CORRELATES OF PARENT-CHILD CONCORDANCE IN SEXUAL ATTITUDES: DOES PARTICIPATION IN THE PARENTS MATTER! PROGRAM IMPROVE THIS AGREEMENT?

by

Colleen McArthur Bridger

A dissertation submitted to the faculty of The University of North Carolina at Charlotte in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Health Services Research

Charlotte

2009

Approved by:

_____
Dr. James Studnicki

_____
Dr. Ahmed A. Arif

_____
Dr. Larissa R. Huber

_____
Dr. David R. Langford

_____
Dr. John R. Culbreth

ABSTRACT

COLLEEN MCARTHUR BRIDGER. Correlates of parent-child concordance in sexual attitudes: does participation in the Parents Matter! Program improve this agreement? (Under the direction of DR. JAMES STUDNICKI)

The sexual health of America's teens is a critical public health issue. Parents are ill-prepared and ill-equipped to fill the sexuality education gap facing today's teens. Understanding the most effective and efficient way to teach parents how to provide this education for their children is an important step in the development of a successful parent sexuality education curriculum. Using a study population of 9-11 year old African American children and their parents, this study first looked to determine the correlates of sexual attitude congruence between these parents and their children. Consistent with previous studies that focused on older Caucasian teens, this study found that parent-child communication and parent-child closeness (as reported by the child) were correlates of concordance in sexual attitudes. Parent-child dyads with higher scores on indices that measured sexual communication and closeness were more likely to agree on 8 questions about dating and sexual activity than those with lower scores. Once these correlates were identified, this study evaluated whether participation in a parent sexuality education curriculum (Parents Matter! Program) improved either the scores on these indices or improved agreement on the 8 aforementioned questions at 6 and 12 months post-intervention. While the difference of mean change analysis found that parents who participated in the Parents Matter! Program (full intervention) scored higher on the parent-child sexual communication index than the brief intervention or the control group at 6 and 12 months post-intervention, a multilevel analysis revealed no significant differences between the three groups. Finally, this study employed a multilevel analysis to determine if there were differences in levels of agreement on the 8 dating and sexual attitude questions between the three groups at 6 and 12 months post-intervention. One question out of 8 showed a clear dose-response relationship between participating in the Parents Matter! Program and higher odds of agreement.

ACKNOWLEDGEMENTS

I would like to acknowledge several people without whom this dissertation would not have materialized. First, Dr. Kim Miller at the CDC. Her willingness to give access to this incredibly rich data set to a complete stranger and then the hours she spent on the phone, email and in reviewing the document is greatly appreciated. Second, Dr. Ahmed Arif who spent countless hours, usually on evenings and weekends, reviewing STATA coding, answering analysis questions and reviewing the document with a fine tooth comb. He was also the one who introduced me to multilevel analysis which strengthened this study considerably. Finally, the other members of my committee, Drs. Studnicki, Huber, Langford and Culbreth. They filled various needs throughout the process; always with an incredibly calm and helpful demeanor.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

The sexual health of America's adolescents is a critical public health issue. With teen pregnancy rates higher than most other developed countries and one in four teenagers in the U.S. currently estimated to be infected with a sexually transmitted disease (STD), our teenagers are engaging in risky sexual behaviors that frequently carry with them life-long consequences including HIV (CDC, 2008).

Sexuality education is often left to the schools and on-going controversies regarding just what to teach and at what age to begin create an education vacuum that teens look to fill through other sources. Teens tell researchers that they want their *parents* to be their most important source of sexuality education, but parents believe *peers* fulfill that role for their children (NCPTP, 2004). Parents who want to provide information to their teens about sex are often unsure how and when to begin the conversation and what to say.

An emerging area of sexuality education is aimed at empowering and training parents to take on this role for their children. However, evaluations of parent sexuality education trainings are showing mixed results (Burgess, Dziegielewski, & Green, 2005; Eastman, Corona, & Schuster, 2006; Forehand et al., 2007; Kirby, 2001; Klein et al., 2005; Brent C. Miller, 1993; O'Donnell et al., 2008; O'Donnell et al., 2005). This study will add to the research by applying a framework based on the Theory of Reasoned Action/Planned Behavior to the examination of what parental characteristics are

correlated with high parent-child congruence in sexual beliefs. Additionally, it will evaluate if participation in the Parents Matter! Program, an intervention designed to improve a parent's ability to communicate with his or her teen about sex, improves sexual attitude congruence (e.g., the extent to which the parent and child agree about teen sexual activity).

The Theory of Reasoned Action (TRA) and its extension the Theory of Planned Behavior (TPB) have been used extensively in research on teen sexual risk-related behaviors (Beadnell et al., 2007; K. Hutchinson & Wood, 2007; Noar, 2007; Sheeran & Taylor, 1999). The TRA postulates that behavior is cognitively determined, but influenced by several outside factors categorized by *attitudes* and *perceived social norms*. The TPB adds to the TRA a *perceived behavioral control* component. Similar to the self-efficacy concept in Bandura's Social Cognitive Theory, this component represents a person's belief in their ability to do what they intend.

The TRA/TPB predicts (see Figure 1) that those teens who understand their parents' sexual beliefs and attitudes will incorporate those values into their decision making about sexual activity both through their own attitudes about sex and through their perception of social norms and behavioral control. Combined, teens' attitudes, social norms and beliefs in their ability to do what they want (e.g., refuse pressure to have an unwanted sexual relationship) predict sexual intent which then predicts behavior (K. Hutchinson & Wood, 2007).

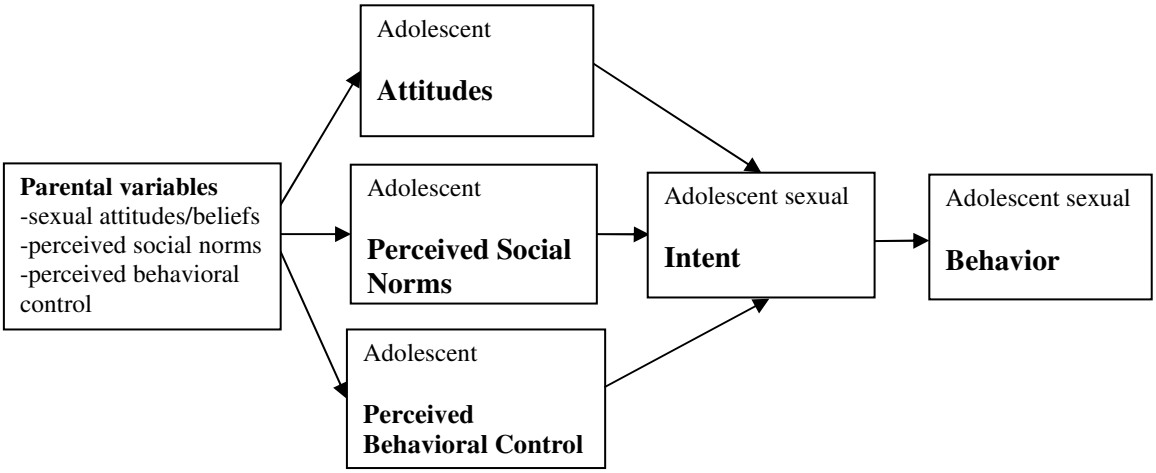

Figure 1. *Theoretical Framework*

Adapted from Hutchinson & Wood's Parent-based expansion of the theory of planned behavior (K. Hutchinson & Wood, 2007).

Parents Matter! is a parent-based sexual risk reduction curriculum for African American youth ages 9-12. Based on four interrelated theories of behavior change, including the TRA, this intervention is designed to decrease adolescent sexual risk behaviors by improving parents' ability to communicate their sexual values, beliefs and expectations for their pre-adolescent children (Dittus, Miller, Kotchick, & Forehand, 2004).

The evaluation of the Parents Matter! curriculum is being conducted as a randomized control trial with 1,100 parent-child dyads enrolled into one of three groups. The primary or "full intervention" Parents Matter! is a 5 week, 15 hour training on improving parenting and sexual risk reduction communication between parents and their children. The second intervention or "brief intervention" was also designed to improve parent-child sexual risk communication, but is abbreviated and done in one 2.5 hour session. The control group received one 2.5 hour general health education session not specific to sexual activity. Participants completed baseline interviews, as well as 6, 12, 24 and 36 month post study interviews. The first published study from this Randomized Control Trial (RCT) found that the intensive, 15 hour Parents Matter!

Program was the most effective intervention when compared to the brief intervention and the Control Group at improving parent-child sexual risk reduction *communication* (Forehand et al., 2007).

What has yet to be evaluated is whether this improved communication actually improves a child's understanding of his or her parent's sexual beliefs and attitudes. This differentiation is important because the research is inconsistent on how effective parent-child sexual risk communication *alone* is at reducing an adolescent's sexual risk behavior (Blake, Simkin, Ledsky, Perkins, & Calabrese, 2001; Brent, 2002; DiLorio, Pluhar, & Belcher, 2003; Forehand et al., 2007; Harris, 1995; M. K. Hutchinson, 2002; Jaccard, Dittus, & Gordan, 1996; B. Miller, 2002; K. Moore, Peterson, & Furstenberg, 1986; Newcomer & Udry, 1985; Regnerus & Luchies, 2006; Rose et al., 2005; Whitaker, Miller, May, & Levin, 1999). This study will attempt to determine if sexual communication, a parent's global sexual attitude and/or a child's perception of the relationship with his or her mother are related to congruency in sexual beliefs in parent-child dyads and if the Parents Matter! Program improves that agreement from baseline to 6 and 12 months post-intervention.

The hypothesis for this study is that parents trained in the Parents Matter! Program curriculum will have greater skills in communicating their sexual beliefs and attitudes to their children which will consequently lead to: 1) greater accuracy in the child's understanding of what the parent believes and 2) greater congruence within the dyad of sexual attitudes and beliefs regarding the child's sexual behavior. There are two ultimate goals of this study. The first is to provide program developers a more targeted list of skills they can help parents strengthen as they continue the development of a 360 degree approach to sex education. The second is to evaluate the Parents Matter! Program's effectiveness at improving parents' abilities as their child's primary sexuality educator.

Specific Aims, Research Questions and Hypotheses

Specific Aim #1 – Determining Correlates of Congruence

Research Question 1: Are parent-child sexual communication, parental global sexual attitudes and/or a child's perception of the relationship with his or her parent correlates of parent-child congruence in sexual beliefs?

H_A1: Parent-child sexual communication, parental global sexual attitudes and a child's perception of the relationship with his or her parent will all emerge as correlates for increased parent-child congruence in sexual attitudes and beliefs.

Research Question 2: Does a teen's ability to correctly state his or her parent's sexual beliefs predict greater congruence in the dyad's sexual beliefs?

H_A2: Teens who can accurately state their parents' sexual beliefs will be more likely to share those beliefs thus leading to greater congruence within the dyad.

Specific Aim #2 - Evaluation of the Parents Matter! Program.

Research Question 3: Does participation in the Parents Matter! Program result in higher parent-child sexual attitude congruence than either the brief intervention or the control group at 6 and 12 months post intervention?

H_A3: Participation in the Parents Matter! Program (full intervention) will result in higher parent-child congruence than either the brief intervention group or the control group at 6 and 12 months post intervention.

Research Question 4: Does participation in the Parents Matter! Program result in higher scores on the predictive indices (developed and tested for Research Question #1) as compared to the brief intervention and the control group?

H_A4: Participation in the Parents Matter! Program will result in higher scores on the predictive indices than either the brief intervention group or the control group at 6 and months post intervention.

Data

The data for this study was taken from a survey conducted by the CDC during their evaluation of the Parents Matter! parent sexuality education curriculum. From 1,545 inquiries, the study

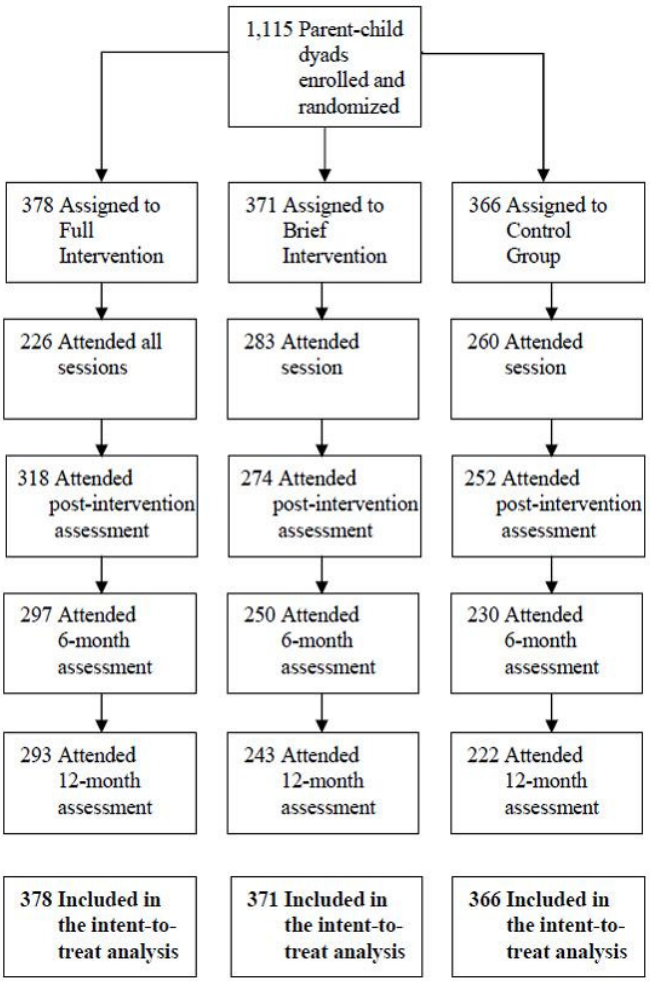

Figure 2. *Parents Matter! randomization flow chart (adapted from Forehand et al., 2007).*

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enrolled1,115 parent-child dyads (72%). These dyads were randomized into three groups with 378 assigned to the Parents Matter! Program intervention (Parents Matter! Program) "full intervention", 371 assigned to the single session intervention "brief intervention" and 366 assigned to the control group (Forehand et al., 2007). See Figure 2 for more details on the Parents Matter! randomization.

The surveys were done at baseline, six months, twelve months, twenty-four months and thirty-six month post intervention (though this study will analyze only baseline, 6 and 12 months post-intervention as the CDC is currently utilizing the full data set for other analyses). Typically administered to the parent and child simultaneously, but in separate areas, the surveys used audio-computer assisted technology. To ensure that the survey had high reliability, validity, sensitivity and was age and culturally appropriate, researchers: 1) used existing scales and measures; 2) had the survey reviewed by a local Community Advisory Board; 3) used focus groups and pilot tests; 4) had elementary school teachers review the child survey for comprehension level and 5) pilot tested the child survey with age-appropriate children (Forehand et al., 2007).

Summary

Many of our nation's teens are making poor decisions about their reproductive health due partly to a lack of basic sexuality education and partly to a lack of parental guidance. The Parents Matter! Program was designed to improve parents' knowledge, skills and abilities as their children's primary sexuality educators. This study will examine which characteristics for both parents and children predict greater agreement in sexual attitudes, and will evaluate if participation in the Parents Matter! Program has a positive effect on those characteristics.

CHAPTER 2: LITERATURE REVIEW

In 2004 there were approximately 745,000 teen pregnancies in the United States. In 2006 nearly one million adolescents and young adults aged 10-24 years were diagnosed with Chlamydia, gonorrhea, or syphilis. Twenty five percent of teen girls aged 15-19 have had the sexually transmitted human papilloma virus (HPV) and approximately one-fourth of current HIV infections occur during adolescence (Gavin et al., 2009). Almost one-half of all teenage mothers and over three-quarters of unmarried teen mothers receive welfare within five years of the birth of their first child and less than 30% of teens pregnant before 18 will earn their high school diploma. Only 1.5% of these will earn a college degree by the time they are thirty (Henshaw, 2004).

Babies born to teen mothers have rates of low birth weight 21% higher than babies born to women age 20-24, and children born low birth-weight have a two-fold increased risk of being diagnosed with attention-deficit or hyperactivity disorders and other disabilities. In spite of being at higher risk for disabilities and other illnesses, children born to teens are less likely to be seen by a doctor. In his or her first 14 years, the typical child of a teen mother visits a physician and other medical providers an average of 3.8 times per year, compared with 4.3 times for a child of non-teen parents (Maynard, 1996). Children of teen parents also suffer higher rates of abuse and neglect. One recent analysis found that there were 110 reported incidents of abuse and neglect per 1,000 families headed by a teen mother. By contrast, in families where the mothers delay childbearing until their early twenties, the rate was less than half, or 51 incidents per 1,000 families (Maynard, 1996). Finally, children of teens are more likely to struggle in school, and less likely to graduate (NCPTP, 2004).

Risk Factors for Teen Pregnancy

A review of the literature identifies several risk factors associated with initiation of teen sexual activity and teen pregnancy. These risk factors fall into three categories: 1) communities; 2) teens; and 3) families.

Community risk factors identified in the research include community disadvantage, for example, neighborhoods with low educational attainment, high unemployment and low per-capita household incomes, and disorganization, for example, communities with high crime rates, high government-funded housing and high drug use. Teens living in these communities, even controlling for all other family and teen variables, are at higher risk of pregnancy (Kalmuss, Davidson, Cohall, Laraque, & Cassell, 2003; Kirby, 2001, 2007; B.C. Miller, Benson, & Galbraith, 2001).

Teenagers themselves have certain characteristics that put them at higher risk of early and unsafe sexual activity and pregnancy. Girls who go through puberty at a younger age than their peers are more likely to initiate sexual activity earlier and consequently are at higher risk for teen pregnancy (Kirby, 2001, 2007; Meschke, Bartholomae, & Zentall, 2000). Teens with low educational expectations or performance as well as teens with low cognitive ability are at higher risk for early and risky sexual behavior (Kalmuss et al., 2003; Shearer et al., 2002). Also, connection to school and/or a religious institution serves as protective factors against teen pregnancy (Kirby, 2001; B. Miller, 2002)

Finally, minority teens are at higher risk for teen pregnancy. Black teens are more likely to have had very early vaginal sex than Hispanics, who are more likely to do so than whites (Abma & Sonenstein, 2001; Kalmuss et al., 2003; O'Donnell, O'Donnell, & Stueve, 2001). Both Blacks and Hispanics are less likely to have used contraceptives at either first or most recent sex and both consistently have significantly higher teen pregnancy rates than their White peers (Abma & Sonenstein, 2001). Yet in spite of their higher rates of early sexual initiation and teen

pregnancies, minority youth, especially those aged 13 and under, are underrepresented in the research on adolescent sexual health (O'Donnell et al., 2001).

