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THE IMPACT OF A SOUTH AFRICAN, FAMILY-BASED HIV PREVENTION
INTERVENTION ON CHILD SEXUAL ATTITUDES:
CHILD NEUROPSYCHOLOGICAL FACTORS AS MODERATORS

by

CHRISTINA SALAMA

Under the Direction of Lisa Armistead, PhD

ABSTRACT

Black South Africans account for a majority of HIV cases in South Africa, and there is thus a need for greater understanding of protective factors specific to this group. Within the HIV prevention and risk literature, little information exists regarding the familial and neuropsychological contributions to HIV prevention in youth. The current study addressed this gap. In a group of black South African parent-child dyads, we explored factors contributing to the development of pre-adolescents' protective attitudes in the context of a family-based HIV prevention intervention, named Imbadu Ekhaya (IE), which translates to "communication in the home," in Xhosa. As expected, the intervention increased communication practices among parents and children. However, child attitudes were not affected by the intervention through

either of the two proposed mediators, parent-child communication or parent attitudes about child sexuality. Furthermore, child executive functioning did not play a role in the relationship between parent-child communication and child sexual attitudes measured 6 months post intervention. Results indicated that the intervention improved communication practices between parents and children, but the impact of such interventions on child outcomes should be explored further.

INDEX WORDS: HIV-prevention, South Africa, Communication, Attitudes, Executive functioning

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CHRISTINA SALAMA

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

in the College of Arts and Sciences

Georgia State University

2015

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Christina Salama
2015

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DEDICATION

This dissertation is dedicated to my family, who always supported my endeavors. I thank them for their endless love and encouragement.

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I would like to express my gratitude to Dr. Lisa Armistead for being an outstanding mentor. Her constant encouragement, support, and invaluable suggestions made this work successful. She has challenged me to broaden my thinking and contributed to the continued development of my research skills. She has been everything that one could want in an advisor. I am also deeply indebted to my other committee members, Dr. Sarah Cook, Kelly Lewis, and Erin Tone, for their time and effort in reviewing this work. Their feedback and encouragement truly made this experience richer.

I am deeply indebted to my parents and family, who have consistently supported me throughout my training and beyond. They have always believed in me and taught me to never waiver in the pursuit of my goals. I thank them for their unending love and encouragement.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	v
LIST OF TABLES.....	viii
No table of figures entries found.LIST OF FIGURES.....	viii
1 INTRODUCTION	1
1.1 HIV in South African Youth	1
1.1.1 Historical and cultural considerations in family-based HIV prevention	3
1.1.2 Contemporary Patterns	7
1.2 Child Attitudes as Determinants of Risk.....	10
1.3 Parent-child Communication about Sex and HIV Prevention for Youth	13
1.4 Parent Sex Attitudes and HIV Prevention	15
1.5 Child Executive Functioning.....	16
1.6 Aims and Hypotheses.....	18
2 Method	20
2.1 Design.....	20
2.1.1 Participants & Recruitment.....	20
2.2 Procedure.....	22
2.3 Intervention Development and Implementation	23
2.3.1 Facilitator training.....	25
2.4 Measures	25
2.5 Constructs and Variables.....	26
2.5.1 Demographic characteristics.....	26
2.5.2 Child attitudes about child sexuality.....	26

2.5.3	Parent attitudes about child sexuality.....	27
2.5.4	Parent-youth sex communication content.....	27
2.5.5	Parent responsiveness to sex communication.....	28
2.5.6	Executive functioning	29
2.6	Statistical Analyses	30
3	Results.....	31
3.1	Retention.....	31
3.2	Fidelity to Intervention.....	32
3.3	Preliminary Analyses.....	32
	Percentage	33
	Mean	33
	Standard Deviation	33
	Range	33
3.4	Primary Analyses	37
4	Discussion	41
4.1	Descriptive Summary	42
4.2	Primary Findings.....	44
4.3	Limitations.....	48
	REFERENCES.....	51
	APPENDICES	66
	Appendix A.1: Measures.....	66

LIST OF TABLES

Table 1. Demographic Characteristics of Participants.....	33
Table 2. Parent Report Means of Study Variables.....	33
Table 3. Child Report Means of Study Variables	34

LIST OF FIGURES

Figure 1. Model 1 predicting child sex attitudes at Time 3.	13
Figure 2. Model 2 Second-stage moderation predicting child sex attitudes at Time 3.....	19
Figure 3. Measurement model with standardized correlation coefficients.	38
Figure 4. Structural model without interaction.	39

1 INTRODUCTION

1.1 HIV in South African Youth

With approximately 5.6 million people infected with HIV, South Africa is home to the largest prevalence of this virus worldwide (UNAIDS, 2013). Black South Africans account for a majority, 79%, of affected individuals (Shisana, 2009), with particularly alarming and rapidly increasing rates among youth: prevalence of HIV for 15-19 year old males (2.5%) doubles by ages 20-24 (5.1%), and female HIV prevalence triples between ages 15-19 (6.7%) and ages 20-24 (21.1%) (Statistics South Africa, 2009). The primary mode of HIV transmission across age groups is heterosexual sex (UNAIDS, 2013), which involves multiple risk factors, including inconsistent condom use, intergenerational sex, and multiple sexual partners (Kalichman, 2005; Kalichman, 2007; Magnani et al., 2005; Pettifor et al., 2005; Simbayi et al., 2006).

Despite adequate knowledge of HIV and its risk factors, black South African youths continue to engage in high-risk sexual activities, such as unprotected sex (Simbayi et al., 2005). Further, many begin to experiment sexually at a young age and with multiple partners, thus leaving themselves particularly vulnerable to HIV infection (Abrams, Abraham, Spears and Marks, 1990; Donenberg & Pao, 2005). Adolescence is also a time that has great potential for new learning (Erikson, 1950, 1975). Therefore, we focused attention on youth aged 10 to 14.

Given that preventing early onset of sexually risky behaviors may be more effective than efforts to decrease or eliminate behaviors already entrenched (Miller, Levin, Whitaker, & Xu, 1998), there may be value in probing of HIV protective factors, especially those that address attitudes and beliefs prior to initiation of sexual activity among South African youth. This study investigates the protective potential of parents in efforts to reduce HIV risk among black South African youth. Specifically, we explore factors that may help pre-adolescents develop protective

attitudes in the context of a family-based HIV prevention intervention, named Imbadu Ekhaya (IE), which translates to “communication in the home,” in Xhosa.

Armistead et al., (2014) demonstrated evidence that IE is an effective intervention among participants in the Langa township of Cape Town, particularly with respect to improving the quantity and quality of parent-child communication about sex. The premise of the intervention is that modifying parent behavior will translate into desired youth outcomes, such as more protective sexual attitudes among youth whose parents participated in the intervention, relative to control participants. However, individual child characteristics, such as cognitive functioning, may impact children’s receptiveness to the protective messages delivered by their parents. For example, although the intervention may adequately improve parents’ abilities to communicate with their children, if child cognitive functioning prevents youth from modifying harmful beliefs, then IE may be less effective for a subset of children (i.e., those with poorer executive functioning). Therefore, we examine both parent and child factors that contribute to the success of the intervention, with respect to increasing protective attitudes about sexual behavior among youth.

Given that the historical context in South Africa has rendered the black South African family unit into a unique context, it is also important to consider how communication practices within families have evolved into their present state. Decades of cultural and political influences (i.e., colonialism, Apartheid, the AIDS epidemic) have transformed the family fabric for black South Africans. In turn, family contexts have affected how, and if, parents communicate with their children about sexual relationships and practices. Therefore, the intervention closely attended to cultural and historical perspectives on sex communication within the black South African families of the Langa township.

