexual partner that we should use a condom.	Pearson Correlation	.195**	.174**	.641**	1	.740**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	747	744	749	751	748
Item27: Before we are ready to have sex, I can talk to my sexual partner about using a condom.	Pearson Correlation	.179**	.150**	.576**	.740**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	744	741	746	748	748
Item28: I can put a condom on without turning my sexual partner off.	Pearson Correlation	.232**	.204**	.435**	.485**	.430**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	742	739	744	746	743
Item29: I am sure that I can use a condom if I have sex.	Pearson Correlation	.163**	.207**	.450**	.571**	.504**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	746	743	747	748	746
Item30: If I am sexually aroused, I can stop before sex to use a condom.	Pearson Correlation	.217**	.258**	.317**	.427**	.396**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	741	738	743	744	741
Item31: I can say no to sex if my sexual partner and I do NOT have a condom.	Pearson Correlation	.091*	.142**	.261**	.334**	.340**
	Sig. (2-tailed)	.013	.000	.000	.000	.000
	N	747	744	749	750	747
Item32: I can stop sex to get a condom, if I do not have one.	Pearson Correlation	.125**	.193**	.300**	.339**	.340**
	Sig. (2-tailed)	.001	.000	.000	.000	.000
	N	743	739	744	745	742

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

		Item28: I can put a condom on without turning my sexual partner off.	Item29: I am sure that I can use a condom if I have sex.	Item30: If I am sexually aroused, I can stop before sex to use a condom.	Item 31: I can say no to sex if my sexual partner and I do NOT have a condom.	Item 32: I can stop sex to get a condom, if I do NOT have one.
Item23: I can get condoms.	Pearson Correlation	.232**	.163**	.217**	.091*	.125**
	Sig. (2-tailed)	.000	.000	.000	.013	.001
	N	742	746	741	747	743
Item24: It is easy for me to have a condom with me all of the time.	Pearson Correlation	.204**	.207**	.258**	.142**	.193**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	739	743	738	744	739
Item25: I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.	Pearson Correlation	.435**	.450**	.317**	.261**	.300**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	744	747	743	749	744
Item26: I can say to my sexual partner that we should use a condom.	Pearson Correlation	.485**	.571**	.427**	.334**	.339**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	746	748	744	750	745
Item27: Before we are ready to have sex, I can talk to my sexual partner about using a condom.	Pearson Correlation	.430**	.504**	.396**	.340**	.340**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	743	746	741	747	742
Item28: I can put a condom on without turning my sexual partner off.	Pearson Correlation	1	.456**	.383**	.235**	.303**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	746	743	740	746	741
Item29: I am sure that I can use a condom if I have sex.	Pearson Correlation	.456**	1	.388**	.350**	.415**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	743	750	742	748	743
Item30: If I am sexually aroused, I can stop before sex to use a condom.	Pearson Correlation	.383**	.388**	1	.424**	.453**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	740	742	745	745	740
Item31: I can say no to sex if my sexual partner and I do NOT have a condom.	Pearson Correlation	.235**	.350**	.424**	1	.632**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	746	748	745	751	746
Item32: I can stop sex to get a condom, if I do not have one.	Pearson Correlation	.303**	.415**	.453**	.632**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	741	743	740	746	747

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix G

Items Included in Exploratory Factor Analysis

Complete List of Items Used in Initial Exploratory Factor Analysis

Item #	Item Description
Item1	If I have sex, I will get AIDS.
Item2	If I have sex, I will get a sexually transmitted disease (STD).
Item3	If I have sex during my teen years, my partner or I will get pregnant.
Item4	If I have sex, and my parents find out, then they will be angry at me.
Item5	If I have sex during my teen years, then I am less likely to graduate from high school.
Item6	If I have sex during my teen years, then I am less likely to have the career that I am hoping for.
Item7	Condoms help prevent pregnancy.
Item8	Condoms help prevent STDs.
Item9	Condoms help prevent AIDS.
Item10	If my partner or I used a condom sex would NOT feel as good
Item11	Sex feels unnatural when a condom is used
Item12	Condoms are embarrassing to use.
Item13	Condoms make you NOT want to have sex because you have to stop to put one on.
Item14	Saying we have to use a condom would make my sexual partner think I am having sex with other people.
Item15	Saying we have to use a condom is like saying to my sexual partner, I don't trust you.
Item16	My sexual partner is likely to break up with me if I said we had to use a condom.
Item17	If I had a condom with me, my sexual partner would not like it.
Item18	Condoms cost too much.
Item19	It is hard for me to get condoms.
Item20	I cannot talk to my sexual partner about condoms.
Item23	I can get condoms.
Item24	It is easy for me to have a condom with me all of the time.
Item25	I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.
Item26	I can say to my sexual partner that we should use a condom.
Item27	Before we are ready to have sex, I can talk to my sexual partner about using a condom.
Item28	I can put a condom on without turning my sexual partner off.
Item29	I am sure that I can use a condom if I have sex.
Item30	If I am sexually aroused, I can stop before sex to use a condom.
Item31	I can say no to sex if my sexual partner and I do NOT have a condom.