At the family level, there are two sub-categories of risk factors: 1) socio-economic and 2) family structure/dynamics. Teens from families with adverse socio-economic indicators, such as low income and education level, were at higher risk for early sexual initiation, unprotected sexual intercourse and pregnancy (Kotchick, Dorsey, Miller, & Forehand, 1999; B. Miller, 2002; K. Miller, Forehand, & Kotchick, 1999). Specific family structure/dynamic variables that put teens at risk include single-parent families, families where teen pregnancy was the norm (either mom or older sister had teen pregnancies), families who expressed casual attitudes about teen sexual activity, and families where monitoring of teens' activities was sporadic or non-existent (Borawski, Levers-Landis, Lovegreen, & Trapl, 2003; McNeely et al., 2002; Pick & Andrade-Palos, 1995; Rose et al., 2005). In families where there was a clear expectation of educational success, closeness, support, strong religious beliefs and clear family values against teen sexual behavior combined with clear expectations of contraceptive use if teens were sexually active, teens were much less likely to experience teen pregnancy - and if they did get pregnant, much less likely to have a repeat pregnancy during their teenage years (Kirby, 2001, 2007; Kotchick et al., 1999; B.C. Miller et al., 2001).

In a 2004 nationwide survey done by the National Campaign to Prevent Teen Pregnancy, more teens (45%) identified parents as the most influential person in their sexual decision making than any other source. However, nearly half of all parents surveyed believed *peers* were the most influential people in their teen's sexual decision making - even though less than a third of teens surveyed identified their peers (NCPTP, 2004).

Theoretical Framework

Most research has shown that parents are more likely to shape adolescents' attitudes and beliefs about sex than their specific sexual knowledge (T. Fisher, 1986; Sanders & Mullis, 1988).

However, a much cited study by Harris (1995) suggests that parents have little or no influence on their adolescent children's behaviors (Harris, 1995). Since then, however, the Theory of Reasoned Action (TRA) and its extension the Theory of Planned Behavior (TPB) have been used extensively in research on predicting sexual risk-related behaviors (Beadnell et al., 2007; K. Hutchinson & Wood, 2007; Noar, 2007; Sheeran & Taylor, 1999). The TRA postulates that behavior is cognitively determined, but influenced by several outside factors categorized by *attitudes* and *perceived social norms*. The TPB adds to the TRA a *perceived behavioral control* component. Similar to the self-efficacy concept in Bandura's Social Cognitive Theory, this component represents a person's belief in their ability to do what they intend. The TRA/TPB have been found to be highly reliable in predicting risk factors such as early initiation of sexual activity or lack of condom use associated with adolescent sexual activity (Albarracin, Kumkale, & Johnson, 2004; Beadnell et al., 2007; Buhi & Goodson, 2007; Gillmore et al., 2002).

Gillmore et al. (2002) tested the applicability of these models on boys and girls to determine if the relationships among theory constructs differ by gender. They found that while boys and girls have different reasons for choosing to become sexually active, their decision-making processes are the same and are reliably predicted by the TRA/TPB (Gillmore et al., 2002). They also dissected "social norms" by differentiating between adult and youth norms to determine which had a greater influence on teen sexual decision making. They found, in direct contrast to Harris, that adult rather than youth norms were the best predictors of the overall social norm component of the TRA (Gillmore et al., 2002).

The TRA/TPB predicts (see Figure 1) that those teens who understand their parents' sexual beliefs and attitudes will incorporate those values into their decision making about sexual activity both through their own attitudes about sex and through their perception of social norms and behavioral control. Combined, these teens' attitudes, social norms and beliefs in their ability

to do what they want (e.g., refuse pressure to have an unwanted sexual relationship) predict sexual intent which then predicts behavior (K. Hutchinson & Wood, 2007).

Parent-Child Sexual Communication

Parental characteristics that are related to parent-child communication (and consequently to a child understanding his or her parent's sexual attitudes and expectations) fall into two general categories: 1) parent-reported communication about sex and 2) parent attitudes about sex. Child/teen characteristics that have been predictive of improved parent-child sexual communication fall into three general categories: 1) general relationship/communication with parent; 2) comfort with communication about sex and 3) perceived risks associated with sexual behavior (Buhi & Goodson, 2007; DiBlasio & Benda, 1990; DiLorio et al., 2003; Laflin, Wang, & Barry, 2008; Solorio et al., 2008).

Studies are mixed on whether communication between parents and teens specific to sex is a protective factor for teen pregnancy. McNeely et al. (2002) found that two variables regarding actual conversations about sex – mother's recommendation of a specific method of birth control and frequency of discussion about sex and birth control – had no effect on the timing of first intercourse. However, the majority of research on this issue has found that parent-child sexual communication, when done well, is associated with decreased sexual risk taking behavior including later sexual initiation and greater condom and contraceptive use (T. Fisher, 1986; M. K. Hutchinson, 2002; Jaccard, Dittus, & Litardo, 1999; Kotchick et al., 1999; K. Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Whitaker et al., 1999).

Kotchick et al. (1999) examined the effects of parental modeling of risky sexual behavior and parent- child communication about sex and found that *only* the quality of communication about sex between a mother and her teen was a deterrent to a teen's sexual risk taking. The parent's sexual risk taking did not have an effect on the teen. Other studies have found that when

teens reported little parental communication about sex, they were more likely to initiate sex at an earlier age (M. K. Hutchinson, 2002; Jaccard, Dittus, & Gordan, 1998; Jaccard et al., 1999).

Many studies have found significant variation in what teens report their parents have told them about sex and what parents believe they have told their teens (DiLorio et al., 2003; Jaccard et al., 1999; K. Miller et al., 1998; Newcomer & Udry, 1985). Consistently, teens report less sexual communication between them and their parents than their parents do (Jaccard et al., 1998; Raffaelli et al., 1999; Rosenthal & Feldman, 2002).

Fasula and Miller (2006) found that maternal responsiveness to questions from their teens about sexual topics had a mediating effect on negative peer influences. In their study, teens that had not had sex were asked questions about their mother's comfort, skill and openness in answering questions about sexually-related topics. These topics included when to start having sex, puberty, handling pressures to have sex, birth control, condoms and choosing sex partners. Among those teens whose peer group was sexually active, those who reported that their mothers had above average responsiveness to sexually-related questions were 1.6 times more likely to plan to delay intercourse than teens who reported their mothers had average responsiveness.

There is little research on sexual risk communication between minority parents and their teens (DiLorio, McCarty, Denzmore, & Landis, 2007; DiLorio et al., 2003; K. Miller et al., 1998). However, in those studies that examined parent child sexual communication specific to African Americans they found that consistent with research among white teens this communication both mediated negative peer influence and reduced the risk of risk teen sexual behavior (DiLorio et al., 2007; DiLorio et al., 2003; Fasula & Miller, 2006; K. Miller et al., 1998).

A Child's Perception of the Relationship with his/her Parent

Many researchers have investigated the association between teen sexual behavior and parent-child closeness/connectedness ((B.C. Miller et al., 2001). In their review of approximately

24 studies, Miller et al. (2001) found with remarkable consistency that parent-child closeness was associated with reduced adolescent pregnancy risk. Teens who felt closer to their parents were more likely to postpone sexual initiation and if sexually active, have fewer sexual partners, and greater use of contraception (B.C. Miller et al., 2001).

While there is much discrepancy between what parents and teens report regarding quantity and quality of parent-child sexual *communication*, there appears to be significantly less discordance in reports of parent-child *connectedness* (Kirby, Lepore, & Ryan, 2005; B.C. Miller et al., 2001; Rose et al., 2005). Studies that examine only the parent's perspective on how close they are with their child compared to studies that focus solely on the child's perception report similar results to those studies that examine both parent and child together (Jaccard et al., 1996).

Parental General Sexual Attitudes

Several studies have identified "parental disapproval of teen sexual activity" as a protective factor in a teen's decision to delay sexual initiation (Fingerson, 2005; Kirby, 2001; McNeely et al., 2002; B.C. Miller et al., 2001; K. Miller et al., 1999; Regnerus & Luchies, 2006; Rose et al., 2005). Most studies have found that teens who perceive their parents to have conservative values about sex are less likely to have sex. However, most studies have found that teens generally perceive their parents to be more liberal regarding teen sexual activity than their parents actually are (Fingerson, 2005; O'Donnell et al., 2001). Also, most parents tend to underestimate their teens' sexual activity (Jaccard et al., 1998; O'Donnell et al., 2001).

This situation where teens think their parents are accepting or even expecting teen sexual activity, combined with parents' tendency to assume their child is "different from the others" creates an often ambiguous sexuality education environment for both parents and teens.

Parent Sexuality Education

Several curricula exist which are designed to train parents in the essential skills necessary to help their teen reduce unsafe sexual behavior and consequent pregnancy. Many of these parent sexuality education programs have been shown to: 1) improve parents' comfort with and skill in talking with their children about sex and/or 2) increase parent-child sexual communication (Blake et al., 2001; Eastman et al., 2006; Forehand et al., 2007; Green & Documet, 2005; Klein et al., 2005; Swain, Ackerman, & Ackerman, 2006). One study also showed that among 351 middle school students who received school-based abstinence-only education, those whose parents were asked to be involved in their sexuality education were more likely to report greater self-efficacy for avoiding high-risk sexual situations and less intention to have sex before high school graduation (Blake et al., 2001).

None of the above-mentioned programs, however, evaluated whether these improvements had a long-term effect on pregnancy rates among teenage participants and most used either convenience samples, or pre-test/post-test research designs that allowed for significant bias.

Parents Matter! Program

The Parents Matter! program was designed to provide education to African American parents on how to talk with their pre-teens about sex. This program brings several strengths to parent sexuality education because it was: 1) designed specifically for African Americans who are underrepresented in teen sexuality research and overrepresented in teen sexual risk taking and 2) designed for pre-teens, also an underrepresented demographic (Ball, Pelton, Forehand, Long, & Wallace, 2004; Dittus et al., 2004; Forehand et al., 2007; Long et al., 2004).

In 1999, the CDC issued a request for proposals to design, implement and evaluate a parent education program aimed at reducing high-risk sexual behavior among African American teens. In response, investigators at the University of Georgia, Georgia State University and the University of Arkansas for Medical Sciences submitted a joint proposal. This diverse team joined

researchers at the CDC and embarked upon the development and evaluation of a first of its kind parent sexuality education curriculum.

The team, recognizing the need to design a program that was intensive enough to bring about meaningful change while also respecting the many demands that parents and children have on their time, set about developing a curriculum that was "brief, practical and economical" (Guilamo-Ramos, Jaccard, & Casillas, 2004). By explicitly comparing a brief intervention with the more extensive intervention in an RCT design, they allow program evaluators to determine if the additional time spent in the full intervention is cost-effective based on the comparative results.

Participants in the RCT were African American parents or guardians who had children in the 4th or 5th grade. The full intervention (Parents Matter! Program) consisted of five 2.5 hour sessions conducted over 5 weeks with booster sessions at 12 and 24 months post-intervention. This intervention focused on improving overall parenting and sexual communication skills by using a variety of presentations modes such as group discussion, video and role-plays. The brief intervention consisted of a single 2.5 hour session in which parents were provided information on general parenting and sexual communication skills. This intervention provided the same information as the full intervention in a condensed format with much less group interaction. The control group consisted of a single 2.5 hour session that focused on general child health issues such as diet and exercise rather than parenting and sexual communication (Dittus et al., 2004).

Consistent with the TRA, the Parents Matter! Program attempts to modify teen's sexual attitudes and norms by providing parents with tools to communicate their own attitudes and expectations regarding their child's sexual behavior with the expectation that the children will incorporate those expectations into their own attitudes and intentions. Then, consistent with the TPB, the Parents Matter! Program seeks to promote greater self-efficacy and expectations among parents about discussing sexuality with their children by providing useful communication strategies and increasing their confidence in their ability to engage their children in effective

discussions about sexual issues. The Parents Matter! Program seeks to increase adolescent sexual risk reduction self-efficacy by promoting open and well-informed dialogue between parents and children about specific sexual risk reduction strategies.

The premise of the Parents Matter! Program is that reductions in adolescent sexual risk behavior will result from changes in parenting behaviors and family environments related to several adolescent constructs important in determining adolescent behavior (Dittus et al., 2004). Primary among these constructs are parent-child sexual communication, parent-child closeness and parental sexual attitudes. The Parents Matter! Program is designed to help parents learn how to provide supportive environments, positively reinforce competence-promoting/risk reducing behavior and structure or monitor children's environments so that exposure to risk is limited.

Are parents the right person for the job of educating their teens about sexual decision making? The research indicates that parents are highly influential in their teen's formation of sexual values. Additionally, parents who successfully maintain a warm, caring and trusting relationship with their teens, have open, responsive communication and supervise their teens' activities are more likely to have teens that postpone sexual activity - or if sexually active, to have fewer partners and are more likely to use contraception and condoms. The research suggests that parents can help fill the sexuality education gap. Consistent with the TRA/TPB framework, several studies have found that parents who: 1) are more confident in their abilities as their child's sexuality educator and 2) recognize the need to provide that education, are more likely to take an active role in their child's sexuality education (Kirby, 2001, 2007; Klein et al., 2005; Pick & Andrade-Palos, 1995; Swain et al., 2006).

In summary, researchers have consistently shown that parental sexual attitudes and beliefs influence a teen's sexual attitudes and beliefs and that those beliefs influence behavior. What is not know, however, is how attitudes are communicated by the parent and assimilated by the child thus leading to a congruence of attitudes. This study will identify if 1) parent child

sexual communication; 2) parental global sexual attitudes and/or 3) a child's perception of the relationship with his or her parent are correlated with sexual attitude congruence and evaluate an intervention aimed at improving a parent's ability to communicate sexual values and expectations with his or her teen about sex. This information will allow researchers to develop a more targeted parent sexuality education intervention.

CHAPTER 3: METHODS

Specific Aim #1 – Determining Correlates of Congruence

Research Question 1: Are parent-child sexual communication, parental global sexual attitudes and/or a child's perception of the relationship with his or her parent correlates of parent-child congruence in sexual beliefs?

H_A1: Parent-child sexual communication, parental global sexual attitudes and a child's perception of the relationship with his or her parent will all emerge as correlates for increased parent-child congruence in sexual attitudes and beliefs.

Rationale/importance: The TRA/TPB postulates that attitudes predict intent which predicts behavior. When parents believe that teens should not have sex, for example, and successfully instill that belief in their teen, the likelihood of that teen engaging in sex is decreased. Understanding common characteristics of those parents who accomplish this will assist researchers in developing targeted education programs to help other parents do the same.

Research Question 2: Does a teen's ability to correctly state his or her parent's sexual beliefs predict greater congruence in the dyad's sexual beliefs?

H_A2: Teens who can accurately state their parents' sexual beliefs will be more likely to share those beliefs thus leading to greater congruence within the dyad.

Rationale/importance: The TRA/TPB predicts that a teen's sexual attitudes and beliefs are in large part influenced by his or her parents' sexual attitudes and beliefs. The literature, however, finds that most teens misunderstand their parent's sexual beliefs (O'Donnell et al., 2008). This question will allow me to evaluate specifically whether the ability to verbalize the

parent's beliefs is an important component in the adoption of these beliefs. Data for this analysis included baseline responses from parent-child dyads.

Specific Aim #2 – Evaluation of the Parents Matter! Program.

Research Question 3: Does participation in the Parents Matter! Program result in higher parent-child sexual attitude congruence than either the brief intervention or the control group at 6 and 12 months post intervention?

H_A3: Participation in the Parents Matter! Program will result in higher parent-child congruence than either the brief intervention group or the control group at 6 and 12 months post intervention.

Rationale/importance: The Parents Matter! Program developers incorporated TRA/TPB into its design. A critical component of the curriculum is empowering and educating parents to share their family values regarding teen sexual activity. While including this component lengthens the curriculum it also moves parent sexuality education away from the simplified ideal of just teaching the facts to a more holistic approach. In evaluations of other parent sexuality education programs, most experience a short-term improvement in desired outcomes followed by a return to baseline results over the long term. The Parents Matter! Program incorporates theories of behavior change and a focus on positive parenting rather than just teaching sexuality education facts. As such, it is different from most parent sex education curricula, which could mean it will have longer lasting results.

Research Question 4: Does participation in the Parents Matter! Program result in higher scores on the predictive indices as compared to the brief intervention and the control group?

H_A: Participation in the Parents Matter! Program will result in higher scores on the predictive indices than either the brief intervention group or the control group at 6 and 12 months post intervention.

Rationale/importance: If during the multivariate analysis for Specific Aim #1, higher scores for an index are predictive of higher dyad congruence, an important component of the

Parents Matter! Program evaluation will be the extent to which participation in the intervention results in higher scores on these predictive indices as compared to the brief intervention and the control group.

Data for this analysis included baseline, six month and 12 month post-intervention survey responses and was analyzed by the three randomly assigned groups.

Research Study Procedures

This study used secondary data analysis to examine the above hypotheses. The data used in this study came from the CDC's Parents Matter! Program evaluation. Eligibility criteria used in this study were: 1) child participant was in 4th or 5th grade and between 9-12 years at the start of the study; 2) the parent participant was the legal guardian of the participating child and had lived with the child continuously for the last three years; 3) the parent self-identified as African American and 4) both parent and child were fluent in English.

If during the initial assessment there were two eligible children living in the household, the older of the eligible children was selected to participate. Also, if there were two eligible parents in the household, only one parent was allowed to participate. In these situations, parents were asked to choose who would attend the intervention sessions.

Parent-child dyads were recruited between 2001 and 2004 at three sites in the southern United States (Athens, GA; Atlanta GA and Little Rock AR). Recruitment activities were conducted by the Community Liaison at each site. This person worked with the Community Advisory Board members to identify prospective recruitment locations. Active recruitment began at least two week before the start of a new cohort. Recruitment sites included: public schools, public housing, community based youth-serving organizations, private and public health agencies and churches. Parents were told that the study consisted of 3 programs designed to support their efforts to promote their pre-teen's health and that they would be randomly assigned to one of the three programs. All key personnel who participated in the study were African American, from

the same communities as participants and participated in training on issues of diversity, ethics and project procedures. Interviewers (blind to group assignment) obtained informed consent from participants and specially trained facilitators conducted the parent trainings.

Once a dyad met eligibility criteria and agreed to participate, they completed the computer assisted baseline assessment. One parent and one child per family participated. After baseline assessment, the dyads were randomly assigned to a study group (full intervention, brief intervention and control groups). The dyads completed additional questionnaires immediately following the intervention, and then at 6, 12, 24 and 36 months post intervention. A minimum of 33 participants were screened in order to enroll at least 21 families in a cohort. Each of the three sites had between 12 and 16 cohorts.