1.1.1 Historical and cultural considerations in family-based HIV prevention

HIV prevention interventions that target families may be particularly necessary in South Africa. Although black South African culture has historically emphasized community and family networks (Rotheram-Borus et al., 2005), these traditions have weakened since the 1930s. The natural transmission of skills and knowledge from adults to children has been disrupted as many black South African families continue to be affected by the history of apartheid-based migrant labor policies, as well as poverty, violence, and AIDS-related loss of generations within families. Moreover, rapid urbanization has reduced the buffering influence of extended families and transformed, even eliminated, long-established methods of sexual socialization for youth (Ankrah, 1993; Atwine, Cantor-Graae, & Bajunirwe, 2005; Delius & Glaser, 2002; Ntombana, 2011; Skinner & Davids, 2006).

Little documentation exists regarding the pre-colonial sexual socialization practices of indigenous South African ethnic groups, such as the Bantu, from which the Xhosa people in Langa are descended. Langa is an all-black township in Cape Town from which the current sample is drawn. Beginning in the 1930s, several historians and anthropologists began studying the history of family and marriage practices among the Bantu and other indigenous South African ethnic groups (Hellman, 1948; Hunter, 1936; Malinowski, 1932; Pitje, 1948; Schapera, 1933; Schapera, 1940), including the fading pre-colonial sexual education practices. According to these records, sexual communication within earlier African communities was open, contrary to current ideologies (Delius & Glaser, 2002). Although pre-marital sex was strictly prohibited in order to prevent pre-mature social and financial burdens of pregnancy, sexual activity was acknowledged as a natural part of the human experience. Schapera (1940) noted that sexual socialization was freely practiced not only among adults, but also intergenerationally. Children

often played games that were sexually influenced and were provided knowledge by adults. Additionally, prior to the 1920s and 1930s, a rich tradition of pre-colonial initiation and sexual socialization was evident among many African ethnic groups (Delius & Glaser, 2002). The purpose of such socialization practices was to induct youth into the community as adults and provide guidance on moral or appropriate social behavior.

Although initiation rituals occurred at about the time of puberty for both genders, practices significantly differed for each sex. Males frequently participated in “initiation schools” that were supervised by community elders (Ntombana, 2011). Young males entered the school as a group and after initiation, social accountability of their actions in the community was provided by their peer group. At the time of puberty, circumcision of males was expected. Following the secluded healing process, elders provided education and guidance about expectations for “manhood.” Topics covered included discipline and self-control, courting practices, and marriage responsibilities. Young males were often “sponsored” by an elder male, which was typically an extended family member (i.e., grandfather or uncle) or a trusted close family friend in the community. The elder was responsible for monitoring the male youth’s education process during initiation (Ntombana, 2011). Following the initiation process, the young male was expected to behave responsibly and appropriately in the community and was held accountable by his peers.

For female youth, initiation occurred at the time of first menstruation. Initially, the young female would be isolated for the duration of her first menstruation cycle, approximately 5-10 days (Delius & Glaser, 2002). Following isolation, female peers and extended family members provided a “coming out party,” during which the young female received a virginity test and was declared a woman among her community. Traditionally, a grandmother or aunt also provided guidance and education on social responsibilities, courting, and sexual etiquette. Both males and

females were instructed on “sweethearting” or “ukumetsha” practices, which comprised non-penetrative sex techniques. Although pre-marital penetrative sex was strictly prohibited and severely punished within the Xhosa and other indigenous African ethnic groups, the community actively encouraged adolescents to court and exercise curiosities via non-penetrative sexual practices. These practices were part of the courting process and frequently required permission from a young woman’s family (Burns, 2004).

Beginning in the late 1920s and 1930s, a transformation in initiation practices was observed, particularly as rural inhabitants migrated to urban areas searching for employment. Since the 1880s, migration had been common for males as they sought to participate in the booming mining industries (Lawson, 2007). However, during the Great Depression in the 1930s, more females moved to the urban areas in search of employment, which further accelerated the urbanization process (Burns, 2004). As disconnected males and females in urban areas increased sexual contact outside the supervision and monitoring of their communities, traditions of initiation, ukumetsha, and prohibition of pre-marital sex became modified or eliminated over the following decades. Subsequently, initiation practices among both males and females were abbreviated and lacked the once strong presence of community elders. For example, in rural areas, if a relative was unavailable to act as a “sponsor” or to provide social education to youth, a community member acquired that instructive role. However, in the more disconnected communities of the urban areas, replacement sponsors were rarely available (Ntombana, 2011). Additionally, contemporary initiation practices focus more on circumcision and connection with a peer group; they lack the instruction on responsible and moral behavior historically administered by elders. Disruption of long-established communities contributed to the growing

disintegration of traditions, particularly initiation and sexual socialization (Delius & Glaser, 2002).

Beginning in the 1600's, a long history of missionary and European influence led Western ideals to be equated with modernity and higher social status (Ntombana, 2011). Thus, a wave of Westernization and modernization overtook indigenous African families in the 1930s (Delius & Glaser, 2002), and two separate philosophies regarding sexual socialization competed during a time of transition in the 1930s (Coovadia et al., 2009). The traditional black African perspective suggested that sex should be communicated about openly and expressed as a healthy and important component of life for all ages. The Christian-influenced Western approach proscribed sex as purely for procreation purposes within marriage and not to be discussed with unmarried youth. As indigenous African families began to value Western practices, ethnic traditions quickly became outdated among both adults and youth, and initiation rituals lost their once-strong presence in indigenous communities (Delius & Glaser, 2002). Therefore, sexual communication, including education regarding non-penetrative sexual practices, was rarely provided, as this was inconsistent with strict Western values of abstinence.

By the 1940s and 1950s, "ukumetsha" was no longer practiced and youth viewed it as an outdated custom and unappealing, as compared to increasingly accepted penetrative sexual practices (Delius & Glaser, 2002). The gap between parent and youth values regarding sexual practices grew as families became less connected to their immediate communities, who traditionally supplemented parental authority with social accountability from peer social groups and elders. Also during this time, Apartheid-based forced migration disrupted numerous communities and increased poverty (Coovadia et al., 2009). Worsening economic factors increasingly impacted parents' abilities to provide an inheritance for their children (which could

be rescinded as punishment for pre-marital sex and pregnancy) and to be present to provide supervision; thus, youth had less incentive to abide by rules of sexual abstinence before marriage (Delius & Glaser, 2002). With the disintegration of adult influence over youth, peer groups became the source of sexual socialization for most.

The taboo regarding open discussion of sexuality was reinforced by South African Apartheid legislation. In 1963, the South African parliament passed laws supporting stringent censorship and restrictions on written and public discourse about sexuality. Though the government liberalized the censorship laws in 1995, discourse on sexuality remains hindered by political, religious, and social norms originally acquired from the Western ideals of Christian Dutch and English colonizers (Nicholas, Daniels, & Hurwitz, 1999).

1.1.2 Contemporary Patterns

The economic, political, and socio-cultural factors rooted in early South African history have resulted in a progressive break-down in black South African families, and subsequently, a lack of communication between adults and youth regarding sexual socialization. Similar to the early migration and urbanization that occurred in the 1930s, during post-Apartheid democracy, increasing economic disparities continue to force many biological parents to migrate away from home to pursue employment (Coovadia et al., 2009). Additionally, since the HIV epidemic in South Africa began in the late 1980s, families have experienced a loss of mothers and fathers due to AIDS (Brown, BeLue, & Collins, 2010). As a result, children may live with extended family (i.e., grandmothers, aunts), who may struggle, for various reasons, to provide supervision, protection, or guidance surrounding interactions between genders (Coovadia et al., 2009). Additionally, as extended family members have transitioned into the role of primary caregiver, they have abandoned traditional initiation processes in which relatives provide sexual education

(Bastien, Kajula, & Muhwezi, 2011). Parental absence, through death or occupational demands, and social norms against parent-child sex communication result in most parents expecting schools to provide sexual education (Delius & Glaser, 2002) for children. However, access to high quality sexual education in the schools that black South African youth typically attend is limited (Ahmed et al., 2009; Coombe & Kelly, 2001). Thus, the structure for sexuality education is absent for many families (Coovadia et al., 2009) as the traditional role of sex education provider has long been vacant (Bastien et al., 2011).