Item32	I can stop sex to get a condom, if I do NOT have one.
Item33	It is too much trouble to carry around condoms.
Item34	I can use a condom, even if the room is dark.
Item35	I can get my sexual partner to agree to use a condom without turning him/her off.
Item36	I will try to get my sexual partner to agree to use condoms if we have sex in the next 3 months.
Item37	A lot of times condoms break when you are using them.

Appendix H

Rotated Variable Factor Matrix for Final EFA Model

Rotated Variable Factor Matrix with Kaiser Normalization: Full Set of Loadings for the Final Iteration of the EFA Model

Item	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
Item35: I can get my sexual partner to agree to use a condom without turning him/her off.	0.793					
Item29: I am sure that I can use a condom if I have sex.	0.78					
Item26: I can say to my sexual partner that we should use a condom.	0.767					
Item27: Before we are ready to have sex, I can talk to my sexual partner about using a condom.	0.718					
Item36: I will try to get my sexual partner to agree to use condoms if we have sex in the next 3 months.	0.691					0.304
Item28: I can put a condom on without turning my sexual partner off.	0.682					
Item25: I can get my sexual partner to agree to use a condom, even if he/she doesn't want to.	0.677					
Item34: I can use a condom, even if the room is dark.	0.657					
Item15: Saying we have to use a condom is like saying to my sexual partner, I don't trust you.		0.808				
Item14: Saying we have to use a condom would make my sexual partner think I am having sex with other people.		0.791				
Item16: My sexual partner is likely to break up with me if I said we had to use a condom.		0.701				
Item17: If I had a condom with me, my sexual partner would not like it.		0.646				
Item19: It is hard for me to get condoms.			0.842			
Item23: I can get condoms.			0.705			
Item33: It is too much trouble to carry around condoms.			0.604			
Item24: It is easy for me to have a condom with me all of the time.			0.602			
Item18: Condoms cost too much.			0.59			
Item8: Condoms help prevent STDs.				0.937		
Item9: Condoms help prevent AIDS.				0.926		
Item7: Condoms help prevent pregnancy.				0.77		

Item	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
Item2: If I have sex, I will get a sexually transmitted disease (STD).					0.926	
Item1: If I have sex, I will get AIDS.					0.907	
Item3: If I have sex during my teen years, my partner or I will get pregnant.					0.718	
Item10: If my partner or I used a condom sex would NOT feel as good						0.847
Item11: Sex feels unnatural when a condom is used						0.828
Item13: Condoms make you NOT want to have sex because you have to stop to put one on.		0.342				0.473

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Biographical Information

Holli M. Slater is a first generation college graduate born to Hollis and Louisa Howard on May 12, 1980. She attended Graham High School and graduated in 1998. She went on to pursue a degree from the University of Dallas where she graduated with a Bachelors of Arts degree in Psychology in May 2002. Following graduation she continued to work for a manufacturing company for several years before changing professions. In 2005, she began work as a foster care case manager at a small non-profit agency in Dallas, TX. In 2006, she returned to the University of Texas at Arlington to pursue a degree in Social Work. While there, she had the opportunity to work on numerous research projects and began her doctoral studies in August 2008, while finishing up her Masters thesis. She graduated with a Masters of Science in Social Work degree in December 2008. From 2007 – 2011, she worked as a research assistant on a collaborative project with Arlington Independent School District conducting a program evaluation of Healthy Families: Tomorrow's Future, a parenting education program funded by the Office of Adolescent and Pregnancy Programs (OAPP). Beginning in September 2010, she began work as a research associate managing a 5-year, 1 million dollar research grant to conduct a program evaluation of Crossroads, a pregnancy prevention program for teen dropouts, funded by the Office of Adolescent Health (OAH). She received her doctoral degree in Social Work from the University of Texas at Arlington in May 2015. The current evaluation project will conclude in February 2016 at which time she plans to to pursue a career in program evaluation.