The consent process and administration of the assessment were conducted entirely by African American interviewers. The interview procedures were similar for all sites. When the parent-child dyads arrived for the interviews, they were escorted by an interviewer to a private area and consented according to the research protocol. Then the parent signed a consent form and the child signed an assent form. After the child signed the assent form, the parent was also asked to sign, providing permission to enroll his or her child.

To assess treatment fidelity, all intervention sessions were recorded. A random selection of 20% of the intervention tapes was assessed to ensure adherence to the order of the intervention materials, use of the correct videos during the training and appropriate termination of the intervention session.

The CDC is currently using this data for additional research projects, but has allowed access to a limited data set for this study. Consequently, I will use baseline, 6 month and 12 month data to examine the study hypotheses.

Potential Confounders

As identified in the literature, risk factors for teen pregnancy which are available in this data set for analysis include: gender and age of the child, gender of the parent, the family's religion frequency, marital status, employment status, education level and income (Kirby, 2001; B.C. Miller et al., 2001). These potential confounders will be considered during each analysis.

Specific Aim #1 - Correlates of Congruence

Data

For specific aim #1, the baseline data of 1,115 parent-child dyads will be used.

Dependent Variable

The main dependent variable for this specific aim is congruence in sexual and dating attitudes between a parent and his or her child. This was measured in two ways. The first was congruence between what a parent believes his or her child should be doing in regards to dating and sexual activity and the child's own attitude about his or her dating and sexual activity. For example: *parent question*--I think my child should wait until s/he is older to have sex; *child question*--I think I should wait until I'm older to have sex (Table 1a).

The second set of questions used to measure congruence again looks at a parent's attitude about his or her child's dating and sexual activity and compares it to how well the child verbalizes what his or her parent's believes. For example: *parent question*-- I think my child should wait until s/he is older to have sex; *child question*--My mom thinks I should wait until I'm older to have sex (Table 1b).

Table 1a *"I Think" congruence questions*

Model	Parent Question	Child Question
1	I think it is OK for my child to have a boyfriend /girlfriend now. *1=not at all true; 2=a little true; 3=very true*	I think it is OK for me to have a boyfriend /girlfriend. *1=not at all true; 2=a little true; 3=very true*
2	I think it is OK for my child to go on a date by her/himself now. *1=not at all true; 2=a little true; 3=very true*	I think it would be OK for me to go on a date by myself with a boy/girl. *1=not at all true; 2=a little true; 3=very true*
3	I think my child should wait until s/he is older to have sex. *1=not at all true; 2=a little true; 3=very true*	I think I should wait until I am older before I have sex. *1=not at all true; 2=a little true; 3=very true*
4	I think my child should wait until s/he is married to have sex. *1=not at all true; 2=a little true; 3=very true*	I think I should wait until I am married before I have sex. *1=not at all true; 2=a little true; 3=very true*

Table 1b "*My Mother Thinks" congruence questions*

Model	Parent Question	Child Question
5	I think it is OK for my child to have a boyfriend /girlfriend now. *1=not at all true; 2=a little true; 3=very true*	My mother thinks it is OK for me to have a boyfriend/girlfriend now. *1=not at all true; 2=a little true; 3=very true*
6	I think it is OK for my child to go on a date by her/himself now. *1=not at all true; 2=a little true; 3=very true*	My mother thinks it is OK for me to go on a date by myself with a boy/girl right now. *1=not at all true; 2=a little true; 3=very true*
7	I think my child should wait until s/he is older to have sex. *1=not at all true; 2=a little true; 3=very true*	My mother thinks I should wait until I am older to have sex. *1=not at all true; 2=a little true; 3=very true*
8	I think my child should wait until s/he is married to have sex. *1=not at all true; 2=a little true; 3=very true*	My mother thinks I should wait until I am married before I have sex. *1=not at all true; 2=a little true; 3=very true*

Since responses are categorical, the congruence results for each dyad ranged from -2 to 2 and were categorized to create the dependent variable as defined in Table 2. Initial analyses

categorized the dyads into three categories representing dyad congruence in sexual and dating attitudes measured categorically on a three point scale as low congruence (difference of +/-2), moderate congruence (difference of +/-1) and high congruence (no difference). For example if the parent answered a question from Table 1a or 1b as *not at all true* and the child answered that same question as *very true,* the congruence difference would be -2 and the dependent variable value would be 0 or low congruence. Likewise, if both parent and child answered the question as *very true*, there would be no congruence difference and the dependent variable value would be 2.

Table 2 *Dependent variable construction and values*

Congruence Category	**Value**	**Congruence Difference**
High Congruence	2	None
Moderate Congruence	1	-1 & 1
Low Congruence	0	-2 & 2

Independent Variables

Because of the large number of variables in this data set, and the likelihood of significant correlation between many of them, factor analysis was used to identify and categorize the variables. These variables were subsequently combined, as described below, to create three different indices. These indices were used in the multivariate regression analysis as main explanatory variables. In a previous study designed to assess if the Parents Matter! Program improved parent-child sexual risk communication (Forehand et al., 2007), the researchers utilized factor analysis to design their dependent variable and created a *parent child sexual communication* (PCSC) Index. This study used these researchers' *parent child sexual communication* index as one of three primary explanatory variables. Then, using the same factor analysis methodology as they used, I created two other main explanatory variables. One, the *parental global sexual attitude* (GSA) index represents parent's beliefs about sex, not specific to their child. The final main explanatory variable is the *child's perception of relationship with*

parent (CPRP) Index. For a complete list of questions that were utilized in the factor analysis, see Appendix A.

In the factor analysis, only those variables with loadings of .30 and greater were used. To create the three indices, average values from those variables with factor loadings of .30 and greater were computed. For example, if five variables factor in the global sexual attitude Index, the responses from those 5 variables were summed and divided by 5. The advantage to this versus using factor scores is that by using the average value to create the Index, the chance of intercorrelation between each of the factors is reduced because having certain items loading heavily on more than one factor can be avoided. Also, factor scores can vary from analysis to analysis; therefore, the factor scores may not be replicable if others were to conduct the same type of study. For this reason, using the average values for the items is more appropriate because the final values will be able to be compared with other studies (Cohen & West, 2003).

For those variables that had a negative factor loading, such as questions P1N1 and P1N33, the responses were reverse scored (a response of 1 was re-coded as 3, a score of 2 was re-coded as 2 and a score of 3 was re-coded as a 1). From henceforth the factors will be referred to as the following: (a) Factor 1 will be the Parental/Child Sexual Communication index (PCSC), (b) Factor 2 will be the Child's Perceived Relationship with Parent index (CPRP), and (c) Factor 3 will be the Global Sexual Attitude index (GSA).

A reliability analysis was used to determine how correlated a set of questions or variables are with one another when it comes to a latent variable. This was used in conjunction with the factor analysis to illustrate that the questions or variables provided an adequate measure of the underlying variable. In general, Cronbach's alpha coefficients are used to provide information with respect to the internal consistency/reliability of the items, with a Cronbach's alpha of approximately .70 indicating that the questions or variables provide an adequate measurement for

the latent variable or a Cronbach's alpha of approximately .80 indicating that the questions or variables provide a good measurement for the latent variable (Nunnally, 1978).

Ordinal logistic regression was used to determine the effects of the three indices on the dependent variable (dyad congruence) controlling for child age and gender, household income, religious frequency, parent marital status, employment status and educational attainment. Ordinal logistic regression analysis was chosen because the dependent variable is comprised of three different, ordered categories; low congruence (0), moderate congruence (1) and high congruence (2).

The logistic regression model used to assess this research question and hypotheses is the following:

$$\text{Logit}(p1 + p2 + \ldots pk) = \log\frac{p1+p2+\cdots+pk}{1-p1-p2-\cdots.-pk} = \alpha k + \beta' x$$

In order to determine if the indices have an impact on the congruence of the parent and child the β coefficients were examined for significance. The significance of the coefficient is based on a t-test that assesses whether the coefficient is different from zero (Tabachnick, 2001).

Each model was run separately and proportional odds assumptions were tested for each model using an approximate likelihood ratio test. When those tests indicated the assumptions were violated (as verified by the Brant test), a separate analysis was done using the Stata program gologit2, a user written program designed to test the partial proportional odds assumption (Williams, 2006). Gologit2 can fit models that are less restrictive than the parallel lines models fitted using ordinal logistic regression, but more parsimonious and interpretable than non-ordinal methods such as multinomial logistic regression (Williams, 2006). Proportional odds models allow for the comparison of the odds of being in the higher group (high congruence) versus lower group (low congruence).

Specific Aim #2 - Evaluation of the Parents Matter! Program

Data

For specific aim #2, the baseline, 6 months and twelve months post-intervention data of 1,115 parent-child dyads were used.

Intent-to-Treat Analysis

This part of the study used an Intent-to-Treat (ITT) analysis. According to Fisher et al., (1990), an intent-to-treat analysis "Includes all randomized patients in the groups to which they were randomly assigned, regardless of their adherence with the entry criteria, regardless of the treatment they actually received, and regardless of subsequent withdrawal from treatment or deviation from the protocol (L. Fisher, DO, & al., 1990)". Because this is a randomized control trial with pragmatic (i.e., identifying the utility of a treatment) rather than explanatory (i.e., identifying the biologic effects of treatment) hypotheses, ITT analysis ensures the least biased results.

Dependent Variable

The main dependent variable for this specific aim is again the congruence in sexual and dating attitudes between a parent and his or her child. In this analysis it was examined by random group assignment (full intervention, brief intervention and control) over time to determine if participation in a particular intervention was more effective in increasing congruence in these attitude measurements. The same eight models identified for research questions 1 and 2 were used for research questions 3 and 4. The first four models examined the congruence between what a parent believes his or her child should be doing in regards to dating and sexual activity and the child's own attitude about his or her dating and sexual activity (Table 1a). The last four

models again looked at a parent's attitude about his or her child's dating and sexual activity and compared it to how well the child verbalized what his or her parents believed (Table 1b).

Using the same ordered response categories as defined in Table 2, this analysis employed both univariate difference of mean change and multivariate multilevel analysis to determine if participating in the full intervention resulted in higher congruence measurements (i.e., greater parent-child attitude agreement) than participating in the brief or control intervention. Then, using the predictive indices from the factor analysis (PCSC, GSA & CPRP), this analysis examined if participating in the full intervention resulted in higher scores on these indices than participating in the brief or control interventions.

For the difference of mean change analysis, mean scores for each index were compared from baseline to 6 months and baseline to 12 months by intervention group. Then Tukey's Honestly Significant Difference (HSD) test was used to determine if any of those differences were statistically significant. Using Tukey's HSD test ensures that the chance of finding a significant difference in any comparison (under a null model) is maintained at the alpha level of the test (D. S. Moore & McCabe, 2006).

Multilevel analysis was chosen because multilevel models take into account the existence of data hierarchies or clusters of multiple observations over time by allowing for residual components at each level in the hierarchy (Luke, 2004). Traditional multiple regression techniques treat the units of analysis as independent observations and fail to recognize hierarchical structures potentially resulting in an overstatement of statistical significance due to the underestimation of standard errors (Luke, 2004; Tasca & Gallop, 2009). Also, in a fixed effects model such as an *Analysis of Variance,* the effects of group-level predictors are confounded with the effects of the group dummy variables; therefore it is not possible to separate out effects due to observed and unobserved group characteristics. In a multilevel (*mixed effects*) model, the random and fixed effects of both types of variables can be estimated (Tasca & Gallop,

2009). Finally, multilevel models are better able to deal with missing data than repeated measures ANOVA.

Approach to Multilevel Analysis

I started by fitting an unconditional or null model to assess the total variation in the outcome variable (index score) among the parent child dyads without regard to time.

Level 1 model: $Yij = \beta oj + \varepsilon ij, where\ \varepsilon ij \sim N(O, \sigma_\varepsilon^2)$

Level 2 model: $\beta oj = y_{00} + \mu oj$

Composite model: $Yij = y_{00} + \mu oj + \varepsilon ij$

Where:

Yij = the level of dependent variable (INDEX) for dyad j (j=1,2,3…..1,114) at time i (i= 0, 6, 12)

βoj = the true mean of Y for dyad j (dyad specific mean)

yoo = the true mean of Y for the population (grand mean)

The average INDEX score at time 0 (baseline) for all 1,114 dyads

μoj = individual specific deviation from grand mean (average intercept at baseline)

eij = the level 1 residual for time i and dyad j and represents the deviation of each dyad score at each time from the dyad mean. It is assumed to be independent and normally distributed with a mean of zero and a variance of σ^2

I then ran an unconditional linear model by adding a TIME variable to model the variation in the INDEX score over time. The Level 1 part of the base model is expanded to:

Level 1 Model: $Y_{ij} = \beta_{oj} + \beta_{1j}TIME_{ij} + \varepsilon_{ij}$ β1 which represents the rate at which dyad j changes in their INDEX score over time (dyad change parameter).

Level 2 of the base model incorporates Level 2 characteristics that might influence the INDEX scores. These group level characteristics (intervention GROUP 0= control, 1=brief and 2=full) will be called Wj. The main predictor is the intervention GROUP.

Level 2 Model:

$\beta 0j = y00 + y01Wj + \mu 0j$ $\beta 0j = y00 + y01GROUPj + \mu 0j \quad \mu 0j \sim N(0, \tau 00)$

or

$B1j = y10 + y11Wj + \mu 1j$ $\beta 1j = y10 + y11GROUPj + \mu 1j \quad \mu 1j \sim N(0, \tau 11)$

The slopes of y01, y11 and y21 represent the effect of the predictor GROUP on the dyad change parameter. This is a conditional linear model because the Level 2 equation has the Level 1 intercept and slopes as its dependent variable. Each component has its own residual which is assumed to be normally distributed with a mean of zero and variance $\tau 00$ (true initial status) and measures the unique deviation of the intercept of each group from the grant mean y00 after accounting for the effect of Wj. $\mu 1j$ represents the deviation of slope within each group from the overall slope y10 after accounting for Wj. $\tau 11$ represents the population residual variance of group slopes. These two variance parameters allow the Level 1 parameters ($\beta 0j$ and $\beta 1j$) to vary from one dyad to another.

The four parameters in the above two equations y00, y01, y10 and y11 are the fixed effects and capture the differences between dyads in change trajectories according to the values of the Level 2 predictors.

Combined, these Level 1 and Level 2 models give us the following equation:

$Yij = (y00 + y01GROUPj + u0j) + y10 + y11GROUPj + u1j) + TIMEij + \varepsilon ij$

$Yij = [y00 + y01GROUPj + y10TIMEij + y11(GROUPSj*TIMEij)] + u0j + u1jTIMEij + \varepsilon ij$

This random effects model allows for an interaction term (GROUPS*TIME) to vary over time and an extra random term (u1jTIMEij) allows for dyads to vary both at where they start at time zero and how they progress over time.

The multilevel analyses for this study were done using the STATA 10 program *gllamm*. The *gllamm* program can fit a large class of Generalized Linear Latent And Mixed Models (GLLAMMs). GLLAMMs are a class of multilevel latent variable models for responses of

mixed types including continuous responses, counts, duration/survival data, dichotomous, ordered and unordered categorical responses and rankings (Rabe-Hesketh, Skrondal, & Pickles, 2002).

CHAPTER 4: RESULTS

Basic descriptive characteristics such as mean, standard deviation, and proportion were calculated for each of the variables at baseline, 6 months and 12 months.

Baseline

Baseline results for the indices, control and demographic variables are presented in Table 3. Nearly all the parent respondents were female (97%). The average age of the child for the baseline measurements was 10.1 years (*SD* = .83). Twenty-four percent (24%) of parents in the sample had either not attended or not completed high school. Over half the survey respondents attended church at least one time per month. There were more girls than boys represented in the sample and 37% of parent respondents were married. Sixty percent (60%) of parents in the sample were employed either part or full-time and forty percent (40%) were living in households with incomes less than $1,000 per month.

Table 3 *Descriptive characteristics of the study sample at baseline measurements*

Variable	**N=1,114**	**Percent (%)**
Child Age (mean, SD)	10.1 (0.83)	n/a
Child Gender		
Female	613	54.7
Male	498	45.3
Parent Gender		
Female	1,077	96.7
Male	34	3.3
Religion Frequency		
< 1/week	502	45.2
≥ 1/week	605	54.7
Currently Married		
Yes	417	64.2
No	237	35.8
Employment		
Full-time	551	49.6

Table 3 (continued)

Part-time	117	10.9
Occasional	27	2.1
Homemaker	178	16.3
Unemployed	137	12.1
Student	51	5.1
Other	47	3.9
Family Monthly Income		
$0-$199	49	4.5
$200-$499	155	14.2
$500-$999	232	22.4
$1,000-$1,999	320	28.5
$2,000-$2,999	179	17.1
$3,000-$3,999	84	7.6
$4,000 or more	60	5.7
Education Level		
No HS	23	1.9
Some HS	246	21.8
HS/GED	326	29.3
Some college	235	21.4
Technical/2-year degree	144	13.1
BS/BA	89	7.9
Graduate School	46	3.8
Predictive Indices		
PCSC (mean, SD)	1.17 (0.50)	n/a
CPRP (mean, SD)	2.79 (0.31)	n/a
GSA (mean, SD)	2.55 (0.20)	n/a

Note: n may not total due to missing values

The breakdown of demographic characteristics of the participants by intervention group (control, brief and full intervention) is presented in Table 4. The p-value presented in the final column of the table represents the chi-squared results for the comparison between each of the control variables with the three groups. The groups at baseline did not significantly differ from one another when it came to any of the control/descriptive variables.

Table 4 *Comparison of three intervention groups at baseline*

	Control		**Brief**		**Full**		**p**
Variable	**n=366**	**%**	**n=371**	**%**	**n=378**	**%**	
Child Age (mean, SD)	10.04 (0.81)		10.14 (0.84)		10.05 (0.77)		0.34

Table 4 (continued)

Child Gender							
Female	200	55.1	205	56.3	208	55.2	0.98
Male	164	44.9	164	43.7	170	44.8	
Parent Gender							
Female	355	97.7	358	97.4	364	96.4	0.62
Male	9	3.3	11	2.6	14	3.6	
Religion Frequency							
< 1/week	154	43.2	175	47.6	173	46.3	0.37
≥ 1/week	208	57.8	192	52.4	208	53.7	
Currently Married							
Yes	137	64.7	136	61.9	144	64.8	0.70
No	75	35.3	85	37.1	77	35.2	
Employment							
Full-time	189	52.1	171	46.2	191	51.4	
Part-time	32	9.1	45	12.3	40	11.1	
Occasional	8	2.3	10	2.7	9	2.2	0.73
Homemaker	62	16.6	59	16.2	57	14.6	
Unemployed	44	12.2	42	11.2	51	13.9	
Student	14	3.9	20	4.7	17	5.1	
Other	14	3.9	21	5.9	12	2.9	
Family Monthly Income							
$0-$199	15	4.1	11	3.1	23	6.2	
$200-$499	42	12.2	50	13.6	63	17.3	
$500-$999	88	24.6	74	21.2	70	18.6	
$1,000-$1,999	101	28.3	107	31.3	112	30.1	0.13
$2,000-$2,999	56	16.2	63	17.6	60	16.2	
$3,000-$3,999	36	9.6	20	5.7	28	7.8	
$4,000 or more	20	5.7	24	7.1	16	3.9	
Education Level							
No HS	11	3.1	7	1.9	5	1.1	
Some HS	83	23.2	85	23.2	78	21.2	
HS/GED	108	29.7	94	26.1	124	32.5	
Some college	76	21.1	88	23.7	71	19.2	0.60
Technical/ 2-year degree	45	11.6	48	13.3	51	12.6	
BS/BA	26	7.1	29	7.8	34	9.4	
Graduate School	14	3.9	17	5.3	15	3.9	

Note: n may not total due to missing values

Six Months Post-Intervention

Six-month post-intervention results are presented in Table 5. The average age of the child for the six-month measurements was 10.7 years (*SD* = 1.02). Religion frequency had

increased slightly from baseline. Over half the survey respondents attended church at least one time per month. There were still more girls than boys represented in the sample. Full or part-time employment increased slightly to 64% and overall family income increased with only 35% (compared to 40% at baseline) of respondents reporting monthly incomes of less than $1,000.