Subsequently, children receive a majority of their sex education and socialization from peers, rather than parents (Bastien, Kajula, & Muhwezi, 2011; Coovadia et al., 2009), which likely impacts youths' beliefs surrounding gender roles and sexual responsibilities. Peer-based sexual education increases the risk that misinformation will spread, and it also likely affects youths' beliefs regarding gender roles and sexual responsibility. Many cultural shifts have likely influenced beliefs about gender and sex among South African youth. Males are traditionally viewed as protectors, providers, and decision makers (Motsemme, 2002), and more recently during the post-apartheid period, without sexual responsibility, but with sexual power and control (Burns, 2004; Jewkes & Morrell, 2012; Kigua, 2004; Lawson, 2007). Conversely, females are viewed as nurturers; valued for their ability to bear children and care for the home (Outwater, Abrahams, & Campbell, 2005; Varga, 2003), but disdained when they are perceived as disturbing traditional gender roles (Mostsemme, 2002).

Urbanization and modernization shifted these roles radically and significantly impacted intimate relationships (vanWyk et al., 2006). For example, during the final years of apartheid, females increasingly moved from rural to urban areas to work in the booming textile industries, and thus, became more financially independent. However, following an increase of imported

services that replaced domestic labor to create goods within the textile industry, the brief financial independence of women diminished. Concurrently, marriage became increasingly unaffordable and unemployed females who were no longer financially independent engaged in multiple sexual relationships to maintain survival. Wealthier male sexual partners, who were typically much older, provided rent, groceries, and clothing (Lawson, 2007). Young women increasingly turned to older men who provided these necessities for survival, which simultaneously left young women more vulnerable to HIV infection from more experienced partners and increasingly shifted economic and sexual power to men. Considerable evidence demonstrates that the large age differential between male and female sexual partners, particularly at first intercourse, confers HIV risk for female youth (e.g., Coombe & Kelly, 2001). Many young females experience their first sexual encounter with significantly older males. The age discrepancy and accompanying power differential infers that manipulation should be considered an important factor in early sexual experience for black South African females (Jewkes & Morrell, 2012; Coombe & Kelly, 2001).

Similarly, males experienced successive de-masculinization due to economic and political inequality. Years of poverty and discrimination during the colonization and apartheid periods resulted in a transformation of the black South African male from provider and leader to powerless, submissive non-citizen (Lawson, 2007). Subsequently, black South African males sought power through other means, primarily through relationships with women and children. This resulted in the contemporary common beliefs that men must exert their sexual needs with multiple partners. Although the concept of having concurrent sexual partners is based on traditional beliefs in polygamy, contemporary economic circumstances prohibited the possibility of marriage, and therefore, resulted in the practice of having multiple sexual relationships outside

of marriage (Lawson, 2007). The presence of HIV within the black South African community has not curbed these practices or beliefs. This is reflected in the widespread belief within black South African communities, including the Xhosa, that males have a biological need to regularly have sexual relations with multiple partners regardless of HIV risk (Gilbert & Walker, 2002) and that males' sexual desires are uncontrollable (Jewkes & Morrell, 2012; Meyer-Weitz, Reddy, Van den Bornd, Kok, & Pertersen, 2003). Thus, the formative work involved in the creation of the family-based prevention intervention included an examination of the ways in which community beliefs and sexuality education in South Africa intersect. By empowering parents with the skills to improve communication with children, it is possible that families can act as a vehicle for changing these harmful beliefs.

1.2 Child Attitudes as Determinants of Risk

Although South African youth, aged 10 to 14 have not typically had intercourse, research in the U.S. and South Africa has demonstrated a connection between youths' sexual attitudes and sexual behavior (Basen-Engquist & Parcel, 1992; Richard & van der Pligt, 1991). Among U.S. youth, attitudes about sex explained a significant amount of the variance in risky sexual behavior, including multiple partners (Basen-Engquist & Parcel, 1992) and inconsistent condom use (Richard & van der Pligt, 1991). In the black South African context, studies examining relations between sexual attitudes and HIV risk indicated that youth who believed condoms get in the way of sex or that their partners disliked using condoms also had higher HIV risk index scores (Simbayi et al., 2005), with the HIV risk index including number of sexual partners, previous diagnosis of a sexually transmitted infection, and unprotected sexual exposure. When considering HIV protective behavior in South Africa, sexual attitudes about condom use, multiple partners, intergenerational sex, and HIV knowledge are critical topics of focus. These

attitudes may also be a viable target in efforts to change behavior, according to the theory of reasoned action (Fishbein & Ajzen, 1975), which proposes a cognitive basis for behavior. Similarly, change in beliefs may actually depend on individual child cognitive abilities, such as executive functioning, to flexibly take in information to formulate new beliefs.

The theory of reasoned action (Fishbein & Ajzen, 1975) is of particular interest in behavior modification and underlies many behavioral interventions targeting HIV prevention, including IE. Fishbein & Ajzen (1975) suggested that behavior is cognitively determined and is a product of intentions. Intentions comprise attitudes towards the behavior, as well as perceived social norms, which reflect other people's expectations (i.e., parent attitudes). Parent attitudes about sex may directly or indirectly affect child beliefs about sexuality. The effect of parent attitudes can be relayed explicitly through direct verbal communication and implicitly through behaviors, body language, or tone (Thornton & Camburn, 1987). Therefore, based on the theory of reasoned action, IE targets parenting behaviors and beliefs that are expected in turn to influence adolescent beliefs and attitudes, with the ultimate aim of delaying onset of sexual behavior.

Fishbein (1990) described behavior as a cognitive process involving intentions as precursors to behavior. Specifically, attitudes comprise intentions and are cognitive antecedents to behavior. Based on the theory of reasoned action, the intervention seeks to influence youths' intentions and behavior by modifying beliefs that constitute the adolescent's attitudes and norms. IE aims to equip parents with tools to communicate their own protective attitudes and expectations regarding sexual behavior in the hope that their children will adopt similar beliefs as part of their own attitudes. Additionally, IE aims to encourage parents to discuss sexuality with their children by teaching helpful communication strategies and increasing confidence in their

ability to engage their children in effective discussions about sexual issues. However, the theory of reasoned action and parent factors may differentially affect child outcomes based on individual child characteristics, such as cognitive functioning (Gardner et al., 2010).

The current study examines a model designed to predict the success of the IE intervention, which targets child attitudes about sex. The model includes both parent and child factors that have been separately linked to child attitudes in behavioral, parenting and HIV prevention literature. Specifically, we expect two mechanisms of action that facilitate the intervention's efforts. First, both parent-child communication about sex and parent attitudes (both measured at Time 2, approximately 1-4 weeks following the intervention) will mediate the relationship between the intervention and child attitudes about sex at Time 3 (6 months following the intervention). Additionally, we expect that parent attitudes about sex following the intervention (Time 2) may operate through parents' communication about sex with their children to influence child sex attitudes. However, as the link between parenting behaviors and child outcomes may manifest in various ways based on child individual characteristics (Gardner et al., 2010), we determined that the direct relationship between parent-child communication about sex and child sex attitudes may manifest differently at varying levels of child cognitive functioning.