Table 5 *Descriptive characteristics of the study sample at six months post-intervention*

Variable	**n=777**	**Percent**
Child Age (mean, SD)	10.7 (1.02)	n/a
Child Gender		
Female	419	53.9
Male	354	46.1
Parent Gender		
Female	752	96.8
Male	25	3.2
Religion Frequency		
< 1/week	344	44.6
≥ 1/week	430	55.3
Currently Married		
Yes	478	61.5
No	298	38.5
Employment		
Full-time	421	54.1
Part-time	77	9.9
Occasional	21	2.7
Homemaker	110	14.1
Unemployed	86	11.2
Student	34	4.4
Other	28	3.6
Family Monthly Income		
$0-$199	34	4.4
$200-$499	97	13.2
$500-$999	133	17.5
$1,000-$1,999	241	31.7
$2,000-$2,999	122	16.2
$3,000-$3,999	73	9.8
$4,000 or more	55	7.1
Predictive Indices		
PCSC (mean, SD)	1.30 (0.47)	n/a
CPRP (mean, SD)	2.74 (0.36)	n/a
GSA (mean, SD)	2.54 (0.23)	n/a

Note: n may not total due to missing values

The breakdown of demographic characteristics of the participants by intervention group (control, brief and full intervention) at the six month measurement is presented in Table 6. The p-value presented in the final column of the table represents the chi-squared results for the comparison between each of the control variables with the three groups. The groups did not differ significantly from one another at the six-month mark.

Table 6 *Comparison of three intervention groups at six months post-intervention*

	Control		**Brief**		**Full**		**p**
Variable	**n=230**	**%**	**n=250**	**%**	**n=297**	**%**	
Child Age (mean, SD)	10.6 (0.87)		10.75 (0.92)		10.68 (0.86)		0.42
Child Gender							
Female	126	54.8	132	52.8	161	54.2	0.93
Male	104	45.2	116	47.2	134	45.8	
Parent Gender							
Female	224	97.4	242	96.8	286	96.2	0.78
Male	6	2.6	8	3.2	11	3.8	
Religion Frequency							
< 1/week	94	41.3	114	46.4	136	45.8	0.47
≥ 1/week	135	58.7	134	53.6	161	54.2	
Currently Married							
Yes	133	58.1	167	66.8	178	59.9	0.09
No	97	42.2	82	33.2	119	40.1	
Employment							
Full-time	123	53.1	125	50.3	173	57.6	
Part-time	18	7.8	26	10.2	33	11.4	
Occasional	5	2.1	6	2.4	10	3.3	0.14
Homemaker	35	14.9	35	13.6	40	13.1	
Unemployed	27	12.2	33	13.1	26	8.5	
Student	8	4.1	15	5.8	11	4.1	
Other	14	6.3	10	4.3	4	1.3	
Family Monthly Income							
$0-$199	7	2.6	15	6.4	12	4.4	
$200-$499	22	10.1	33	14.1	42	15.2	
$500-$999	36	16.3	49	19.6	48	16.5	
$1,000-$1,999	80	35.7	77	32.3	84	29.3	0.15
$2,000-$2,999	40	18.3	37	15.4	45	15.8	
$3,000-$3,999	22	9.7	13	4.5	38	13.3	
$4,000 or more	17	8.4	18	7.2	20	7.2	

Note: n may not total due to missing values

Twelve-Month Post-Intervention

Twelve month post-intervention results are presented in Table 7. The average age of the child for the twelve-month measurements was 11.2 years (*SD* = .88). Church attendance remained steady with over half the survey respondents attending church at least one time per month. Overall family income remained stable with 36% of respondents reporting monthly incomes of less than $1,000.

Table 7 *Descriptive characteristics of the study sample at twelve months post-intervention*

Variable	**N=757**	**Percent**
Child Age (mean, SD)	11.2 (0.88)	n/a
Child Gender		
Female	412	54.5
Male	343	45.5
Parent Gender		
Female	733	96.8
Male	24	3.1
Religion Frequency		
< 1/week	331	43.7
≥ 1/week	425	56.3
Currently Married		
Yes	466	61.7
No	290	38.3
Employment		
Full-time	416	55.2
Part-time	70	8.6
Occasional	20	3.2
Homemaker	106	13.5
Unemployed	89	12.1
Student	27	3.6
Other	29	4.1
Family Monthly Income		
$0-$199	40	5.4
$200-$499	83	10.7
$500-$999	145	20.4
$1,000-$1,999	214	28.7
$2,000-$2,999	125	16.8
$3,000-$3,999	83	10.7
$4,000 or more	50	7.3
Predictive Indices		
PCSC (mean, SD)	1.34 (0.46)	n/a
CPRP (mean, SD)	2.71 (0.36)	n/a
GSA (mean, SD)	2.54 (0.21)	n/a

Note: n may not total due to missing values

The breakdown of demographic characteristics of the participants by intervention group (control, brief and full intervention) at the 12-month post-intervention survey is presented in Table 8 below. The p-value presented in the final column of the table represents the chi-squared results for the comparison between each of the control variables with the three groups. The groups differed significantly from one another when it came to marital status, with the Brief group having more currently married respondents than the control or full intervention groups.

Table 8 *Comparison of three intervention groups at 12-Months Post-Intervention*

	Control		**Brief**		**Full**		**p**
Variable	**n=222**	**%**	**n=243**	**%**	**n=293**	**%**	
Child Age (mean, SD)	11.1 (0.83)		11.3 (0.87)		11.2 (0.78)		0.40
Child Gender							
Female	121	54.5	133	54.7	158	53.9	0.39
Male	99	44.6	109	44.9	135	46.1	
Parent Gender							
Female	215	96.8	234	96.3	284	96.9	0.83
Male	6	2.7	9	3.7	9	3.1	
Religion Frequency							0.12
< 1/week	84	37.8	110	45.3	137	46.8	
≥ 1/week	137	61.7	132	54.3	157	53.6	
Currently Married							
Yes	129	58.1	165	67.9	172	58.7	0.05
No	91	41.0	78	32.1	121	41.3	
Employment							
Full-time	118	53.1	126	52.4	172	58.6	
Part-time	19	9.2	25	9.9	26	9.1	
Occasional	6	2.6	2	1.8	8	2.8	
Homemaker	38	17.2	32	13.2	36	12.2	0.84
Student	5	2.1	11	5.1	11	4.3	
Other	8	3.9	11	5.1	10	3.9	
Family Monthly Income							
$0-$199	11	4.8	11	4.8	18	6.3	
$200-$499	25	12.2	29	12.3	29	10.6	
$500-$999	36	17.3	48	19.6	61	21.3	
$1,000-$1,999	61	27.5	75	31.8	78	26.5	0.68
$2,000-$2,999	42	18.6	37	15.8	46	15.3	
$3,000-$3,999	28	13.3	18	7.7	37	13.2	
$4,000 or more	13	6.1	18	7.7	19	7.1	

Note: n may not total due to missing values

Specific Aim #1 - Correlates of Congruence

- *Research Question 1: Are parent-child sexual communication, parental global sexual attitudes and/or a child's perception of the relationship with his or her parent correlates of parent-child congruence in sexual beliefs?*
- *Research Question 2: Does a teen's ability to correctly state his or her parent's sexual beliefs predict greater congruence in the dyad's sexual beliefs?*

Factor Analysis

Factor analysis was conducted using variables from the baseline measurements of sexual communication (parent and child questionnaires), sexual attitudes (parent questionnaires only) and perceptions of the relationship with the child's mother (child questionnaires only). Only these three factors were retained in the analysis. To get a better sense of the relationships between the items and the factors a varimax rotation was conducted. The three factors were able to explain 56.5% of the variation in the items. These scores are presented in Table 9.

Table 9 *Eigenvalues for factors from factor analysis*

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	6.01	2.68	.279	.279
Factor 2	3.33	.523	.155	.434
Factor 3	2.81	.166	.131	.565

The factor loadings for the variables that were created for this study are presented in Table 10. The first factor is comprised of variables P1L5 to C1F23 (see Appendix 1 for a list of questions used in the analysis). The factor loadings for the first factor had a low of .36 for C1F23 to a high of .78 for P1L8. These factors were averaged together to give an overall measurement of the first factor. This was done for the remaining factors from the factor analysis for each of the three indices.

Table 10 *Factors and factor loadings from factor analysis*

Items	PCSC	CPRP	GSA
C1C1		0.44	
C1C3		0.63	
C1C5		0.48	
C1C7		0.63	
C1C9		0.59	
C1C11			
C1C13		0.63	
C1C15			
C1C17		0.54	
C1C19		0.62	
C1C21			
P1N1			-0.37
P1N2			0.35
P1N3			0.42
P1N4			0.37
P1N5			
P1N6			
P1N7			
P1N8			
P1N9			
P1N10			
P1N15			0.30
P1N16			0.34
P1N17			0.36
P1N18			0.31
P1N19			0.59
P1N20			0.62
P1N21			0.33
P1N22			0.40
P1N23			0.31
P1N24			0.35
P1N32			
P1N33			-0.34
P1N34			
P1N35			
P1N36			
P1N37			
P1L5	0.59		
P1L6	0.69		
P1L7	0.64		
P1L8	0.78		
P1L9	0.73		
P1L11	0.70		
P1L13	0.39		
P1L14	0.60		
P1L15	0.58		
C1F9	0.40		

Table 10 (continued)

C1F11	0.41
C1F13	0.54
C1F15	0.57
C1F17	0.56
C1F19	0.49
C1F23	0.36
C1F25	
C1F27	

The reliability coefficients (Cronbach's alpha coefficients) for the factors ranged from a low of α =.69, for the Global Sexual Attitude (GSA) index to a high of α = .89 for Parent Child Sexual Communication (PCSC) Index. These results are summarized in Table 11.

Table 11 *Reliability results for factors from factor analysis*

Factor	**Alpha**	**Number of Items**
PCSC	.89	16
CPRP	.82	8
GSA	.69	15

The summary statistics for the baseline measurements of the three factors are presented in Table 12. For the PCSC Index, the average factor value was equal to 1.17 (*SD* = .50). The index that had the highest average value was the CPRP index with an average value equal to 2.79 (*SD* = .31).

Table 12 *Summary statistics for computed factor values*

Factor	Mean	SD	Min	Max
PCSC	1.17	.50	0	2
CPRP	2.79	.31	1	3
GSA	2.55	.20	1.4	3

Congruence Measurements

The contingency table for the congruence between what a parent believes his or her child should be doing in regards to dating and sexual activity, compared to what the child believes and how well the child verbalizes what his or her mother believes is presented in Table 13. The numbers that fall on the diagonal represent the number of parents and children who were in full congruence with one another (i.e. provided the same response). The values on the off diagonal are the number of observations that were not congruent with one another (i.e. provided different responses to the questions). This table shows that there is generally more agreement between mothers and children regarding dating and sexual activity than there is disagreement. And in cases where there is disagreement, the children are able in many cases to correctly identify their mother's beliefs even when they are different from the child's.

Table 13 *Parent and child response "My mother thinks" and "I think" Questions for Baseline Measurements*

	Child		
Parent	1 (Not at all true)	2 (A little true)	3 (Very true)
"I Think" Questions			
Boyfriend/Girlfriend OK			
1(Not at all true)	374	305	311
2(A little true)	11	27	45
3(Very true)	3	5	12
Date OK			
1(Not at all true)	764	189	123
2(A little true)	3	2	2
3(Very true)	6	2	0
Wait until Older For Sex			
1(Not at all true)	15	8	78
2(A little true)	1	0	3
3(Very true)	97	94	794
Wait until Married for sex			
1(Not at all true)	12	18	32
2(A little true)	33	23	111
3(Very true)	127	141	593
"My Mother Thinks" Questions			
Boyfriend/Girlfriend OK			
1 (Not at all true)	597	248	146
2 (A little true)	20	25	38
3 (Very true)	6	9	5

Table 13 (continued)

Date OK			
1(Not at all true)	900	108	68
2(A little true)	3	3	1
3(Very true)	6	2	0
Wait until Older For Sex			
1(Not at all true)	13	6	82
2(A little true)	1	0	3
3(Very true)	87	53	845
Wait until Married for sex			
1(Not at all true)	14	9	39
2(A little true)	30	21	116
3(Very true)	130	94	637

The percent of parent-child dyads who agreed or disagreed on each question is shown in Table 14. The question that compares the parent and child's opinion on if it is ok for the child to have a boy/girlfriend (Model 1) has the lowest percentage of dyads in complete agreement at 38%. The same question asked from the perspective of what the child believes his or her mother will say (Model 5) is the next lowest at 57% in complete agreement, but is considerably higher than its companion question. Consistently the percentages were higher for complete agreement among those questions that asked the children to predict their mother's answers indicating that even when they disagreed, children were generally able to predict their mother's opinions.

Table 14 *Percent of dyads with complete agreement, complete disagreement or some disagreement by model*

	Boy/girlfriend OK		**Dating Ok**		**Older before sex**		**Married before sex**	
	Model 1 I think	Model 5 Mother thinks	Model 2 I think	Model 6 Mother thinks	Model 3 I think	Model 7 Mother thinks	Model 4 I think	Model 8 Mother thinks
Complete Agreement	38%	57%	70%	83%	74%	79%	58%	62%
Complete Disagreement	28%	14%	12%	7%	16%	16%	15%	16%
Some Disagreement	34%	29%	18%	10%	10%	5%	27%	22%

To better understand these findings, I examined the directionality of the incongruence for the "my mother thinks" questions at baseline. Table 15 shows the percent of children who either underestimated or overestimated their mother's opinions about dating and sexual activity. In general, when there was disagreement between what the parent and child believed, the children tended to *underestimate* the conservativeness of their mother's beliefs about dating and sexual activity. This is especially true for the question asking if having a boy/girlfriend right now is ok with 40% of child respondents underestimating what his or her mother believes.

Table 15 *Directionality of incongruence "My Mother Thinks" Models 5-8*

Parent Question	**Child thinks Mother is less Conservative than she actually is**	**Child thinks Mother is more Conservative than she actually is**
Model 5- Boy/girlfriend Ok now	40%	3%
Model 6- Ok for child to date now	16%	1%
Model 7- Child older before sex	13%	8%
Model 8- Child married before sex	23%	15%

Univariate Analysis

Univariate results for each model are shown in Table 16. These analyses were conducted on the baseline data. The dependent variable for Models 1-4 is the congruence between the mother's opinion and the child's opinion for the same question (see Table 1a). The dependent variable for Models 5-8 is the congruence between the mother's opinion and what the child thinks the mother's opinion is for the same questions (see Table 1b). In all models this variable is categorized as low congruence (0), moderate congruence (1) and high congruence (2). The independent variables are the three indices that were created based on the results from the factor analysis (PCSC, CPRP and GSA).

These results show several significant associations between each index and all of the models. The Parent-Child Sexual Communication (PCSC) index was found to predict congruence in all eight models with odds ratios ranging from a low of 1.37 to a high of 1.77. Consistently, as parent-child sexual communication increased so did the level of congruence in how the dyads answered each sexual attitude question indicating a correlation between parent child sexual communication and attitude agreement.

The Child's Perception of the Relationship with his/her Parent (CPRP) index was found to improve congruence in five models. Again, consistently as the child's perception of the relationship with his or her parent improved, so did sexual attitude congruence with odds ratios ranging from 1.52 to 2.52. This was especially true for the models that compared the parent/child individual attitudes but less so when it came to the models that called for the child to predict his or her parent's sexual attitudes.

The parental General Sexual Attitude (GSA) index was associated with a decrease in sexual attitude congruence in two models. In both the "I think" and "my mother thinks" questions about the permissibility of premarital sex, the higher a parent scored on the GSA index (indicating more liberal views about sex), the less likely there was to be congruence among the dyad.

Table 16 *Unadjusted ordinal logistic regression results for all models*

	Model 1 *Boy/girl friend* OR 95% CI	**Model 2** *Dating* OR 95% CI	**Model 3** *Older for sex* OR 95% CI	**Model 4** *Married for sex* OR 95% CI	**Model 5** *Mother thinks boy/ girlfriend* OR 95% CI	**Model 6** *Mother thinks dating* OR 95% CI	**Model 7** *Mother thinks older for sex* OR 95% CI	**Model 8** *Mother thinks married for sex* OR 95% CI
PCSC	1.37** 1.09-1.71	1.72* 1.32-2.23	1.46** 1.11-1.93	1.60* 1.26-2.03	1.48** 1.17-1.88	1.56** 1.13-2.14	1.56** 1.14-2.17	1.77* 1.38-2.26

Table 16 (continued)

CPRP	2.04* 1.43-2.91	2.52* 1.73-3.68	1.52*** 1.02-2.24	1.75** 1.23-2.48	1.03 0.71-1.48	1.16 0.72-1.89	1.05 0.67-1.67	1.87** 1.31-2.68
GSA	1.29 0.74-2.25	1.07 0.55-2.01	1.04 0.52-2.06	0.12* 0.06-0.21	0.64 0.35-1.16	0.66 0.30-1.44	1.50 0.72-3.12	0.08* 0.04-0.16

PCSC= Parent Child Sexual Communication
CPRP= Child's Perception of Relationship with Parent
GSA= General Sexual Attitudes
*p<0.001
**p< 0.01
***p≤0.05

Multivariate Analysis

Ordinal Logistic Regression Analysis

The univariate and multivariate results for each Index, by congruence level for each model are presented in Appendix 2, Tables A1-A8. The adjusted odds ratios for the ordinal logistic regression analysis for the three indices are presented in Table 17. Each model was run separately controlling for potential confounders: gender and age of the child, gender of the parent, the family's religion frequency, marital status, employment status, education and income.