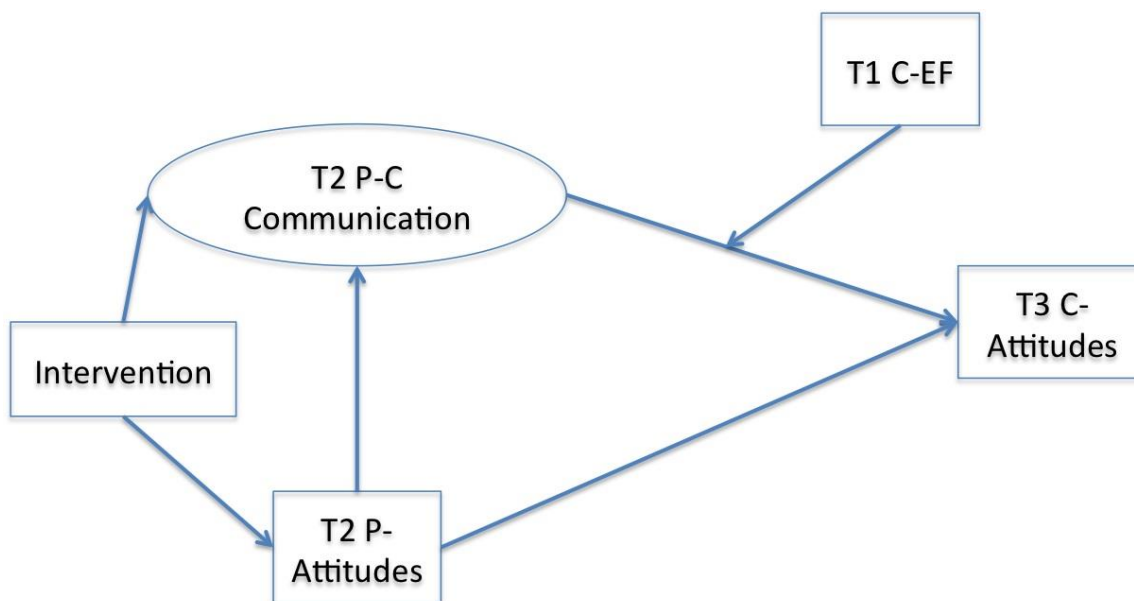


Figure 1. Model 1 predicting child sex attitudes at Time 3.

**Note: P denotes parent, C denotes child, and EF denotes executive functioning.

This study examined two mechanisms: parent-child communication and parent attitudes about adolescent sex. IE targeted both mechanisms aiming to influence child outcomes. Communication about sex as an intervention mechanism has been raised as a way to transmit parent beliefs to youth (Forehand et al., 2007).

1.3 Parent-child Communication about Sex and HIV Prevention for Youth

As previously discussed, cultural, historical, and familial factors result in many black South African parents engaging minimally in sexuality education with their children. As research examining U.S. parents' abilities to provide sex education to their youth has proved promising, IE sought to provide the knowledge and skills needed for South African parents to assume similarly prominent roles in their children's sexual education process.

Family-based HIV prevention interventions typically focus on improving parent-child communication about sex and HIV, as better parent communication skills are linked to

better sexual health outcomes (DiClemente et al., 2001; Donenberg & Pao, 2005; Hutchinson & Cooney, 1998). In U.S. samples, parents who provide accurate information about risks, consequences, and responsibilities related to sexual behavior have adolescents who are more likely to make responsible decisions about health and sexuality (e.g., Dittus, Jaccard, & Gordon, 1999; Karofsky, Zeng, & Kosorok, 2001). Kotchick et al. (2001) studied Latino and African American family relationships and demonstrated an inverse relationship between communication and sexual behavior, in which as positive communication increased, adolescent sexual activity and number of partners decreased (Kotchick et al., 2001). Parental influence, including values and communication practices, also predicted adolescent attitudes about sex in a sample of mostly Caucasian youth, such that a greater perceived parent influence by adolescents predicted more positive sexual attitudes (Chapman & Werner-Wilson, 2008). In the U.S. context, parent-child communication about sex that is perceived as open, receptive, and comfortable, is related to decreased risky sexual behavior and sexual experience among youth (Hutchinson et al., 2003; Miller et al., 1998).

Researchers on the African continent are turning their attention to parental influence, particularly that conveyed via direct communication, on youth sexual behavior and attitudes, and emerging research from Southern Africa has yielded findings similar to those in the U.S. In a review of parent-child sexuality communication among sub-Saharan African countries (i.e., Ghana, Nigeria, Ivory Coast, and South Africa), supportive experiences of parent-child communication about sex were consistently linked with protective child behavior outcomes, such as increased condom use, delayed sexual debut, sexual abstinence, and reduction in sexual partners (Bastien et al., 2011). Bastien et al. (2011) highlighted the importance of both the quantity and quality of parent communication. They indicated that children were most

responsive to open and positive approaches, in contrast to discussions that included threatening rhetoric. Ultimately, supportive communication appears to be the vehicle by which parents' protective attitudes most effectively influence child attitudes.

Evidence indicates that parenting-based interventions to improve sex communication skills and prevent risky sexual behavior are successful in both the U.S. (Akers et al., 2011; Forehand et al. 2007) and South African (Armistead et al., 2014; Bastien et al., 2011; Bogart et al., 2013) contexts. Specifically, family-based HIV preventions primarily are effective in changing quantity and quality of parent-child communication about sex. Ideally, such interventions' most favorable outcomes transpire when parents' protective attitudes are effectively communicated, and children acquire these protective beliefs as part of their own repertoire of attitudes, intentions, and behaviors. However, no research has demonstrated whether the transference of attitudes between parents and children translates into effective outcomes (i.e., HIV prevention). Additionally, little research has examined the parental and child factors that influence the success of family-based HIV interventions.

1.4 Parent Sex Attitudes and HIV Prevention

Parent attitudes about sex may directly influence child attitudes and beliefs in absence of explicit discussions. Parents may transmit their sexual attitudes to children through socialization, both explicitly and implicitly (Thornton & Camburn, 1987). Parent attitudes may be communicated implicitly to children through tone of voice, body language, and other socialization behaviors. Youth likely process parent behaviors as a reflection of their parents' sex attitudes and beliefs (Lau, Quadrel, & Hartman, 1990). Parent attitudes and beliefs may also be reflected in their supervision and discipline patterns. For example, parents who have more conservative values regarding youth sexuality may adopt a restrictive parenting style, resulting in

more supervision of and less autonomy for their children (Thornton & Camburn, 1987). Among U.S. populations, conservative parent attitudes about sex have been shown to correlate with conservative child attitudes about premarital sex (Meier, 2003; Thornton & Camburn, 1987). Furthermore, Fisher (1986) found that parent attitudes predicted child attitudes about pre-marital sex, condom use, and other risky sexual behaviors, regardless of communication. Therefore, child attitudes may actually mirror parent attitudes about sex in absence of explicit communication.

The model proposed in this study also considers the indirect effect of parental attitudes on child attitudes through parent-child communication about sex. The content of parents' discussions about sex with their children likely reflects parent attitudes (Fishbein & Ajzen, 1975). Parents' attitudes may dictate how and what topics are discussed with their children, which directly influences child beliefs. Furthermore, parents with more protective sex attitudes following intervention may be more willing or open to explicitly communicating their beliefs with youth, thereby affecting child sex attitudes.

1.5 Child Executive Functioning

Child cognitive processes may impact interventions' effectiveness. Executive functioning (EF), a subset of cognitive functioning, is a set of neuropsychological processes important for goal-directed behavior, including planning, abstract thinking, and inhibition/shifting (Miyake et al., 2000). EF is primarily associated with the pre-frontal cortex region of the brain, which is not completely mature until early adulthood for most individuals (Cicerone et al., 2006). Blakemore and Choudhury (2006) suggested that changes in the brain during the transition between childhood and adolescence impact EF, particularly in the areas of decision-making and socialization. Furthermore, in adolescents, Casey et al. (2008) suggested that risky behavior may

reflect the immature imbalance of contributions of areas of the brain responsible for increased emotional responsiveness (nucleus accumbens and limbic system) and executive functioning (pre-frontal cortex). Van Leijenhorst et al. (2010) demonstrated support for the association between risky decision-making and the maturity of the ventral medial pre-frontal cortex, such that adolescents who made more risky decisions, accompanied by higher reward, also showed increased activation in the ventral medial pre-frontal cortex relative to peers who made fewer risky decisions. Therefore, because of immaturity in prefrontal regions, it may be more challenging for adolescent youth, relative to adults, to make healthy decisions when confronted with risky behavioral options (Hall et al., 2008).