The dependent variable for Models 1-4 is the congruence between the mother's opinion and the child's opinion for the same question (see Table 1a). The dependent variable for Models 5-8 is the congruence between the mother's opinion and what the child thinks the mother's opinion is for the same questions (see Table 1b). Because of the ordered nature of the dependent variable, proportional odds model (POM) was used for the analysis. The independent variables are the three indices that were created based on the results from the factor analysis (PCSC, CPRP and GSA).

Table 17 *Adjusted ordinal logistic regression results for all models*

	Model 1 *Boy/girl friend* OR 95% CI	**Model 2** *Dating* OR 95% CI	**Model 3** *Older for sex* OR 95% CI	**Model 4** *Married for sex* OR 95% CI	**Model 5** *Mother thinks boy/ girlfriend* OR 95% CI	**Model 6** *Mother thinks dating* OR 95% CI	**Model 7** *Mother thinks older for sex* OR 95% CI	**Model 8** *Mother thinks married for sex* OR 95% CI
PCSC	1.16 0.90-1.19	1.49** 1.10-2.01	1.47** 1.09-1.99	1.48** 1.14-1.92	1.03 0.78-1.35	1.30 0.90-1.89	1.57** 1.14-2.17	1.57* 1.20-2.05
CPRP	1.90* 1.31-2.77	3.40 * 1.59-3.61	1.66** 1.11-2.49	1.94* 1.35-2.79	0.96 0.64-1.43	1.15 0.68-1.94	1.23 0.74-1.98	2.22* 1.52-3.23
GSA	1.35 0.72-2.51	1.30 0.62-2.72	1.35 0.64-2.84	0.13* 0.07-0.25	1.05 0.54-2.07	1.09 0.45-2.62	2.23*** 1.00-5.01	0.12* 0.06-0.24

Note. Control variables included in all models are child's gender and age, parent's gender, religious frequency, marital status, employment status, education level and family income.
PCSC= Parent Child Sexual Communication
CPRP= Child's Perception of Relationship with Parent
GSA= General Sexual Attitudes
*p<0.001
**p< 0.01
***p≤0.05

Parent Child Sexual Communication (PCSC)

The first Index, Parent Child Sexual Communication (PCSC) was significantly associated with higher congruence in models 2, 3, 4, 7 and 8. For each model, higher scores on the parent-child sexual communication index (indicating more communication) resulted in increased odds of congruence between the parent and the child. For the question, *I think it is ok for my child/me to go on a date right now by him/myself*; parents and their children who reported greater amounts of sexual communication were more likely to answer the question exactly the same, thus achieving higher congruence than those parent-child dyads with lower sexual communication (OR=1.49; 95% CI=1.10, 2.01). For the question, *I think my child/I should be older to have sex*, again reports of more sexual communication between the parent and the child was associated with

higher congruence (OR=1.47; 95% CI=1.09, 1.99). There was no significant relationship between the PCSC index and congruence when the question examined the agreement between the mother's attitude about the child's dating or needing to be older for sex and what the child predicted the mother's attitude was. With the four models that examined attitudes about sex (Models 3, 4, 7 and8), the PCSC index was associated with higher congruence for both the *I think* and the *my mother thinks* questions.

Child's Perception of the Relationship with Parent (CPRP)

The second Index, Child's Perception of Relationship with Parent (CPRP) was significantly associated with higher congruence in models 1, 2, 3, 4, and 8. For each model, higher responses on the questions for the children about their relationship with their parents (indicating greater satisfaction with the relationship) resulted in significantly higher odds of congruence between the parent and the child. With the question regarding readiness for a boy/girlfriend the CPRP index was significantly associated with higher congruence for the *I think* question (OR=1.90; 95% CI=1.31, 2.77) but not the *my mother thinks* question. In fact while the CPRP index was significantly associated with higher congruence for all the *I think* questions, it was only significant for one *my mother thinks* question. For this question (*married before having sex),* a child's perception of a positive relationship with his or her parent resulted in significantly higher congruence than those with a less positive relationships (*my mother thinks married before sex* OR= 2.22; 95% CI=1.52, 3.23).

General Sexual Attitudes (GSA)

The third Index, parents Global Sexual Attitude (GSA) was significant in models 4, 7 and 8. For model 4, *"I think" married before having sex* and 8, *"my mother thinks" married before having sex*, higher responses on the questions about sexual attitudes (indicating more liberal attitudes about sex) resulted in lower congruence between the parent and the child (*I think* OR=

0.13; 95% CI= 0.07, 0.25 and *my mother thinks* OR=0.12; 95% CI= 0.06, 0.24). In contrast, for the "my mother thinks" question regarding being older for sex, the higher a parent scored on the GSA Index, the more likely the dyad would agree (OR=2.23; 95% CI=1.00-5.01).

In summary, two indices PCSC and CPRM were significantly correlated with parent-child congruence in sexual attitudes and in how well a child could predict his or her mother's sexual attitude. The third Index, GSA was correlated with parent-child congruence, but in two models, higher scores on the index were predictive of lower congruence. Interestingly, none of the three indices had a significant association with the "*my mother thinks*" questions about having a boy/girlfriend or dating.

Specific Aim #2 - Evaluation of the Parents Matter! Program

- *Research Question 3: Does participation in the Parents Matter! Program result in higher parent-child sexual attitude congruence than either the brief intervention or the control group at 6 and 12 months post intervention?*

First, I examined the individual models for significant trends in the Pearson's correlation coefficients (using the *nptrend* command in STATA). Table 18 shows the results of this nonparametric test for trend across ordered groups. Where the trend was significant between the three categories (low, medium and high congruence), I examined each model for a difference between the three intervention groups (brief, full and control groups).

There were only three statistically significant trends, one at baseline, one at 6 months and one at 12 months. None of the trends was consistent over time and none showed any statistically significant effects of program participation on the dyads' congruence levels.

Table 18 *Dyad congruence trends by model*

	P-Value for Trend		
Model--Question	Baseline	6-Months	12-Months
Model 1--I think boy/girlfriend OK	0.79	0.55	0.33

Table 18 (continued)

Model 5--I think mom thinks boy/girlfriend OK	0.71	0.02	0.48
Model 2--I think dating now OK	0.81	0.26	0.46
Model 6--I think mom thinks dating now OK	0.46	0.40	0.71
Model 3--I think I should be older before sex	0.45	0.85	0.13
Model 7--I think mom thinks I should be older before sex	0.53	0.59	0.05
Model 4--I think I should be married before sex	0.21	0.96	0.88
Model 8--I think mom thinks I should be married before sex	0.004	0.31	0.54

Multilevel Analysis

Univariate Analysis

The results of the unadjusted multilevel *gllamm* analysis can be found in Table 19. Even though all groups were demographically statistically similar at baseline, there is wide variation in the univariate baseline congruence measurements, especially in the full intervention group with 3 models having odds ratios well below the control group and 4 having odds ratios well above. The brief intervention group trended more in line with the control group with the exception of Model 8, where its odds ratio was well above the control group and similar to the full intervention group. All models except Model 4 and its companion Model 8 (Married before having sex) saw decreased odds of congruence over time regardless of the intervention group. Generally speaking, the decreases were more significant from baseline to 6 months than from 6 months to 12 months.

For Model 1 (I think it is ok for my child/me to have a boy/girlfriend right now) all groups showed statistically significant decreases in their odds of congruence at both 6 months and 12 months. The full intervention group had a baseline odds ratio of 0.84 (95% CI 0.53-1.31) so its relative decrease in odds of congruence was similar to those for the control and brief intervention groups. This indicates no significant effect of the interventions as compared to the control group.

For Model 2 (I think it is ok for my child/me to go on a date right now), both the control and brief intervention groups had a statistically significant decrease in their odds of congruence at

6 and 12 months post-intervention. The full intervention group started baseline with an odds ratio of 1.43 (95% CI 0.85-2.39), though it was not statistically significant, nor were the odds ratios at 6 or 12 months, though they trended similarly with the control and brief intervention groups again indicating no differences by intervention groups.

Model 3 (I think my child/I should be older before having sex), showed both the control group and the full intervention group with a statistically significant decrease in the odds of congruence. Again, the full intervention group had baseline odds ratios lower than the other two groups (OR 0.78; 95% CI 0.50-1.21) and trended similarly with the control and brief intervention groups at 6 and 12 months post-intervention.

Model 4 (I think my child/I should be married before having sex) started at baseline with the full intervention group having significantly higher odds of congruence. Each group experienced an increase in the odds of congruence, however only the full intervention group's results were statistically significant and their increase from an OR of 1.60 at baseline to an OR of 1.82 was greater than the other two groups' increases.

Model 5 (I think/my mother thinks it is ok for my child/me to have a boy/girlfriend right now), the companion to Model 1, had higher congruence among all intervention groups at 6 and 12 months than Model 1 indicating the child respondents were more likely to predict their mother's opinions than they were to agree with them. At 6 months the control group had slightly higher odds of congruence than either the brief or full intervention group. However, relatively speaking there was a shaper decline in congruence in the control group from baseline than the brief or full intervention groups and at 12 months post-intervention this trend strengthened with the brief and full intervention groups having less decrease in congruence than the control group.

Model 6 (I think/my mother thinks it is ok for my child/me to go on a date alone right now) again overall had higher odds of congruence than its companion Model 2. It was the only model to have similar odds of congruence at 6 and 12 months. The full intervention group started

at nearly double the odds of congruence at baseline (OR 1.99; 95% CI 1.10-3.63) than the control or brief intervention groups and saw its odds of congruence drop much more than the other two groups by 12 months post-intervention.

Model 7 (I think/my mother thinks my child/I should be older before having sex) was the only univariate model with no statistically significant odds ratios. It is also the only model where the results from baseline to 6 months are essentially the same. The decrease from baseline to 12 months, however, is similar to the other models. The full intervention group started with much lower odds of congruence at baseline (OR 0.74; 95% CI 0.46-1.19) and had the smallest decrease in odds ratios of the three groups.

Model 8 (I think/my mother thinks my child/I should be married before having sex) is the only model where there is a clear association between the intervention and the odds of congruence. All models show significant increases in their odds of congruence, however the brief intervention group's results are higher than the control group and the full intervention group's odds of congruence are higher than both the brief and the control group. This trend is evident at 6 months and the increases continue at 12 months post-intervention.

Table 19 *Unadjusted multilevel analysis results for all models*

	Intervention Type	**Baseline**	**6 Months post-intervention**	**12 Months post-intervention**
Model 1	Control	1.00	0.55 (0.44-0.71)*	0.43 (0.30-0.61)*
	Brief	1.03 (0.69-1.53)	0.56 (0.35-0.91)*	0.44 (0.25-0.77)*
	Full	0.84 (0.53-1.31)	0.46 (0.27-0.79)*	0.36 (0.19-0.68)*
Model 2	Control	1.00	0.58 (0.43-0.76)*	0.42 (0.28-0.62)*
	Brief	0.98 (0.63-1.53)	0.56 (0.33-0.96)*	0.40 (0.21-0.77)*
	Full	1.43 (0.85-2.39)	0.81 (0.43-1.52)	0.59 (0.28-1.25)

Table 19 (continued)

Model 3	Control Brief Full	1.00 0.93 (0.65-1.34) 0.78 (0.50-1.21)	0.82 (0.62-1.07) 0.78 (0.49-1.27) 0.66 (0.37-1.16)	0.65 (0.44-0.96)* 0.63 (0.35-1.13) 0.52 (0.26-1.05)**
Model 4	Control Brief Full	1.00 1.17 (0.83-1.63) 1.60 (1.07-2.39)*	1.09 (0.86-1.39) 1.26 (0.82-1.94) 1.72 (1.04-2.87)*	1.15 (0.81-1.63) 1.33 (0.79-2.26) 1.82 (0.97-3.41)**
Model 5	Control Brief Full	1.00 0.84 (0.56-1.26) 0.85 (0.54-1.35)	0.78 (0.60-1.00)* 0.66 (0.40-1.08)** 0.67 (0.38-1.17)	0.58 (0.40-0.84)* 0.49 (0.27-0.89)* 0.50 (0.25-0.99)*
Model 6	Control Brief Full	1.00 1.08 (0.66-1.77) 1.99 (1.10-3.63)*	0.69 (0.50-.95)* 0.73 (0.40-1.35) 1.35 (0.65-2.79)	0.68 (0.44-1.07) 0.73 (0.35-1.50) 1.33 (0.56-3.20)
Model 7	Control Brief Full	1.00 0.91 (0.61-1.35) 0.74 (0.46-1.19)	0.96 (0.71-1.03) 0.90 (0.54-1.53) 0.74 (0.40-1.37)	0.77 (0.51-1.18) 0.73 (0.39-1.38) 0.60 (0.28-1.27)
Model 8	Control Brief Full	1.00 1.57 (1.10-2.23)* 1.87 (1.23-2.84)*	1.49 (1.15-1.92)* 2.29 (1.46-3.62)* 2.74 (1.61-4.65)*	1.83 (1.27-2.65)* 2.82 (1.61-4.91)* 3.37 (1.75-6.47)*

Controlling for the interaction between time and intervention type
** p<0.05*
***p< 0.1*

Multivariate Analysis (gllamm)

The results of the adjusted multilevel *gllamm* analysis of the eight models are shown in Table 20. The same potential confounders identified in the literature and used in all previous analyses were used in this analysis. I also controlled for the interaction between time and intervention type. Overall, 5 models saw a decrease in the odds of congruence from baseline to 6 and 12 months. Two models, Model 4 and its companion Model 8 saw increases in odds of congruence over time. Model 6 saw an initial decrease in the odds of congruence at 6 months

with an increase in the odds of congruence at 12 months that resulted in odds ratios being higher than baseline for all three groups.

Model 1 (boy/girlfriend ok) started at baseline with odds ratios for the full intervention group well below the control and brief intervention (OR 0.81; 95% CI 0.52-1.25). All three groups had decreased odds of congruence at both 6 and 12 months, however, the full intervention group's odds ratios decreased slightly less than the other two groups'. Model 5 the companion to Model 1 showed the same basic results as Model 1, except that the odds of congruence were higher for all groups at both 6 and 12 months post-intervention. This indicates that the child respondents were more likely to predict their mother's opinion than they were to agree with them. While this trend existed in all the univariate models, this is the only multivariate model where this occurs.

Model 2 (dating ok) and 3 (older for sex) had no statistically significant results, but each group saw relatively small decreases in the odds of congruence at 6 months and essentially no change from 6 months to 12 months. For Model 3, the full intervention group at baseline had odds ratios well below the control group (OR 0.77; 95% CI 0.50-1.20) and also saw their odds of congruence decrease less sharply than the control group.

Model 4 (married before sex) showed the odds of congruence increasing at 6 months, regardless of intervention group and then decreasing slightly at 12 months post intervention. Again the full intervention group's baseline odds ratio was much higher than the control or brief intervention group (OR 1.58; 95% CI 1.05-2.36) and none of the results were statistically significant at 12 months post-intervention. Model 8, like its companion Model 4, showed increases in the odds of congruence among all three groups over time. However, unlike Model 4 all of the results for Model 8 were statistically significant. At baseline, the brief (OR 1.54; 95% CI 1.07-2.18) and full (OR 1.74; 95% CI 1.15-2.64) interventions had higher odds of congruence at 12 months than the control group. The gains in odds of congruence were highest among the

full intervention group (12 month post-intervention OR 2.55; 95% CI 1.30-5.01), followed second by the brief intervention group (12 months post-intervention OR 2.25; 95% CI 1.25-4.03) and then the control group (12 months post-intervention OR 1.48; 95% CI 0.98-2.23).

Model 6 at baseline showed the odds of congruence for the full intervention group to be twice as high as the control group (OR 2.08; 95% CI 1.17-3.70). It was also the only model in both the univariate and multivariate analyses to show a decrease in congruence at 6 months followed by an increase beyond baseline in odds of congruence at 12 months. This trend was consistent within all intervention groups, however, the full intervention group had a substantially larger increase in odds of congruence from 6 months to 12 months and had the only statistically significant result for this Model.

Model 7 (older before sex) again showed the odds of congruence at baseline much lower than the control group (OR 0.70; 95% CI 0.44-1.13). The decrease in the odds of congruence for the full intervention group was much less than the other two groups, but was not statistically significant.

In summary, Model 8 was the only model where all results were statistically significant and there was a clear dose-response relationship between the level of intervention and the odds of congruence with the full intervention group having the highest odds of congruence and the largest increase in those odds from baseline to 12 months post-intervention. Model 6 showed significant improvement from 6 months to 12 months post-intervention only in the full intervention group.

Table 20 *Adjusted multilevel analysis results of all models*

	Intervention Type	**Baseline**	**6 Months post-intervention**	**12 Months post-intervention**
Model 1	Control	1.00	0.70 (0.54-0.92)*	0.63 (0.42-0.94)*
	Brief	0.98 (0.66-1.44)	0.68 (0.42-1.11)	0.61 (0.34-1.11)
	Full	0.81 (0.52-1.25)	0.56 (0.32-0.97)*	0.50 (0.26-0.99)*

Table 20 (continued)

Model 2	Control Brief Full	1.00 0.91 (0.60-1.38) 1.31 (0.79-2.15)	0.88 (0.65-1.20) 0.79 (0.46-1.36) 1.14 (0.61-2.13)	0.88 (0.57-1.38) 0.79 (0.40-1.54) 1.13 (0.52-2.46)
Model 3	Control Brief Full	1.00 0.87 (0.60-1.25) 0.77 (0.50-1.20)	0.85 (0.64-1.15) 0.76 (0.46-1.25) 0.68 (0.38-1.21)	0.71 (0.46-1.10) 0.64 (0.34-1.18) 0.57 (0.27-1.17)
Model 4	Control Brief Full	1.00 1.14 (0.81-1.59) 1.58 (1.05-2.36)*	1.07 (0.83-1.40) 1.21 (0.77-1.90) 1.68 (1.00-2.8)*	1.05 (0.71-1.56) 1.19 (0.68-2.08) 1.65 (0.86-3.17)
Model 5	Control Brief Full	1.00 0.84 (0.57-1.22) 0.87 (0.56-1.35)	0.91 (0.69-1.20) 0.76 (0.47-1.24) 0.79 (0.45-1.39)	0.79 (0.53-1.20) 0.67 (0.36-1.22) 0.69 (0.35-1.39)
Model 6	Control Brief Full	1.00 1.24 (0.79-1.95) 2.08 (1.17-3.70)*	0.87 (0.61-1.24) 1.06 (0.58-1.93) 1.78 (0.86-3.67)	1.07 (0.64-1.78) 1.30 (0.61-2.74) 2.17 (0.88-5.33)**
Model 7	Control Brief Full	1.00 0.81 (0.55-1.21) 0.70 (0.44-1.13)	0.91 (0.66-1.26) 0.76 (0.44-1.31) 0.66 (0.35-1.24)	0.73 (0.46-1.17) 0.62 (0.31-1.21) 0.53 (0.24-1.17)
Model 8	Control Brief Full	1.00 1.54 (1.07-2.18)* 1.74 (1.15-2.64)*	1.44 (1.08-1.90)* 2.18 (1.37-3.48)* 2.48 (1.44-4.24)*	1.48 (0.98-2.23)** 2.25 (1.25-4.03)* 2.55 (1.30-5.01)*

Controlling for interaction between time and intervention type, parent gender, education, religious frequency, employment status, education, income level and child age and gender.
** p<0.05*
***p<0.10*

- Research Question 4: Does participation in the Parents Matter! Program result in higher scores on the predictive indices as compared to the brief intervention and the control group?