Development of or change in attitudes is dependent upon aspects of executive functioning (e.g., set-shifting, inhibition, etc.). Cognitive flexibility, a type of executive functioning, may be involved in the process of changing or shifting attitudes to be more protective. An individual with cognitive inflexibility may exhibit difficulties in forming concepts, learning from mistakes, and modifying unsuccessful strategies (Milner, 1963). The capacity for cognitive flexibility may be important for self-regulation and emotion management as children develop and subsequently encounter situations of risk that may require such critical thinking (Compas, 2009). In risk prevention efforts (e.g., substance use prevention), child executive functioning capacities, which include cognitive flexibility, appear to play a moderating role in the success of interventions (Riggs & Greenberg, 2009), such that premorbid executive functioning may enhance or attenuate the outcome of prevention efforts.

Fishbein et al. (2006) demonstrated the moderating effects of cognitive flexibility on social cognition, including beliefs about aggression, among urban, male youth who participated in a substance abuse prevention intervention. Specifically, youth with cognitive inflexibility

demonstrated persistence in beliefs supporting aggression following the intervention, relative to youth with better flexibility. Similarly, Lewis et al. (2009) examined associations between cognitive flexibility and construction of beliefs and social understanding. Among Asian children, cognitive flexibility was linked to the correction of “false beliefs” when studying theory of mind (Lewis et al., 2009). Those children with better flexibility were able to “correct” false beliefs following teaching of “correct beliefs” and cognitive remediation of executive dysfunction. Therefore, cognitive inflexibility may play a distinct role in the formation and modification of attitudes. Inflexibility may interfere with children’s ability to adopt the attitudes that parents are trying to communicate. Furthermore, cognitive inflexibility may limit a child’s ability to switch from harmful to protective beliefs or attitudes. Therefore, as IE targets healthy attitudes about sex among black South African youth, it is necessary to consider how individual child cognitive flexibility may impact the success of the intervention.

1.6 Aims and Hypotheses

In this investigation, we aimed to demonstrate that parents’ sex communication and parent attitudes may each act as mechanisms by which a family-based intervention affects child sex attitudes at Time 3 (6 months post intervention). We also aimed to investigate the role of child executive functioning in the reception of parent communications. To this effect, three hypotheses were examined:

- (1) We hypothesized that the intervention leads to better parent and child reported sex communication (more topics, better responsiveness) at Time 2 (1-4 weeks post intervention), which leads to more protective child attitudes about sex at Time 3 (6 months post-intervention).

- (2) We also examined the role of parent attitudes about sex at Time 2 as a possible mediator of the intervention, acting either directly or indirectly through parent-child communication at Time 2 to influence child sex attitudes at Time 3.
- (3) Additionally, we expected that the relationship between parents' communication (topics, responsiveness) at Time 2 and child sex attitudes at Time 3 to be moderated by or dependent on levels of child executive functioning. For those children with more cognitive inflexibility, we expected the relation of communication with change in child sex attitudes at Time 3 to be weak or non-existent. However, at lower levels of inflexibility, we expected communication at Time 2 to have a direct effect on child sex attitudes at Time 3.

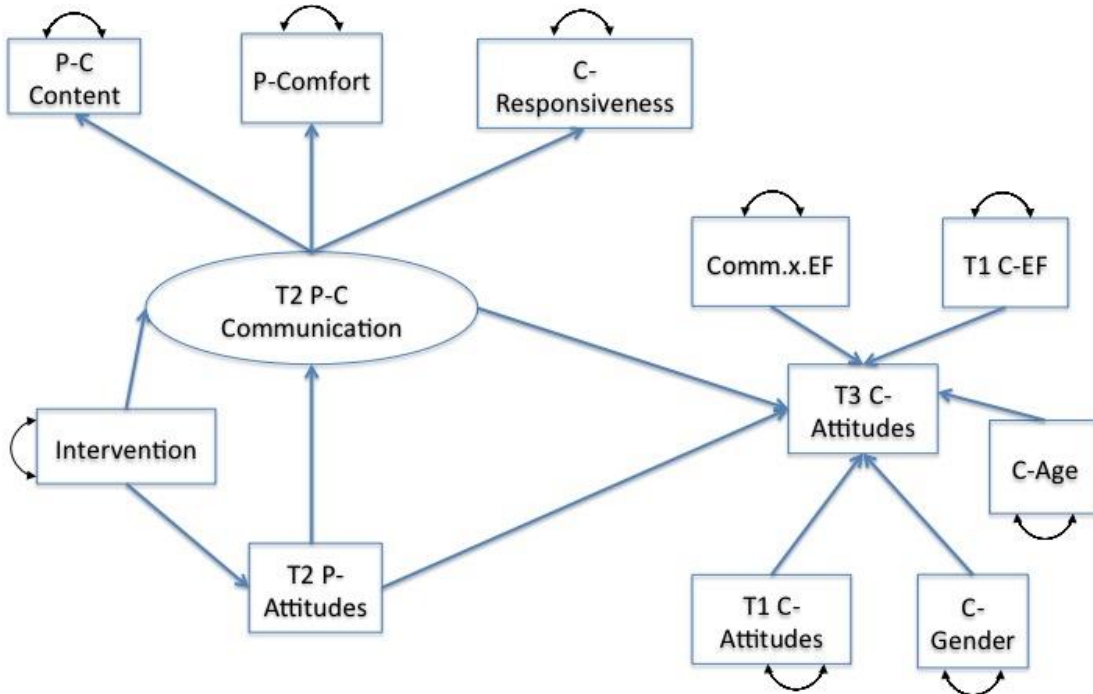


Figure 2. Model 2 Second-stage moderation predicting child sex attitudes at Time 3.

****Note:** P denotes parent, C denotes child, and EF denotes executive functioning.

2 Method

2.1 Design

We designed an experimental-repeated measures study with two conditions: intervention and wait-list control. We collected baseline data from both groups and follow-up data within one month of the intervention's conclusion and at six months after the intervention. The hypothesized model was tested using a structural regression model that posits several indicators predicting child sexual attitudes at Time 3 (6 months post intervention). Specifically, we anticipated that the intervention predicts child sexual attitudes at Time 3 through one latent and one observed variable measured at Time 2 (1-4 weeks post intervention): parent-child communication about sex and parent sexual attitudes, respectively. Finally, we expected the relationship between parent-child communication about sex and child sex attitudes to depend on different levels of child executive functioning. Baseline child sex attitudes and other significantly correlating demographic variables were included in the model as covariates.

2.1.1 *Participants & Recruitment*

All participants ($n=99$) resided in the Langa Township in Cape Town, South Africa. Langa was initially established for black South Africans during the Apartheid era and is the oldest black community in Cape Town. It has a population of approximately 50,000 people and is home to both government-established housing and an informal settlement (i.e., living structure made from corrugated metal) known as "Joe Slovo." Based on formative work and the over-arching South African context, only female parents were included in this research. Families who participated in focus groups prior to this study consistently reported that fathers played a limited role in child rearing. Even when fathers were present in the home, mothers assumed responsibility for

childcare and most household chores (Zimmerman, Tarantino, Armistead, & Cook, under review). Moreover, evidence from South African literature (Barbarin & Richter, 2007) suggested that females are typically the primary parents in black South African families, likely driven by cultural gender roles, which dictate that women are the primary nurturers in a household, while males traditionally occupied the roles of protector, provider, and decision-maker. Additionally, formative focus groups indicated that single gender intervention groups ease facilitation.

Two project staff members and a community outreach worker from the Langa office of the Cape Town Child Welfare Society (CTCWS) recruited participants over the course of six months. The CTCWS was the project's primary community-based partner, and its staff members were involved in the development of the intervention and assessments. Recruitment staff visited homes door-to-door, inviting families who met study inclusion criteria to attend one of three informational meetings.