Difference of Mean Change Analysis

Table 21 compares the mean and standard deviations for each index by intervention group at baseline, 6 months and 12 months post-intervention. At baseline the means and standard deviations for each index were similar regardless of intervention group.

Table 21 *Mean comparisons for baseline, 6-month and 12-month measurements by group*

	Brief		Full		Control	
Index	M	SD	M	SD	M	SD
Baseline						
PCSC	1.12	0.50	1.10	0.50	1.14	0.50
CPRP	2.78	0.31	2.80	0.29	2.79	0.33
GSA	2.54	0.21	2.55	0.20	2.56	0.20
6-Month						
PCSC	1.34	0.49	1.32	0.44	1.23	0.49
CPRP	2.75	0.36	2.74	0.36	2.73	0.36
GSA	2.54	0.21	2.55	0.20	2.53	0.27
12-Month						
PCSC	1.34	0.48	1.37	0.44	1.30	0.45
CPRP	2.69	0.38	2.71	0.36	2.73	0.34
GSA	2.53	0.20	2.55	0.20	2.55	0.23

Table 22 compares the difference in means from baseline to 6 months and baseline to 12 months by intervention group for each Index. At 6 months post-intervention, the mean difference for the PCSC index for the brief and full intervention groups is about double that for the control group. While there is an overall decrease in mean score, there is no difference in means for the CPRP index by group at 6 months post-intervention. The GSA index mean increased slightly for the brief and full intervention groups and decreased slightly for the control group at 6 months post-intervention.

At 12 months post-intervention the gains seen in the PCSC index were reversed slightly for all groups and the declines seen in the CPRP index have also reversed with substantial increases among all groups. Again the GSA index showed very little change over time and no variation by group.

Table 22 *Mean differences between baseline and 6-month as well as baseline and 12-month measurements by group*

Index	Brief		Full		Control	
	M	SD	M	SD	M	SD
Baseline to 6-Month						
PCSC	0.22	0.31	0.24	0.35	0.13	0.33

Table 22 (continued)

CPRP	-0.04	0.30	-0.04	0.37	-0.04	0.35
GSA	0.02	0.16	0.01	0.16	-0.02	0.21
Baseline to 12-Month						
PCSC	-0.09	0.34	-0.08	0.35	-0.06	0.36
CPRP	0.22	0.34	0.29	0.37	0.20	0.33
GSA	0.00	0.15	0.01	0.16	-0.02	0.19

Table 23 compares the difference of mean change for each index by intervention group. For the PCSC index at 6 months post-intervention, both the brief and the full intervention groups saw statistically significant differences versus the control group. Both groups had higher scores on the PCSC Index. The difference between the brief and the full intervention groups was not significant. At 12 months, however, only the full intervention group had a significantly higher mean change than the control group.

For the CPRP Index, there were no statistically significant differences of mean change. The GSA index saw a statistically significant difference between the brief intervention group and the control group at 6 months post-intervention.

Table 23 *Difference of Mean Change from baseline between arms of intervention at each assessment*

Index	Group Comparisons	6 month post-intervention	Tukey HSD-test	12 month post-intervention	Tukey HSD-test
PCSC	Brief vs. Control	0.09 (0.01,0 .16)	3.95*	0.02 (-0.06, 0.10)	0.91
	Full vs. Control	0.10 (0.03, 0.17)	4.80*	0.09 (0.02, 0.17)	3.95*
	Brief vs. Full	0.02 (-0.05, 0.09)	0.85	0.07 (-0.004, 0.14)	3.04
CPRP	Brief vs. Control	0.006 (-0.07, 0.08)	0.28	0.03 (-0.05, 0.11)	1.25
	Full vs. Control	0.005 (-0.07, 0.08)	0.24	0.01 (-0.06, 0.09)	0.60
	Brief vs. Full	0.0009 (-0.07, 0.07)	0.04	0.01 (-0.06, 0.09)	0.65
GSA	Brief vs. Control	0.04 (0.0004, 0.08)	3.49*	0.02 (-0.02, 0.06)	1.95
	Full vs. Control	0.03 (-0.008, 0.07)	2.56	0.02 (-0.01, 0.06)	2.18
	Brief vs. Full	0.01 (-0.03, 0.05)	0.92	0.003 (-0.03, 0.04)	0.22

* p-value < 0.05

Multilevel Analysis

While the difference of mean change analysis allows for the calculation of the differences in mean scores for each index by intervention group, it does not allow us to control for any potential confounders or differences between groups. For this a multilevel analysis must be done. Using the STATA 10 *gllamm* analysis program, I was able to conduct both univariate and multivariate analysis of changes in index scores over time by intervention group.

Table 24 shows the results of the unadjusted multilevel *gllamm* analysis for each index over time. For the PCSC Index, this analysis shows statistically significant results for all three intervention groups at 6 and 12 months post-intervention. The differences from baseline to 6 months and 12 months post-intervention are essentially the same for each group. There are no statistically significant results for the GSA Index. For the CPRP Index, both the control and brief intervention groups show statistically significant results at 6 and 12 months post-intervention, however, there is no significant difference between either of these groups.

Table 24 *Univariate Analysis of Indices (gllamm)*

Index	Intervention Type	Baseline	6 Months post-intervention	12 Months post-intervention
PCSC	Control	1.00	1.18 (1.15-1.21)*	1.19 (1.14-1.24)*
	Brief	1.02 (0.97-1.08)	1.21 (1.14-1.29)*	1.22 (1.14-1.30)*
	Full	1.01 (0.95-1.08)	1.20 (1.11-1.28)*	1.21 (1.11-1.31)*
GSA	Control	1.00	0.99 (0.98-1.00)	0.98 (0.96-1.01)
	Brief	0.99 (0.95-1.02)	0.98 (0.94-1.01)	0.97 (0.93-1.01)
	Full	0.99 (0.95-1.03)	0.98 (0.94-1.03)	0.98 (0.93-1.03)
CPRP	Control	1.00	0.96 (0.94-0.99)*	0.93 (0.89-0.97)*
	Brief	0.99 (0.95-1.03)	0.95 (0.90-1.00)*	0.92 (0.87-0.98)*
	Full	1.02 (0.97-1.07)	0.98 (0.92-1.04)	0.94 (0.88-1.02)

Controlling for the interaction between time and intervention type
**p<0.05*

Table 25 shows the adjusted multilevel *gllamm* analysis for each index by intervention group over time. After adjusting for parent gender, education, religious frequency, employment

status, education, income level and child age and gender as well as the interaction between time and intervention type, the only index with statistically significant results was the PCSC index. This index showed significant results for all groups at 6 months and only the control group at 12 months. There was no significant difference between either the brief or the full intervention groups, however.

Table 25 *Multivariate Analysis of Indices (gllamm)*

Index	Intervention Type	Baseline	6 Months post-intervention	12 Months post-intervention
PCSC	Control	1.00	1.12 (1.08-1.15)*	1.08 (1.02-1.13)*
	Brief	0.96 (0.91-1.02)	1.08 (1.01-1.16)*	1.04 (0.96-1.13)
	Full	0.97 (0.91-1.04)	1.09 (1.01-1.18)*	1.05 (0.96-1.15)
GSA	Control	1.00	1.00 (0.98-1.01)	1.00 (0.97-1.02)
	Brief	0.98 (0.96-1.01)	0.98 (0.95-1.01)	0.98 (0.95-1.02)
	Full	0.99 (0.96-1.02)	0.99 (0.95-1.03)	0.99 (0.95-1.03)
CPRP	Control	1.00	0.98 (0.95-1.01)	0.97 (0.95-1.03)
	Brief	0.99 (0.95-1.03)	0.97 (0.92-1.03)	0.96 (0.90-1.02)
	Full	1.02 (0.97-1.07)	1.00 (0.94-1.06)	0.99 (0.92-1.06)

Controlling for the interaction between time and intervention type, parent gender, education, religious frequency, employment status and income level and child age and gender.

In summary, while the difference of mean change analysis showed a relationship between the full intervention and increased mean scores on the PCSC index at 12 months post-intervention, the adjusted multilevel analysis found no statistically significant results that indicated an effect of either intervention on the three predictive indices.

CHAPTER 5: DISCUSSION

The goal of this study was to determine if there were certain characteristics that parents and children who have the same attitudes about sex share, and to evaluate if participating in the Parents Matter! Program intervention had any effect on those characteristics.

The first part of the study looked at those characteristics and classified them into three indices: 1) Parent Child Sexual Communication (PCSC), 2) a parent's General Sexual Attitude (GSA) and 3) a Child's Perception of the Relationship with his or her Parent (CPRP). As hypothesized and consistent with previous research on older, Caucasian teens, parent-child sexual communication and a child's perception of the relationship with his or her parent were strongly correlated with parent-child agreement in the majority of sexual attitude models. The parents' general sexual attitudes index was correlated with increased agreement in only one model and decreased agreement in two. Overall, however, the results of this study are consistent with the literature in its finding that greater parent-child sexual communication and closeness are more likely to result in children who share their parents' beliefs about sexual behavior.

The second part of the study examined if the Parents Matter! Program was effective in improving either dating/sexual attitude agreement between parents and their pre-teens, or scores on the above mentioned predictive indices (PCSC, GSA and CPRM). When it came to the dating/sexual attitude models, there was one model for which there was a clear dose-response relationship between the two interventions (Brief and Full) as compared to the control group. For this model, which examined the mother's beliefs about pre-marital sex and the child's ability to predict the mother's answer to that question, the full intervention had the highest odds of agreement both at 6 and 12 months post-intervention. The intervention appears to have no effect, however, on the three predictive indices. This is in contrast to the first published results of the

Parents Matter! Program which found in a difference of mean change analysis that parent-child sexual communication improved for the participants of the full intervention as compared to the brief intervention and the control group (Forehand et al., 2007). I too found this result in my difference of mean change analysis, but when the potential confounders were added during the multilevel analysis, these results were nullified.

Examining each baseline predictive index reveals some expected and some unexpected results. For example, with both the PCSC and the CPRP indices, in 5 of the 8 models, higher scores on the index resulted in greater agreement in dating and sexual attitudes. This would be expected and consistent with the TRA/TPB; greater parent-child communication and closeness should result in greater attitude agreement. What was unexpected, however, was that the PCSC index was correlated in only half the models and the CPRP index in only one-fourth of the models that asked the child to predict what his or her mother thought about a question. This would suggest that there was some mechanism in the relationship that resulted in an increase in attitude transmission independent of the child being able to state his or her parent's attitudes. This is counter to my hypothesis and an interesting research finding that adds some depth to other studies that find, like this one, that children generally underestimate their parent's sexual conservativeness. Perhaps, this understanding is less important than once thought, or perhaps this finding is less relevant among pre-teens than teens.

The GSA index was fraught with inconsistencies. First, with a Cronbach's alpha of less than .70 it was of questionable reliability as a predictive Index. Second, during the regression analysis it was correlated with decreased odds of congruence in two models, correlated with increased odds of congruence in one other and not significant in the majority of the models. Previous research generally finds that the more conservative a parent is in his or her sexual attitudes the more likely the child will be to delay sexual activity (B. Miller, 2002). These studies, however, have been primarily conducted with Caucasian, married parents of older teens. None

have studied African American parents of pre-teens like this one. More research needs to be done to determine if general sexual attitudes specifically in African American families have any effect on teen/pre-teen sexual attitudes or behavior as these results are so inconsistent it is hard to draw any conclusions.

In the Parents Matter! Program evaluation, the congruence between the parents and their children decreased over time in the majority of the 8 models. This would be developmentally expected as the children transitioned from ages 9-11 at baseline to 10-13 at the twelve month post intervention assessment. It was hoped that participation in the Parents Matter! Program (full intervention) would have had a mediating effect on this relationship for all models, but as discussed earlier, was evident in just one model.

This study's findings that the Parents Matter! Program had a positive effect on only one sexual attitude model, and no effect on the predictive indices is counter to both the study's hypotheses and previously published research. It is possible that had more models specific to sexual issues/attitudes rather than dating been selected for comparison, there might have been more significant results. Half the models in this analysis dealt with dating and having a boy/girlfriend rather than actual sexual issues. This was due to the young age of the child participants. While the theory behind the decision to begin this intervention with pre-teens is strong and intuitively logical, it complicates the evaluation.

The primary goal of the Parents Matter! Program is to decrease the number of teens who are sexually active and to decrease the risky behaviors of those who are. The challenge is that the median age of the child participants at 12 months post-intervention was 11.2 years with less than 5% of the respondents reporting sexual experience at that time. Ultimately, researchers need to evaluate if participating in the full intervention of the Parents Matter! Program resulted in later sexual initiation and greater contraceptive use once sexually active. Until that type of an evaluation can be completed, other research results will be largely ambiguous.

Study Limitations

This study was one of the few parent sexuality evaluations designed as an RCT. This eliminated many weaknesses typically found in this type of analysis. However, there were several limitations. First, study participants were a convenience sample. Second, as mentioned above the age of the child, given their low rate of sexual initiation, limits the researcher's ability to effectively evaluate the ultimate goal of this program—reducing teen sexual activity and risk taking. Also, as with many longitudinal RCTs, attrition was a challenge. The choice to use the Intent to Treat analysis controlled for this some, but also resulted in fewer statistically significant results. The study was designed to determine the effectiveness of a parent sexuality education program. However, with 97% of the parent participants being mothers, this limits the generalizability of these results. Finally, my analysis was done only through the 12 month post-intervention assessment. Future researchers should evaluate if significant results can be found at 24 and 36 months post-intervention.

Study Strengths

This study had several strengths. First, as mentioned earlier it is one of the few evaluations of a parent sexuality education program that was conducted as an RCT. Second, it is one of only a handful of studies about this topic that focuses entirely on African Americans. This is important because it allows researchers to determine if there are differences between the more prevalent, Caucasian-based teen sexual risk reduction research findings when compared to studies utilizing African American participants. Also, as more and more youth are engaging in sexual activity at younger ages, this intervention is rare in that it targets parents of elementary school aged children for education rather than waiting until middle or high school like most programs. The ability to study the sexual attitudes of elementary school aged children is a welcome addition to the dearth of research on this subject. Finally, I found no evidence that multilevel analysis has ever been used to study the effects of a parent sexuality education program over time. Typically

ANOVA or difference of mean change analyses are utilized. These analyses do not allow the researcher to control for confounders or their changes like multilevel analysis does.

Policy Implications

The public health implications of this study are mixed. On one hand, the results corroborate existing studies which find that parent child sexual communication and closeness are related to shared sexual attitudes. On the other hand, the relatively weak association between participating in the Parents Matter! Program and increased parent-child sexual attitude congruence is disappointing. This is a rich data set, however, and it is possible that a clearer focus on purely sexual issues rather than dating and sexual attitudes would bring stronger results.

Two generations ago, parent sexuality education was not needed. The message to teens then was simple: wait until you are married to have sex. That did not always work, but there were essentially no risk reduction options available to teens then. These days, pubertal onset is earlier and marriage is later than at any point in our history. The media portrays sex as an expected norm for teens; often without the portrayal of real-world consequences. Add to that the plethora of contraceptive options available for teens and it is understandable that parents are in need of sexuality education. The challenge for public health practitioners is how to provide the most effective parent sexuality education program in the shortest amount of time. This targeted approach is important both for the participants who as parents of teens are short on time, but also for the providers as the longer a program the more expensive it is to conduct. As the need for parent sexuality education programs continues to increase, more and more public health educators will look for a program that works in the shortest amount of time. Thus research needs to focus not purely on effectiveness, but on *efficient effectiveness*.

Ultimately, future research should focus on the effectiveness of the Parents Matter! Program in reducing teen sexual activity, pregnancy and sexually transmitted infections. Also, as mentioned earlier, researchers need to determine if it is truly necessary for a pre-teen to

completely understand his or her parent's sexual attitudes and expectations in order to reduce their sexual risk taking. Finally, more research is needed to determine just how much time parent sexuality education curricula should take to be effective. That was one of the original goals of the CDC's evaluation of the Parents Matter! Program that has yet to be addressed.

In conclusion, the responsibility for the sexual-health education of our teens rests firmly in the hands of their parents. Parents are often ill-informed and ill-equipped to take on this challenge and need education and guidance on how to proceed. A targeted parent education curriculum that improves parent child sexual communication and closeness in addition to providing facts about reproductive health is needed to prepare parents for their role as their child's primary sexuality educator. The Parents Matter! Program's goal is just that. However, it is unclear from the results of this study if this intervention accomplishes its mission. Regardless, more research must be done, more programs developed and more parents educated. The sexual health of America's teens depends on it.

REFERENCES

Abma, J. C., & Sonenstein, F. L. (2001). Sexual activity and contraceptive practices among teenagers in the United States, 1988 and 1995. *Vital and Health Statistics, 23*(21), 1-72.

Albarracin, D., Kumkale, G. T., & Johnson, B. T. (2004). Influences of social power and normative support on condom use decisions: a research synthesis. *AIDS Care, 16*(6), 700-723.

Ball, J., Pelton, J., Forehand, R., Long, N., & Wallace, S. (2004). Methodological overview of the Parents Matter! Program. *Journal of Child and Family Studies, 13*(1), 21-34.

Beadnell, B., Wilsdon, A., Wells, E., Morison, D. M., Gillmore, M. R., & Hoppe, M. (2007). Intrapersonal and Interpersonal Factors Influencing Adolescents' Decisions about Having Sex: A Test of Sufficiency of the Theory of Planned Behavior. *Journal of Applied Social Psychology, 37*(12), 2840-2876.

Blake, S. M., Simkin, L., Ledsky, R., Perkins, C., & Calabrese, J. M. (2001). Effects of a Parent-Child Communications Intervention on Young Adolescents' Risk for Early Onset of Sexual Intercourse. *Family Planning Perspectives, 33*(2), 52-61.

Borawski, E. A., Levers-Landis, C. E., Lovegreen, L. D., & Trapl, E. S. (2003). Parental monitoring, negotiated unsupervised time, and parental trust: The role of perceived parenting practices in adolescent health risk behaviors. *Journal of Adolescent Health, 33*(2), 60-70.

Brent, M. (2002). Family influences on adolescent sexual and contraceptive behavior. *The Journal of Sex Research, 39*(1), 22-26.

Buhi, E., & Goodson, P. (2007). Predictors of Adolescent Sexual Behavior and Intention: A Theory-Guided Systematic Review. *Journal of Adolescent Health, 40*, 4-21.

Burgess, V., Dziegielewski, S. P., & Green, C. E. (2005). Improving comfort about sex communication between parents and their adolescent: Practice-based research within a teen sexuality group. *Brief Treatment and Crisis Intervention, 5*, 379-390.

CDC. (2008). *Prevalence of Sexually Transmitted Infections and Bacterial Vaginosis among Female Adolescents in the United States: Data from the National Health and Nutritional Examination Survey (NHANES) 2003-2004.* Paper presented at the 2008 National STD Prevention Conference, Chicago, Illinois.

Cohen, J., & West, S. G. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Mahwah, NJ: Lawerence Erlbaum Associates Inc.

DiBlasio, F., & Benda, B. (1990). Adolescent Sexual Behavior: Multivariate analysis of a Social Learning Model. *Journal of Adolescent Research, 5*(4), 449-466.

DiLorio, C., McCarty, F., Denzmore, P., & Landis, A. (2007). The moderating influence of mother-adolescent discussion on early and middle African-American adolescent sexual behavior. *Research in Nursing & Health, 30*, 193-202.

DiLorio, C., Pluhar, E., & Belcher, L. (2003). Parent-child communication about sexuality: A review of the literature from 1980-2002. *Journal of HIV/AIDS Prevention & Education for Adolescents & Children, 5*(3), 7-32.

Dittus, P., Miller, K., Kotchick, B., & Forehand, R. (2004). Why Parents Matter!: the conceptual basis for a community-based HIV prevention program for the parents of African American youth. *Journal of Child and Family Studies, 13*(1), 5-20.

Eastman, K., Corona, R., & Schuster, M. (2006). Talking Parents, Healthy Teens: A worksite-base Program for parents to promote adolescent sexual health. *Preventing Chronic Disease, 3*(4), 1-10.

Fasula, A., & Miller, K. (2006). African-American and Hispanic adolescents' intentions to delay first intercourse: parental communication as a buffer for sexually active peers. *Journal of Adolescent Health, 38*, 193-200.

Fingerson, L. (2005). Do mothers' opinions matter in teens' sexual activity? *Journal of Family Issues, 26*(7), 947-974.

Fisher, L., DO, D., & al., e. (1990). Intention-to-Treat in clinical trials. In K. Peace (Ed.), *Statistical Issues in Drug Research and Development*: Marcel Kekker.

Fisher, T. (1986). Parent-child communications about sex and young adolescents' sexual knowledge and attitudes. *Adolescence, 12*, 517-527.

Forehand, R., Armistead, L., Long, N., Wycoff, S., Kotchick, B., Whitaker, D., et al. (2007). Efficacy of a parent-based sexual-risk prevention program for African American preadolescents. A randomized control trial. *Arch Pediatr Adolesc Med, 161*(12), 1123-1129.

Gavin, L., MacKay, A., Brown, K., Harrier, S., Ventura, S., Kann, L., et al. (2009). Sexual and Reproductive Health of Persons aged 10-24 years--United States, 2002-2007. *MMWR, 58*(SS06), 1-58.

Gillmore, M. R., Archibald, M. E., Morrison, D. M., Wilsdon, A., Wells, E., Hoppe, M., et al. (2002). Teen sexual behavior: Applicability of the theory of reasoned action. *Journal of Marriage and the Family, 6*(11), 885-897.

Green, H. H., & Documet, P. I. (2005). Parent peer education: Lessons learned from a community-based initiative for teen pregnancy prevention. *Journal of Adolescent Health 37*, 100-107.

Guilamo-Ramos, V., Jaccard, J., & Casillas, E. (2004). The Parents Matter! Program: practical, theoretical and methodological perspectives. *Journal of Child and Family Studies, 13*(1), 113-123.

Harris, J. R. (1995). Where is the child's environment? A group socialization theory of development. *Psychological Review, 102*, 458-489.

Henshaw, S. (2004). US Teenage pregnancy statistics with comparative statistics for women aged 20-24. *The Guttmacher Institute*.

Hutchinson, K., & Wood, E. (2007). Reconceptualizing adolescent sexual risk in a parent-based expansion of the theory of planned behavior. *Journal of Nursing Scholarship, 39*(2), 141-146.

Hutchinson, M. K. (2002). The Influence of Sexual Risk Communication between Parents and Daughters on Sexual Risk Behaviors. *Family Relations, 51*(3), 238-247.

Jaccard, J., Dittus, P., & Gordan, V. (1996). Maternal correlates of adolescent sexual and contraceptive behavior. *Family Planning Perspectives, 28*, 159-165 & 185.

Jaccard, J., Dittus, P., & Gordan, V. (1998). Parent-Adolescent Congruency in Reports of Adolescent Sexual Behavior and in Communications about sexual behavior. *Child Development, 69*(1), 247-261.

Jaccard, J., Dittus, P., & Litardo, H. (1999). Parent adolescent communication about sex and birth control: Implications for parent based interventions to reduce unintended adolescent pregnancy. *Advances in Population, 3*, 189-226.

Kalmuss, D., Davidson, A., Cohall, A., Laraque, D., & Cassell, C. (2003). Preventing sexual risk behaviors and pregnancy among teenagers: linking research and programs. *Perspectives on Sexual and Reproductive Health, 35*(2), 87-93.

Kirby, D. (2001). Understanding what works and what doesn't in reducing adolescent sexual risk taking. *Family Planning Perspectives, 33*(6), 276-281.

Kirby, D. (2007). *Emerging Answers 2007: Research Findings on Programs to Reduce Teen Pregnancy and Sexually Transmitted Diseases*. Washington, DC: National Campaign to Prevent Teen and Unplanned Pregnancy.

Kirby, D., Lepore, G., & Ryan, J. (2005). *Factors affecting teen sexual behavior, pregnancy, childbearing and sexually transmitted disease: Which are important? Which can you change?* Washington DC: National Campaign to Prevent Teen Pregnancy.

Klein, J., Sabaratnam, P., Pazos, B., Auerbach, M. M., Havens, C. G., & Brach, M. J. (2005). Evaluation of the Parents as Primary Sexuality Educators Program. *Journal of Adolescent Health, 37*, S94 - S99.

Kotchick, B., Dorsey, S., Miller, K., & Forehand, R. (1999). Adolescent sexual risk-taking behavior in single-parent ethnic minority families. *Journal of Family Psychology, 13*(1), 93-102.

Laflin, M., Wang, J., & Barry, M. (2008). A Longitudinal Study of Adolescent Transition from Virgin to Nonvirgin Status. *Journal of Adolescent Health, 42*, 228-236.

Long, N., Austin, B.-J., Gound, M., Kelly, A., Gardner, A., Dunn, R., et al. (2004). The Parents Matter! Program inteventions: content and the facilitation process. *Journal of Child and Family Studies, 13*(1), 47-65.

Luke, D. (Ed.). (2004). *Multilevel Modeling*. Thousand Oaks: Sage Publications, Inc.

Maynard, R. (1996). *Kids Having Kids: A Robin Hood Foundation Special Report on the Costs of Adolescent Childbearing. .* New York: The Robin Hood Foundation.

McNeely, C., Shew, M., Beuhring, T., Sieving, R., Miller, B., & Blum, R. (2002). Mothers' influence on the timing of first sex among 14 and 15 year-olds. *Journal of Adolescent Health, 31*(3), 256-265.

Meschke, L., Bartholomae, S., & Zentall, S. (2000). Adolescent sexuality and parent-adolescent processes: Promoting healthy teen choices. *Family Relations, 49*, 143-154.

Miller, B. (2002). Family influences on adolescent sexual and contraceptive behavior. *Journal of Sex Research, 39*(1), 22-26.

Miller, B. C. (1993). Families, Science, and Values: Alternative Views of Parenting Effects and Adolescent Pregnancy. *Journal of Marriage and the Family, 55*(1), 7-21.

Miller, B. C., Benson, B., & Galbraith, K. A. (2001). Family relationships and adolescent pregnancy risk: A research synthesis. *Developmental Review, 21*(1), 1-38.

Miller, K., Forehand, R., & Kotchick, B. (1999). Adolescent sexual behavior in two ethnic minority samples: The role of family variables. *Journal of Marriage and the Family, 61*(1), 85-98.

Miller, K., Kotchick, B., Dorsey, S., Forehand, R., & Ham, A. (1998). Family communication about sex: What are parents saying and are their adolescents listening? *Family Planning Perspectives, 30*(5), 218-222 & 235.

Moore, D. S., & McCabe, G. P. (2006). *Introduction to the practice of statistics*. New York, NY: W.H. Freeman.

Moore, K., Peterson, J., & Furstenberg, F. (1986). Parental attitudes and the occurrence of early sexual activity. *Journal of Marriage and the Family, 48*, 777-782.

NCPTP, N. C. t. P. T. P. (2004). *With One Voice: America's Adults and Teens Sound Off about Teen Pregnancy*: The National Campaign to Prevent Teen Pregnancy.

Newcomer, S. F., & Udry, J. R. (1985). Parent-Child Communication and Adolescent Sexual Behavior. *Family Planning Perspectives, 17*(4), 169-174.

Noar, S. M. (2007). An interventionist's guide to AIDS behavioral theories. *AIDS Care, 19*(3), 392-402.

Nunnally, J. C. (1978). *Psychometric Theory*. New York, NY: McGraw-Hill.

O'Donnell, L., O'Donnell, C., & Stueve, A. (2001). Early sexual initiation and subsequent sex related risks among urban minority youth: The Reach for Health Study. *Family Planning Perspectives, 33*(6), 268-275.

O'Donnell, L., Stueve, A., Duran, R., Myint-U, A., Agronick, G., San Doval, A., et al. (2008). Parenting practices, Parents' underestimation of daughters' risks, and alcohol and sexual behaviors of urban girls. *Journal of Adolescent Health, 42*, 496-502.

O'Donnell, L., Steuve, A., Agronick, G., Wison-Simmons, R., Duran, R., & Jeanbaptiste, V. (2005). Saving sex for later: An evaluation of a parent education intervention. . *Perspectives on Sexual and Reproductive Health, 37*(4), 166-173.

Pick, S., & Andrade-Palos, P. (1995). Impact of the family on the sex lives of adolescents *Adolescence, 30*(119), 667-675.

Rabe-Hesketh, S., Skrondal, A., & Pickles, A. (2002). Reliable estimation of generalized linear mixed models using adaptive quadrature. *The Stata Journal, 2*(1), 1-21.

Raffaelli, M., Smart, L., Van Horn, S., Hohbein, A., Kline, J., & Chan, W.-L. (1999). Do mothers and teens disagree about sexual communication? A methodological reappraisal. *Journal of Youth and Adolescence, 28*(3), 395-402.

Regnerus, M., & Luchies, L. (2006). The parent-child relationship and opportunities for adolescents' first sex. *Journal of Family Issues, 27*(2), 159-183.

Rose, A., Koo, H., Bhaskar, B., Anderson, K., White, G., & Jenkins, R. (2005). The Influence of Primary Caregivers on the Sexual Behavior of Early Adolescents. *Journal of Adolescent Health, 37*, 135-144.

Rosenthal, D., & Feldman, S. (2002). The importance of importance: adolescents' perceptions of parental communication about sexuality. *Journal of Adolescence, 22*(6), 835-851.

Sanders, G. F., & Mullis, R. M. (1988). Family influences on sexual attitudes and knowledge as reported by college students. *Adolescence, 92*, 827-846.

Shearer, D. L., Mulvihill, B. A., Klerman, L. V., Wallander, J. L., Hovinga, M. E., & Redden, D. T. (2002). Association of early childbearing and low cognitive ability. *Perspectives on Sexual and Reproductive Health, 34*(5), 236-243.

Sheeran, P., & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology, 29*(8), 1624-1675.

Solorio, R., Rosenthal, D., Milburn, N., Weiss, R., Philip, B., Gandara, M., et al. (2008). Predictors of Sexual Risk Behaviors Among Newly Homeless Youth: A Longitudinal Study. *Journal of Adolescent Health, 42*, 401-409.

Swain, C., Ackerman, L., & Ackerman, M. (2006). The Influence of Individual Characteristics and Contraceptive Beliefs on Parent-Teen Sexual Communications: A Structural Model. *Journal of Adolescent Health, 38*, 753.e759-753.e718.

Tabachnick, B. G. (2001). *Using multivariate statistics*. Needham Heights, MA: Allyn and Bacon.

Tasca, G. A., & Gallop, R. (2009). Multilevel modelng of longitudinal data for psychotherapy researchers: I. The basics. *Psychotherapy Research, 1*(1), 1-9.

Whitaker, D. J., Miller, K. S., May, D. C., & Levin, M. L. (1999). Teenage Partners' Communication About Sexual Risk and Condom Use: The Importance of Parent-Teenager Discussions. *Family Planning Perspectives, 31*(3), 117-121.

Williams, R. (2006). Generalized ordered logit/partial proportional odds models for ordinal dependent variables. *The Stata Journal, 6*(1), 58-82.

APPENDIX A - STUDY VARIABLES

Variable Codes	Variable Description	n	% or mean (Baseline)
Demographic Information			
C1AGEND	Parent's gender	1,111	% female
C1cGENDER	Child's gender	1,111	% female
c1age	Child's age	1,109	9-14 years
P1A5	Religion frequency	1,107	1=never 2=few/yr 3=1-2/mnth 4=1/wk 5=+1/wk
P1A9	Currently married	654	1=yes
P1A16	Employment status	1,108	1=full time 2=part time 3=occasional 4=homemaker 5=unemployed 6=student 7=other
P1A17	Family income per month	1,079	1=$0-$199 2=$200-$499 3=$500-$999 4=$1,000-1,999 5=$2,000-$2,999 6=$3,000-$3,999 7=$4,000 or more Mean =
P1A20	Education level	1,109	1=no HS 2=some HS 3=HS/GED 4=some college 5=tech/assoc/2 year 6= BS/BA 7=graduate school
P1B8	Describe child's grades	1,108	1=mostly A's 2=mostly B's 3=mostly C's 4=mostly D/F

Appendix A (continued)

P1B9	Child failing grade on last RC	1,105	1=yes
P1B10	Child ever repeated grade	1,108	1=yes
P1F6	How old when parent had sex first time	1,065	mean
P1F7	Parent birth control used @ first sex	1,091	1=yes
P1F8	Parent condoms used @ first sex	1,094	1=yes
P1F9	Parent number of sex partners lifetime	924	8.0 mean
P1F13	Any of your children have children as teens	1,105	1=yes
Sexual Communication Variables			
Parental Variables *(note: * indicates variable included in PCSC Index)*			
How many times have you talked with your child about:			
P1L5*	Dating	1,103	0= never 1=once or twice 2=a lot
P1L6*	Puberty	1,105	0= never 1=once or twice 2=a lot
P1L7*	Menstruation	1,105	0= never 1=once or twice 2=a lot
P1L8*	What sex is	1,104	0= never 1=once or twice 2=a lot
P1L9*	Reproduction	1,101	0= never 1=once or twice 2=a lot
P1L11*	Abstinence or waiting to have sex	1,094	0= never 1=once or twice 2=a lot
P1L13*	Peer pressure to have sex (skip pattern from talk about peer pressure)	985	0= never 1=once or twice 2=a lot
P1L14*	Condoms	1,090	0= never 1=once or twice 2=a lot
P1L15*	HIV/AIDS	1,104	0= never 1=once or twice 2=a lot
Child Variables			
How many times has your mother ever talked to you about:			
C1F9*	Dating or going out with a boy/girl	1,105	0=never 1=once or twice 2=lots of times
C1F11*	Puberty	1,105	0=never 1=once or twice 2=lots of times

Appendix A (continued)

C1F13*	Menstruation	1,105	0=never 1=once or twice 2=lots of times
C1F15*	What sex is	1,102	0=never 1=once or twice 2=lots of times
C1F17*	Abstinence	1,105	0=never 1=once or twice 2=lots of times
C1F19*	Reproduction	1,105	0=never 1=once or twice 2=lots of times
C1F23*	Peer Pressure	1,104	0=never 1=once or twice 2=lots of times
C1F25	Condoms	1,105	0=never 1=once or twice 2=lots of times 3=d/k about condoms (code as 0)
C1F27	HIV/AIDS	1,103	0=never 1=once or twice 2=lots of times
Global Sexual Attitude Variables *(note: * indicates variable included in GSA Index)*			
P1N1*reverse coded	People should only have sex if married	1,100	1= not at all true 2=a little true 3=very true
P1N2*	Ok for sex before marriage	1,088	1= not at all true 2=a little true 3=very true
P1N3*	Ok for sex before marriage if both people love each other	1,085	1= not at all true 2=a little true 3=very true
P1N4*	Ok for sex before marriage if have known for long time	1,084	1= not at all true 2=a little true 3=very true
P1N5	Ok for 10-12 year olds to have a boyfriend/girlfriend	1,107	1= not at all true 2=a little true 3=very true
P1N6	Ok for 10-12 year olds to go on a date alone	1,102	1= not at all true 2=a little true 3=very true
P1N7	Ok for 13-15 year olds to have a boyfriend/girlfriend	1,105	1= not at all true 2=a little true 3=very true

Appendix A (continued)

P1N8	Ok for 13-15 year olds to go on a date alone	1,106	1= not at all true 2=a little true 3=very true
P1N9	Not Ok for 13-15 year olds to have sex under any circumstances	1,104	1= not at all true 2=a little true 3=very true
P1N10	Ok for 13-15 year olds to have sex as long as they use protection	1,107	1= not at all true 2=a little true 3=very true
P1N15*	If teens have sex it is important that they use condoms	1,104	1= not at all true 2=a little true 3=very true
P1N16*	If teens have sex it is important that they use birth control	1,104	1= not at all true 2=a little true 3=very true
P1N17*	If teens have sex they should use condoms even if the girl uses birth control	1,103	1= not at all true 2=a little true 3=very true
P1N18*	If teens have sex they should use condoms even if they know each other well	1,100	1= not at all true 2=a little true 3=very true
P1N19*	Important teens know how to get and use birth control pre sex	1,097	1= not at all true 2=a little true 3=very true
P1N20*	Important teens know how to get and use condoms pre sex	1,097	1= not at all true 2=a little true 3=very true
P1N21*	Important teens be able to talk about sex with an adult pre sex	1,104	1= not at all true 2=a little true 3=very true
P1N22*	Important teens be able to talk with their partner about pregnancy and disease pre sex	1,101	1= not at all true 2=a little true 3=very true
P1N23*	Important teens know how a female gets pregnant pre sex	1,101	1= not at all true 2=a little true 3=very true
P1N24*	Important teens know how alcohol and drugs affect decision making pre sex	1,103	1= not at all true 2=a little true 3=very true
P1N32	Teens should only be taught about abstinence or not to have sex	1,082	1= not at all true 2=a little true 3=very true
P1N33*reverse coded	Teens having sex is against my moral or religious beliefs	1,084	1= not at all true 2=a little true 3=very true