With respect to inclusion criteria for youth, the age range was limited to early adolescence. In South Africa, the average age of sexual debut is 16.7 (Pettifor, Rees & Steffenson, 2005). Therefore, to achieve optimal protection, we enrolled families with at least one child between the ages of 10 and 14 in order to intervene prior to onset of sexual intercourse in most cases. A total of 106 parents attended informational recruitment meetings. Four of these families were determined to be ineligible, and 102 families enrolled in the study. Three families opted not to complete baseline testing, due to the length of the assessment, and approximately 22 children did not participate in the neuropsychological testing portion of the assessment due to administrator error. Inclusion criteria were being the primary caregiver of at least one child between the ages of 10 and 14 with whom the caregiver had lived for at least the previous year; having lived in the

target community (Langa) for at least one year; and the ability to participate in assessments and the intervention in either English or Xhosa. Xhosa is the most widely spoken language in the Langa community (Statistics South Africa, 2001). When the parent was responsible for more than one child in a household between the ages of 10 and 14, recruiters selected the child with the most recent birthday for participation. The primary female parent was defined as the adult household member who engaged in the majority of the parenting duties for assuring the well being of the 10 to 14 year-old child. The parent was not necessarily the youth's biological mother but, according to self-report, was responsible for and provided the primary care for and supervision of the youth.

2.2 Procedure

The study was endorsed by the Civics Association in Langa and approved by the GSU Institutional Review Board and Stellenbosch University's Ethics Committee. It was implemented in rental space within the Langa township. Subsequent to parents' attendance at one of the three informational meetings, interested and eligible parents were scheduled with their youth for the consent process, immediately followed by the baseline assessment. Project staff consented and assented each parent and child dyad together. Project staff included two Xhosa- and English-speaking, female college graduates employed by the University of Stellenbosch with extensive research experience in recruiting participants in similar studies. Consent/assent forms were available in English and Xhosa, with participants choosing the language of administration, and all were read and explained to participants to mitigate literacy concerns. Roughly 60% of parents and 30% of youth completed the assessment in Xhosa, and the rest chose English. Consent/assent forms clearly indicated that parents did not have access to children's responses and vice versa.

Parents and children were separately assessed using audio-computer assisted interviews (A-CASI) to ensure privacy of responses. Participants selected whether the computer would verbally present interview items in English or Xhosa, while simultaneously presenting the written version of each question in both languages. Parents were provided with R70 (approximately \$9) in grocery vouchers to off-set costs associated with their completion of the baseline assessment (e.g., childcare, transportation). The children received a small toy or other appropriate gift (valued at approximately R20 or \$3) in appreciation for their participation. The baseline assessment required approximately one hour for parents and 30 minutes for children to complete. Both parents and children provided reports about parent-child communication and sexual attitudes. Parents provided information about family structure and socioeconomic status. Child executive functioning was obtained through neuropsychological testing. Subsequent to baseline assessments, parents were randomly assigned to the intervention or the wait-list control group.

2.3 Intervention Development and Implementation

In order to address the intervention's cultural relevancy, U.S. (Georgia State University) and South African researchers from the University of Stellenbosch, in collaboration with the primary community partner (i.e., Cape Town Child Welfare Society; CTCWS) and parents and youth from the target community, developed the intervention and adapted existing measures to meet the needs of the Langa community. Initially, focus groups and in-depth interviews were completed with Langa parents and children to identify relevant themes around sex communication among target families, including cultural taboos and actual practices. Following the focus groups, a week-long workshop involving project investigators, CTCWS staff, and family stakeholders was conducted to review formative findings. The workshop occurred in

Cape Town and was used to create a framework for the intervention, outline the general content of the components, and determine the method of implementing the intervention, including the extent of child involvement (e.g., ranging from participation in a portion of each session to provide an opportunity for parents to practice skills to more limited attendance). Subsequent to the workshop, the researchers drafted content for a six-session intervention and identified assessment tools. A second workshop included the U.S. and South African research teams and staff from the CTCWS. During this workshop, the intervention manual and assessment tools were finalized.

The six-session intervention began within four weeks of a family's baseline assessment. Three groups of fourteen to eighteen parents received the intervention, which was implemented by two female facilitators. Session 1 introduced the intervention and addressed understanding pre-teens, what children need to succeed using the Circle of Courage (Reclaiming Youth International, n.d.), and how parents are important during this stage of development. Session 2 focused on positive parenting, parent involvement, and the parent-school relationship. Session 3 continued a focus on parenting skills discussed in session 2 and incorporated the use of family meetings. Session 4 dealt with the realities of adolescent sexual experiences and parent-child communication about sex. Session 5 addressed talking about sex with children in today's South Africa, including gender norms and roles, HIV and trauma in families, and transactional sex. Session 6 reviewed prior sessions and also added a discussion on peer pressure. Sessions included didactic presentation of information, small group discussions, experiential exercises, modeling, role-play, and homework. Youth did not attend independent sessions, but, rather, joined their primary parents on two occasions for skill practice. Skills practice targeted parent-child communication first about a topic chosen by the youth and second about strategies to avoid

peer pressure. Each intervention session included dinner catered by a township business. Each session ran approximately two and one half hours. Facilitators fluent in English and Xhosa delivered the intervention, and intervention materials were provided to parents in both languages.

2.3.1 Facilitator training

Three groups of 14 to 18 parents received the intervention, and each session was implemented by two facilitators. Four facilitators were trained over a five-day period by the U.S. and South African researchers. Prior to the training, facilitators reviewed the intervention manual and were assigned a partner with whom to implement the intervention. Training included content review, modeling, and role-playing intervention sessions. Later, and just prior to implementation, the facilitators practiced delivering sessions and role-played potentially problematic scenarios. Staff at the Cape Town Child Welfare Society met weekly with facilitators to provide supervision.

Post-intervention follow-up was assessed within one month of the last intervention session for those randomly assigned to the intervention condition. For those in the wait-list control group, post-intervention follow-up was assessed within the same time frame as the intervention group (i.e., 7 to 11 weeks after baseline). Another follow-up was completed six months after baseline for both intervention and control groups.

2.4 Measures

Formative work drawing from the literature and our cultural knowledge resulted in modification of U.S.-based instruments for the parents and children. Specifically, we modified the measures considerably to address the sample's cultural context. Modifications were informed by input from South African researchers, family service providers, and parents and youth living in the target area. South African investigators, research personnel, and Cape Town

Child Welfare Society (CTCWS) staff reviewed all measures line by line, and we modified each based on their feedback. Subsequent to this formative work, the measures were translated from English to Xhosa and back, using the back-translation technique by Brislin (1970).

2.5 Constructs and Variables

2.5.1 Demographic characteristics.

We gathered demographic information using the Household Economic and Social Status Index (HESSI; Barbarin & Khomo, 1997; Barbarin & Richter, 2007). The HESSI was created in South Africa for use with families living in South African townships. In addition to basic demographic information, the HESSI assesses multiple indicators of material resources available to South African households, including housing quality, number of consumer goods (e.g., refrigerator), financial assets, and adequacy of food supply. We summed these items to create a scale score, which could range from 0 to 28. Higher scores indicated the presence, rather than absence, of resources and this measure served as a proxy for socioeconomic status.

2.5.2 Child attitudes about child sexuality.

Sexual attitudes were assessed through measures developed for use with a previous U.S. family-based HIV prevention intervention (Forehand et al., 2007). Children were asked about their attitudes regarding various aspects of sexual behavior and sex education. Sixteen items asked about three different areas: attitudes about people having sex (in general), attitudes about the teen him/herself having sex, and attitudes toward birth control, condoms, and responsibility. Also included were items regarding intergenerational sex and having multiple sex partners. Sample items from each domain included, “People should have sex only if they are married,” “I think it is OK to have sex as long as I protect myself from STDs and pregnancy,” and “I think I

should use condoms if I have sex.” Item responses were on a Likert-type scale with three options ranging from “Not at all true” with a value of 0 to “Very true” with a value of 2. Items were reverse scored as needed and averaged so that higher scores indicated more protective sexual attitudes, and scores could range from 0 to 2. Data from Time 1 and Time 3 were utilized in the current study. Reliabilities for this report at Time 1 and Time 3 were moderate at $\alpha = .88$ and $\alpha = .85$, respectively.