Appendix A (continued)

P1N34	The main problem with teens having sex is neg. consequences like STDs and pregnancy	1,088	1= not at all true 2=a little true 3=very true
P1N35	Teens should be taught about condoms and birth control before they have sex	1,099	1= not at all true 2=a little true 3=very true
P1N36	Teaching teens about condoms and birth control is giving permission to have sex	1,097	1= not at all true 2=a little true 3=very true
P1N37	Teaching teens about condoms and birth control will make them want to have sex	1,096	1= not at all true 2=a little true 3=very true
Child Perception of Relationship with Mother *(note: * indicates variable included in CPRP Index)*			
C1C1*	My mother shows me that she loves me	1,105	1= not at all true 2=a little true 3=very true
C1C3*	I have a lot of fun with my Mother	1,105	1= not at all true 2=a little true 3=very true
C1C5*	I trust my mother	1,105	1= not at all true 2=a little true 3=very true
C1C7*	My mother understands me	1,105	1= not at all true 2=a little true 3=very true
C1C9*	My mother and I can talk about almost anything	1,105	1= not at all true 2=a little true 3=very true
C1C11	My mother sometimes doesn't listen to me	1,105	1= not at all true 2=a little true 3=very true
C1C13*	I like talking to my mother	1,105	1= not at all true 2=a little true 3=very true
C1C15	There are things I won't talk to my mother about	1,105	1= not at all true 2=a little true 3=very true

Appendix A (continued)

C1C17*	It is easy to talk about problems with my mother	1,105	1= not at all true 2=a little true 3=very true
C1C19*	I am happy with how my mother and I get along	1,105	1= not at all true 2=a little true 3=very true
C1C21	Sometimes it seems like I'm not important to my mother	1,105	1= not at all true 2=a little true 3=very true

APPENDIX B – CONVERSION CODEBOOK VARIABLES

Baseline

Wide Form Variable Codes	**Long Form Variable Codes**	**Variable Description**
SUBJECT	SUBJECT	
P1A5	parel1	Religion frequency
married	mar1	Marital status
P1A16	paemp1	Employment status
P1A17	painc1	Family income per month
P1A20	paedu1	Education level
C1ADGEND	C1ADGEND	Gender of adult care giver
C1cGENDER	C1cGENDER	Child's gender as reported by child
c1age	cage1	Child's reported age at time of questionnaire
Groups	groupsr	Intervention group designation reversed from wide format 1=control, 2=full, 3=brief
	timegroupsr	Interaction term of time*groups
Congruence1	cong1_1	Difference in scores between parent question: I think it is ok for my child to have a boy/girlfriend and child question: I think it is ok for me to have a boy/girlfriend.
Congruence2	cong2_1	Difference in scores between parent question: I think it is ok for my child to have a boy/girlfriend and child question: My mom thinks it is ok for me to have a boy/girlfriend
Congruence3	cong3_1	Difference in scores between parent question: I think it is ok for my child to date now and child question: I think it is ok for me to date now
Congruence4	cong4_1	Difference in scores between parent question: I think it is ok for my child to date now and child question: My mom thinks it is ok for me to have a boy/girlfriend.
Congruence5	cong5_1	Difference in scores between parent question: I think my child should be older before having sex and child question: I think I should be older before I have sex

Appendix B (continued)

Congruence6	cong6_1	Difference in scores between parent question: I think my child should be older before having sex and child question: My mom thinks I should be older before I have sex
Congruence7	cong7_1	Difference in scores between parent question: I think my child should be married before having sex and child question: I think I should be married before I have sex
Congruence8	cong8_1	Difference in scores between parent question: I think my child should be married before having sex and child question: My mom thinks I should be married before I have sex
PCSC	pcsc1	Parent Child Sexual Communication Index
GSA	gsa1	Parent Global Sexual Attitudes
CPRP	CPRP1	Child's Perception of Relationship with Mother
C1DATE	cdate1	Date questionnaire completed

Six months post-intervention

Wide Form Variable Codes	**Long Form Variable Codes**	**Variable Description**
P3A5	parel6	Religion frequency
married_3	mar6	Marital status
P3A16	paemp6	Employment status
P3A17	painc6	Family income per month
P1A20	paedu6	Education level
C1ADGEND	C1ADGEND	Gender of adult care giver
C1cGENDER	C1cGENDER	Child's gender as reported by child
c3age	cage6	Child's reported age at time of questionnaire
Groups	groupsr	Intervention group designation reversed from wide format 1=control, 2=full, 3=brief
	timegroupsr	Interaction term of time*groups
Congruence2_3	cong2_6	Difference in scores between parent question: I think it is ok for my child to have a boy/girlfriend and child question: My mom thinks it is ok for me to have a boy/girlfriend

Appendix B (continued)

Congruence3_3	cong3_6	Difference in scores between parent question: I think it is ok for my child to date now and child question: I think it is ok for me to date now
Congruence4_3	cong4_6	Difference in scores between parent question: I think it is ok for my child to date now and child question: My mom thinks it is ok for me to have a boy/girlfriend.
Congruence5_3	cong5_6	Difference in scores between parent question: I think my child should be older before having sex and child question: I think I should be older before I have sex
Congruence6_3	cong6_6	Difference in scores between parent question: I think my child should be older before having sex and child question: My mom thinks I should be older before I have sex
Congruence7_3	cong7_6	Difference in scores between parent question: I think my child should be married before having sex and child question: I think I should be married before I have sex
Congruence8_3	cong8_6	Difference in scores between parent question: I think my child should be married before having sex and child question: My mom thinks I should be married before I have sex
PCSC2	pcsc6	Parent Child Sexual Communication Index
GSA2	gsa6	Parent Global Sexual Attitudes
CPRP2	CPRP6	Child's Perception of Relationship with Mother
C3DATE	cdate6	Date questionnaire completed
Wide Form Variable Codes	**Long Form Variable Codes**	**Variable Description**
P4A5	parel12	Religion frequency
married_4	mar12	Marital status
P4A16	painc12	Employment status

Appendix B (continued)

P4A17	painc12	Family income per month
P1A20	paedu12	Education level
C1ADGEND	C1ADGEND	Gender of adult care giver
C1cGENDER	C1cGENDER	Child's gender as reported by child
c4age	cage12	Child's reported age at time of questionnaire
Groups	groupsr	Intervention group designation reversed from wide format 0=control, 1=full, 2=brief
	Timegroupsr	Interaction term of time*groups
Congruence2_4	cong2_12	Difference in scores between parent question: I think it is ok for my child to have a boy/girlfriend and child question: My mom thinks it is ok for me to have a boy/girlfriend
Congruence3_4	cong3_12	Difference in scores between parent question: I think it is ok for my child to date now and child question: I think it is ok for me to date now
Congruence4_4	cong4_12	Difference in scores between parent question: I think it is ok for my child to date now and child question: My mom thinks it is ok for me to have a boy/girlfriend.
Congruence5_4	cong5_12	Difference in scores between parent question: I think my child should be older before having sex and child question: I think I should be older before I have sex
Congruence6_4	cong6_12	Difference in scores between parent question: I think my child should be older before having sex and child question: My mom thinks I should be older before I have sex
Congruence7_4	cong7_12	Difference in scores between parent question: I think my child should be married before having sex and child question: I think I should be married before I have sex

Appendix B (continued)

Congruence8_4	cong8_12	Difference in scores between parent question: I think my child should be married before having sex and child question: My mom thinks I should be married before I have sex
PCSC3	pcsc12	Parent Child Sexual Communication Index
GSA3	gsa12	Parent Global Sexual Attitudes
CPRP3	CPRP12	Child's Perception of Relationship with Parent
C4DATE	cdate12	Date questionnaire completed.

APPENDIX C - ORDINAL LOGISTIC REGRESSION TABLES

MODEL 1

Results for each of the factors, by congruence level of the "Boyfriend/Girlfriend" question are presented in Table 1. The results are presented for what the mother and the child believe about the child having a boyfriend/girlfriend ("I think it is OK for my child to have a boyfriend /girlfriend now" and "I think it is OK for me to have a boyfriend /girlfriend").

Table A1a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother and "I think" Boyfriend/Girlfriend Question*

Variable	N	M	SD
High Congruence			
PCSC	389	1.15	.51
CPRP	413	2.84	.28
GSA	382	2.55	.21
Moderate Congruence			
PCSC	351	1.14	.48
CPRP	366	2.76	.32
GSA	349	2.56	.20
Low Congruence			
PCSC	307	1.04	.51
CPRP	314	2.75	.33
GSA	303	2.54	.20

Table A1b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and "I think" Boyfriend/Girlfriend Question*

Model	OR	Z	p	95% CI
PCSC	1.37	2.72	0.007	1.09-1.71
CPRP	2.04	3.92	0.000	1.43-2.91
GSA	1.29	0.90	0.368	0.74-2.25

Table A1c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and "I think" Boyfriend/Girlfriend Question*

Model	OR	Z	p	95% CI
PCSC	1.16	1.16	0.25	0.90 – 1.19
CPRP	1.90	3.35	0.001	1.31 – 2.77
GSA	1.35	0.93	0.35	0.72 – 2.51

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 2

Results for each of the factors, by congruence level of the "child ok to date" question are presented in Table 2. The results are presented for what the mother and the child believe about the child going on an unsupervised date ("I think it is OK for my child to go on a date by her/himself now" and "I think it is OK for me to go on a date by myself with a boy/girl").

Table A2a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother and I think "OK to Date" Question*

Variable	N	M	SD
High Congruence			
PCSC	733	1.16	0.51
CPRP	766	2.82	0.29
GSA	723	2.55	0.20
Moderate Congruence			
PCSC	188	1.02	0.49
CPRP	196	2.70	0.35
GSA	189	2.52	0.19
Low Congruence			
PCSC	125	1.02	0.47
CPRP	129	2.73	0.35
GSA	121	2.58	0.22

Table A2b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and I think "OK to Date" Question*

Variable	OR	Z	p	95% CI
PCSC	1.72	4.06	0.000	1.32-2.23
CPRP	2.52	4.79	0.000	1.73-3.68
GSA	1.07	0.22	0.83	0.55-2.01

Table A2c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and I think "OK to Date" Question*

Variable	OR	Z	p	95% CI
PCSC	1.49	2.59	0.01	1.10 – 2.01
CPRP	3.40	4.18	0.00	1.59 – 3.61
GSA	1.30	0.70	0.49	0.62 – 2.72

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 3

Results for each of the factors, by congruence level of the "older for sex" question are presented in Table 3. The results are presented for what the mother and the child believe about the child waiting until s/he is older to have sex ("*I think my child should wait until s/he is older to have sex" and "I think I should wait until I am older before I have sex*").

Table A3a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother and I think "Older for Sex" Question*

Variable	N	M	SD
High Congruence			
PCSC	774	1.14	0.49
CPRP	809	2.80	0.29
GSA	765	2.55	0.20
Moderate Congruence			
PCSC	105	1.06	0.49
CPRP	106	2.65	0.42
GSA	102	2.54	0.19
Low Congruence			
PCSC	165	1.04	0.54
CPRP	175	2.80	0.31
GSA	165	2.55	0.21

Table A3b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and I think "Older for Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.46	2.72	0.007	1.11-1.93
CPRP	1.52	2.09	0.04	1.02-2.24
GSA	1.04	0.10	0.92	0.52-2.06

Table A3c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and I think "Older for Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.47	2.54	0.01	1.09 – 1.99
CPRP	1.66	2.45	0.01	1.11 – 2.49
GSA	1.35	0.78	0.44	0.64 – 2.84

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 4

Results for each of the factors, by congruence level of the "older for sex" question are presented in Table 4. The results are presented for what the mother and the child believe about the child being married before sex ("I think my child should wait until s/he is married to have sex" and "I think I should wait until I am married before I have sex").

Table A4a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother and I think "Married before Sex" Question*

Variable	N	M	SD
High Congruence			
PCSC	424	1.11	0.52
CPRP	433	2.82	0.26
GSA	410	2.52	0.20
Moderate Congruence			
PCSC	192	1.10	0.48
CPRP	204	2.76	0.35
GSA	192	2.59	0.19
Low Congruence			
PCSC	99	1.05	0.48
CPRP	104	2.70	0.41
GSA	101	2.56	0.20

Table A4b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and I think "Married before Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.60	3.85	0.000	1.26-2.03
CPRP	1.75	3.17	0.002	1.23-2.48
GSA	0.12	-6.88	0.000	0.06-0.21

Table A4c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother and I think "Married before Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.48	2.93	0.003	1.14 – 1.92
CPRP	1.94	3.57	0.000	1.35 – 2.79
GSA	0.13	-5.99	0.000	0.07 – 0.25

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 5

Results for each of the factors, by congruence level of the "boyfriend/girlfriend" question are presented in Table 5. The results are presented for what the mother believes and the child thinks the mother believes about the child having a boyfriend/girlfriend now. *"I think it is OK for my child to have a boyfriend /girlfriend now" and "My mother thinks it is OK for me to have a boyfriend/girlfriend now"*

Table A5a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Boyfriend/Girlfriend" Question*

Variable	N	M	SD
High Congruence			
PCSC	598	1.16	0.50
CPRP	627	2.79	0.32
GSA	583	2.54	0.20
Moderate Congruence			
PCSC	305	1.05	0.50
CPRP	315	2.78	0.31
GSA	305	2.57	0.20
Low Congruence			
PCSC	145	1.06	0.49
CPRP	152	2.80	0.27
GSA	146	2.55	0.20

Table A5b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Boyfriend/Girlfriend" Question*

Variable	OR	Z	p	95% CI
PCSC	1.48	3.28	0.001	1.17-1.88
CPRP	1.03	0.15	0.88	0..71-1.48
GSA	0.64	-1.50	0.132	0.35-1.15

Table A5c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Boyfriend/Girlfriend" Question*

Variable	OR	Z	p	95% CI
PCSC	1.03	0.21	0.83	0.78 – 1.35
CPRP	0.96	-0.21	0.83	0.64 – 1.43
GSA	1.05	0.15	0.88	0.54 – 2.07

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 6

Results for each of the factors, by congruence level of the "Ok to date" question are presented in Table 6. The results are presented for what the mother believes and the child thinks the mother believes about the child going on an unsupervised date. *"I think it is OK for my child to go on a date by her/himself now" and "My mother thinks it is OK for me to go on a date by myself with a boy/girl right now"*

Table A6a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother Believes and Child Thinks Mother Believes "OK to Date" Question*

Variable	N	M	SD
High Congruence			
PCSC	866	1.14	0.51
CPRP	903	2.79	0.32
GSA	852	2.55	0.20
Moderate Congruence			
PCSC	111	1.04	0.48
CPRP	114	2.77	0.27
GSA	111	2.57	0.23
Low Congruence			
PCSC	69	1.00	0.45
CPRP	74	2.78	0.28
GSA	70	2.56	0.22

Table A6b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "OK to Date" Question*

Variable	OR	Z	p	95% CI
PCSC	1.56	2.73	0.006	1.13-2.14
CPRP	1.16	0.62	0..538	0.72-1.89
GSA	0.66	-1.05	0.294	0.30-1.44

Table A6c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "OK to Date" Question*

Variable	OR	Z	p	95% CI
PCSC	1.30	1.41	0.16	0.90 – 1.89
CPRP	1.15	0.52	0.60	0.68 – 1.94
GSA	1.09	0.19	0.85	0.45 – 2.62

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 7

Results for each of the factors, by congruence level of the "older for sex" question are presented in Table 7. The results are presented for what the mother believes and the child thinks the mother believes about the child waiting until she is older to have sex. "I think my child should wait until s/he is older to have sex" and "My mother thinks I should wait until I am older to have sex"

Table A7a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother Believes and Child Thinks Mother Believes child should be "Older for Sex" Question*

Variable	N	M	SD
High Congruence			
PCSC	822	1.14	0.49
CPRP	858	2.79	0.31
GSA	813	2.56	0.20
Moderate Congruence			
PCSC	63	1.11	0.47
CPRP	63	2.81	0.23
GSA	61	2.54	0.20
Low Congruence			
PCSC	159	1.01	0.56
CPRP	169	2.78	0.36
GSA	158	2.54	0.20

Table A7b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Older for Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.57	2.76	0.006	1.14 – 2.17
CPRP	1.23	0.87	0.384	0.77 – 1.98
GSA	2.23	1.95	0.05	1.00 – 5.01

Table A7c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Older for Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.55	2.91	0.004	1.15-2.09
CPRP	1.05	0.22	0.829	0.66-1.67
GSA	1.50	1.07	0.283	0.71-3.12

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.

MODEL 8

Results for each of the factors, by congruence level of the "married before sex" question are presented in Table 8. The results are presented for what the mother believes and the child thinks the mother believes about the child being married before having sex. *"I think my child should wait until s/he is married to have sex" and "My mother thinks I should wait until I am married before I have sex"*

Table A8a *Factor Value Distributions for High, Moderate and Low Congruence Measurements for Mother Believes and Child Thinks Mother Believes child should be "Married Before Sex" Question*

Variable	N	M	SD
High Congruence			
PCSC	642	1.17	0.48
CPRP	672	2.81	0.27
GSA	628	2.51	0.19
Moderate Congruence			
PCSC	243	1.05	0.52
CPRP	249	2.76	0.35
GSA	244	2.63	0.19
Low Congruence			
PCSC	161	1.00	0.54
CPRP	169	2.73	0.39
GSA	160	2.60	0.20

Table A8b *Unadjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Married before Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.77	4.60	0.000	1.38-2.26
CPRP	1.87	3.42	0.001	1.31-2.68
GSA	0.08	-7.66	0.000	0.04-0.16

Table A8c *Adjusted Ordinal Logistic Regression Results for Congruence Measurements for Mother Believes and Child Thinks Mother Believes "Married before Sex" Question*

Variable	OR	Z	p	95% CI
PCSC	1.57	3.32	0.001	1.20 – 2.05
CPRP	2.22	4.17	0.000	1.52 – 3.23
GSA	0.12	-6.07	0.000	0.06 – 0.24

Note. Control variables included in the model but not presented in the above table are gender of the child, gender of the adult, the religion frequency, the child's age, marital status, employment and family income.