2.5.3 *Parent attitudes about child sexuality.*

The construct of attitudes about child sex was measured using the Caregiver Attitudes about Sex scale. This 16-item measure includes 13 items from an original 37-item measure developed for use in the Parents Matter! Program (Ball, Pelton, Forehand, Long, & Wallace, 2004) and an additional three items added specifically for Imbadu Ekhaya. The measure assesses caregivers’ beliefs about premarital sex, adolescent sexual activity and the importance of children having access to sex knowledge (e.g. ”It is okay for my child to date now” and “My child should know how to get and use condoms”). Participant responses were averaged to create scale scores ranging from 0 to 2, with higher scores indicating more protective caregiver attitudes about child sex. Data from Time 2 were utilized. Reliability for parent report at Time 2 was low ($\alpha = .58$).

2.5.4 *Parent-youth sex communication content.*

We asked parents and their youth whether they discussed eight basic sex topics (e.g., dating, puberty, menstruation, sex, HIV/AIDS). We named this count variable *number of sex topics discussed* and it could range from 0 to 8. We summed the number of yes responses for parents and youth separately, with higher scores indicating more topics discussed. We also measured the breadth of these discussions by asking whether the communication included

information about reproduction, abstinence, peer pressure to be sexually active, condoms, birth control, sexually transmitted diseases, rape and sexual assault including child sexual assault, media messages about sex, and consent to sexual activity. We named this count variable breadth, and it could range from 0 to 10. However, child reports of breadth were incomplete at Time 2 due to item gating. Therefore, for youth, only reports on topics were included in this study. For parents, number of topics and breadth were used. This measure has been used in the US and on the African continent, but not previously with South African samples (Miller, et al., 2009; Vandenhoudt, et al., 2010). Estimates of internal reliability are not appropriate for count variables. As these subscales were significantly correlated (see Table 4) and to facilitate parsimony in the overall model, parent and child report of number of topics discussed and breadth were summed to create a composite “content” observed variable. Data from 1-4 weeks post intervention (Time 2) were utilized.

2.5.5 Parent responsiveness to sex communication.

Using 22 items, we asked parents to rate themselves, and adolescents to rate their parents, on how responsive parents were to questions about sex on a 3-point scale (0=not at all true to 2=very true). For example, parents rated themselves on "I feel comfortable talking to TC about sex topics" and adolescents rated their parents on "My parent feels comfortable... ". A version of this scale has been used in the U.S. and Africa (Forehand et al., 2007; Vandenhoudt et al., 2010). We used 16 items from Forehand et al.'s original 21-item measure and added 6 specific to IE (e.g., "It's the school's job to make sure TC knows about sex;" "I don't need to talk to TC about sex because s/he will learn about it during their initiation"). Factor analysis of these items suggested a single responsiveness scale for youth, but two subscales for parents that we characterized as comfort with discussing sex (11 items) and openness to the same (9 items). We

used a scale mean so that scores ranged between 0 and 2. Higher scores indicate greater responsiveness. Reliability for the youth scale was adequate ($\alpha = .65$), but higher for parents ($\alpha = .85$ for comfort & $\alpha = .81$ for openness). Data from 1-4 weeks post intervention (Time 2) were utilized.

2.5.6 *Executive functioning.*

At baseline, youth participants completed the computer-based version of the Wisconsin Card Sorting Test (WCST; Heaton, 1993), an executive function measure that assesses abstract reasoning and cognitive inflexibility in response to changing environmental contingencies. This modified version of the WCST consists of four stimulus cards and 64 response cards that depict various shapes (crosses, circles, triangles, or stars), colors (red, blue, yellow, or green) and numbers of figures (one, two, three, or four). The four response cards with the following characteristics appear on the top of the computer screen before the participant in left-to-right order: one red triangle, two green stars, three yellow crosses, and four blue circles. As each new stimulus card appears on the bottom of the computer screen, the participant is then instructed to choose a response card that matches each consecutive stimulus card. The participant is told only whether each response is right or wrong and is never told the correct sorting principle (or category). Once the participant has made a specified number of consecutive “correct” matches to the initial sorting principle (usually to Color), is changed--to Form or Number--without warning, requiring the participant to use the examiner’s feedback to develop a new sorting strategy. The WCST proceeds in this manner through a number of shifts in set (i.e., sorting principle) among the three possible sorting categories (Color, Form, and Number). This current study focused only on the perseverative errors (measuring cognitive inflexibility) component of

the WCST. Perseverative errors are an indication of cognitive inflexibility, with higher scores demonstrating greater inflexibility.

Three prior studies known to the researchers have evaluated performance on the WCST in South African samples (Meyer, 2005; Powell, 2000; Skuy et al., 2001). However, data from these studies cannot be used for normative comparisons in the current study due to age and ethnicity discrepancies. Using established U.S. normative data would also be inappropriate for this sample. Score discrepancies between South African individuals and the United States sample on which the WCST was standardized have been reported (Skuy et al., 2001) and are likely a reflection of differences in education, unfamiliarity with concepts, and/or language differences. Therefore, we used raw scores rather than standardized scores in analyses.

2.6 Statistical Analyses

Initially, we examined bivariate correlations among study variables, including demographic variables. Additionally, assumptions of the model were explored and were found to be satisfied. Kline (2011) recommends at least 20 subjects per parameter for an ideal minimum sample size and 10 subjects for a less than ideal minimum sample size. Therefore, the current study is underpowered with 13 parameters and a total of 99 subjects (approximately 8 subjects per parameter). We addressed data missingness using multiple imputation methods in Mplus (Graham, 2009). The imputed dataset, comprising of 30 datasets estimating missing values, was utilized for all statistical analyses.

To test the structural model, we employed maximum likelihood estimation with standard errors (MLR estimator) using Mplus version 7.0. Two-step modeling was used to estimate the model (Anderson & Gerbing, 1988). First, a measurement model was estimated, which included a confirmatory factor analysis for the latent variable (Time 2 parent-child sex communication)

with its observed indicators, and standardized covariance relationships among all study variables. The latent variable, parent-child sex communication, included four indicators, i.e., parent and child content, parent comfort, parent openness, and child responsiveness. Next, the overall model (see Figure 2) was analyzed using stepwise structural regression modeling and included second-stage moderation. Our structural regression model was analyzed with a one-factor, 11-indicator measurement model and an overidentified recursive structural model. The structural regression model was used to test hypothesized causal relationships between factors and examined for comparable fit against the measurement model. The structural model was analyzed with and without the hypothesized interaction. The interaction comprised second-stage moderated mediation, examining baseline child executive functioning as a moderator between parent-child communication about sex (Time 2) and child sex attitudes (Time 3), controlling for child age, gender, and baseline child sex attitudes.

3 Results

3.1 Retention

Attendance for the 6-week intervention was high. Attendance at any one intervention session ranged from 56% to 100% of participants (M attendance = 4.6 sessions; $SD = 1.90$). Six participants did not attend any session but were included in data analyses, using the intent-to-treat method. We retained 89% of our intervention group and 88% of our control group from baseline to the immediate post-intervention follow-up assessment. Retention from baseline to the Time 3 (6 months post intervention) assessment was 84.2% for the intervention group and 80.9% for the control group. Retention percentages refer to dyads. Dyads were considered lost at follow-up if only the parent or youth completed the assessment. We included data from dyads

that failed to complete the Time 2 (1-4 weeks post intervention) follow-up assessment, but returned for the Time 3 follow-up assessment. The reasons for attrition were as follows: either parent or child did not complete the assessment (N=5); the length of the assessment (N= 4); the child or family moved out of the community (N=2); death of the parent (N=1); or unknown (N= 2). No associations were found between number of completed assessments and group assignment (intervention vs. control), parent's age, age of child, or other demographic variables.

3.2 Fidelity to Intervention

Data on implementation fidelity were obtained from 33% of intervention sessions. Using a checklist, project staff observed facilitators' adherence to study protocol. Facilitators delivered the intervention as intended 89.15% of the time. Utilizing the Intervention Group Environment Scale (Wilson et al., 2008; described below), participants in the intervention condition rated their groups as highly cohesive ($M = 4.24$, $SD = 0.57$; possible range=1-5), facilitators as well prepared and effective at implementing the intervention ($M = 4.33$, $SD = 0.49$; possible range=1-5), and sessions as rarely counterproductive ($M = 2.47$, $SD = 0.88$, possible range=1-5).

3.3 Preliminary Analyses

Descriptive statistics at baseline for participant demographic variables are displayed in Table 1, and study variable means and standard deviations are presented in Tables 2 and 3.

Table 1. Demographic Characteristics of Participants.

	Percentage	Mean	Standard Deviation	Range
Age		11.70	1.40	10-14
Gender	Male 47.5%			
	Female 52.5%			
Parent Ethnicity	Xhosa 83.8%			
	Zulu 11.1%			
	Sotho 3.0%			
	Other 2.0%			
Parent Age		42.55	11.43	22-74
Material Resources		17.55	5.84	2-27

Table 2. Parent Report Means of Study Variables

Variable	Baseline		Time 2		Possible Range
	Control	Intervention	Control	Intervention	
# of Sex Topics Discussed	3.95 (2.27)	4.12 (2.41)	4.21 (2.38)	6.29 (1.58)	0-8
Breadth	4.11 (2.98)	4.29 (3.34)	4.62 (3.55)	6.63 (2.81)	0-10
Comfort	1.31 (0.55)	1.41 (0.51)	1.38 (0.52)	1.59 (0.37)	0-2
Openness	0.92 (0.46)	1.03 (0.58)	0.69 (0.52)	0.75 (0.54)	0-2
Sexual Attitudes	1.38 (0.26)	1.45 (0.30)	1.13 (0.22)	1.10 (0.24)	0-2

*Note: Only bolded values were included in model.

Table 3. Child Report Means of Study Variables

Variable	Baseline		Time 2		Time 3		Possible Range
	Control	Intervention	Control	Intervention	Control	Intervention	
# of Sex Topics Discussed	4.79 (2.47)	4.44 (2.48)	5.27 (2.91)	6.10 (2.27)	N/A	N/A	0-8
Responsiveness	1.12 (0.40)	1.09 (0.34)	1.08 (0.31)	1.28 (0.36)	N/A	N/A	0-2
Sexual Attitudes	1.37 (0.24)	1.47 (0.29)	N/A	N/A	1.46 (0.46)	1.50 (0.52)	0-2
WCST Perseverative Errors (raw score)	17.64 (9.87)	16.91 (11.81)	N/A	N/A	N/A	N/A	0-46**

*Note: Only bolded values were included in model.

**Actual range

Bivariate correlations among demographic and all study variables are presented in Table 4. Only youth age and gender correlated at least marginally significantly with outcome variables at baseline. Material resources, the proxy for socioeconomic status, were not associated with study variables, likely due to the limited variability in this measure. Older, relative to younger, children reported more protective sexual attitudes at both baseline, $r(99)=.36, p<.01$ and Time 3, $r(99)=.27, p<.05$. Similarly, female youth reported significantly more protective sexual attitudes than males at baseline, $r(99)=.26, p<.01$ and marginally more at Time 3, $r(99)=.19, p=.07$.

Bivariate correlations among the observed variables are also presented in Table 4. Study condition was associated with a majority of the parent-child communication and responsiveness variables. For those families assigned to the intervention, both parents and children reported greater content, such as topics discussed and breadth, at Time 2, $r(88)=-.38, p<.01$, such that those families assigned to the intervention indicated greater parent and child reported content relative to controls. Similarly, participation in the intervention was significantly associated with

most measures of communication quality at Time 2. Specifically, youth whose parents participated in the intervention reported that their parents were more responsive to communication about sex, $r(88)=-.28, p<.01$, and intervention parents indicated greater comfort when discussing sex topics with their children, $r(88)=-.23, p<.05$. However, parent-reported openness was not significantly related to intervention participation, $r(88)=-.06, p=.60$.

Table 4. Zero-order Correlations between All Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1) Intervention (1=Treatment, 2=Control)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2) Child age	<.01	--	--	--	--	--	--	--	--	--	--	--	--	--
3) Child gender (1=Male, 2=Female)	.12	.08	--	--	--	--	--	--	--	--	--	--	--	--
4) HESSI Material Resources	.01	-.01	.07	--	--	--	--	--	--	--	--	--	--	--
5) T1 C-Sexual Attitudes	.18	.36**	.26*	.05	--	--	--	--	--	--	--	--	--	--
6) T3 C-Sexual Attitudes	.07	.27*	.19	-.07	.53**	--	--	--	--	--	--	--	--	--
7) T2 P Topics	-.47**	.12	.07	-.14	-.05	-.07	--	--	--	--	--	--	--	--
8) T2 P Breadth	-.30**	.17	-.03	-.09	-.01	-.13	.82**	--	--	--	--	--	--	--
9) T2 C Topics	-.16	.07	.32**	.19	.15	-.01	.27*	.23*	--	--	--	--	--	--
10) T2 P-C Content	-.38**	.15	.14	-.01	.04	-.09	.87**	.89**	.61**	--	--	--	--	--
11) T2 P-Openness	-.06	-.01	-.02	.11	-.09	.06	.04	-.09	-.02	-.04	--	--	--	--
12) T2 P-Comfort	-.23*	.21	-.01	.10	.01	-.04	.57**	.56**	.17	.55**	.05	--	--	--
13) T2 C- Responsiveness	-.28**	.18	.04	-.03	.12	.15	.04	.16	.33**	.23*	-.10	.04	--	--
14) T2 P-Sexual Attitudes	.04	.13	-.09	.12	.01	-.15	.26*	.46**	.01	.33*	.02	.39**	-.05	--
15) T1 C-WCST Perseverative Errors	.03	-.01	.03	-.10	-.18	-.01	.08	.10	-.16	.01	-.10	.10	-.09	.16

* $p < .05$; ** $p < .01$; Note: "P" denotes parent report, while "C" denotes child/youth report.

3.4 Primary Analyses

The measurement model (Figure 3) depicts the standardized covariance structure among the latent variable and the remaining observed variables. As the measurement model includes all possible relationships within the model, it is believed to demonstrate the best possible fit among all variables. The measurement model provided a good fit for the observed data ($CFI=.96$, $RMSEA=.06$, $SRMR=.05$). Confirmatory factor analyses revealed that with the exception of parent reported openness, all indicators loaded significantly onto the Time 2 parent-child communication latent variable, $\beta=.26-.91$, $p<.05$. Those participants in the intervention condition engaged in significantly more communication behaviors, including discussing more topics, feeling greater comfort, and demonstrating more responsiveness, than those parents in the control group, $\beta=-.43$, $p<.01$. Contrary to study hypotheses, study condition was not significantly related to any other variable in the measurement model, including the outcome variable of Time 3 youth sexual attitudes. Both hypothesized mediators of the model, Time 2 parent-child communication and parent sexual attitudes, were significantly correlated, such that parents with more positive sexual attitudes tended to report increased communication, $\beta=.31$, $p<.01$. As expected, the primary outcome variable, Time 3 youth sexual attitudes, was significantly related to Time 1 youth sexual attitudes, $\beta=.53$, $p<.01$, in addition to the demographic variable youth age, $\beta=.25$, $p<.05$. Executive functioning was not significantly related to any variable in the model.

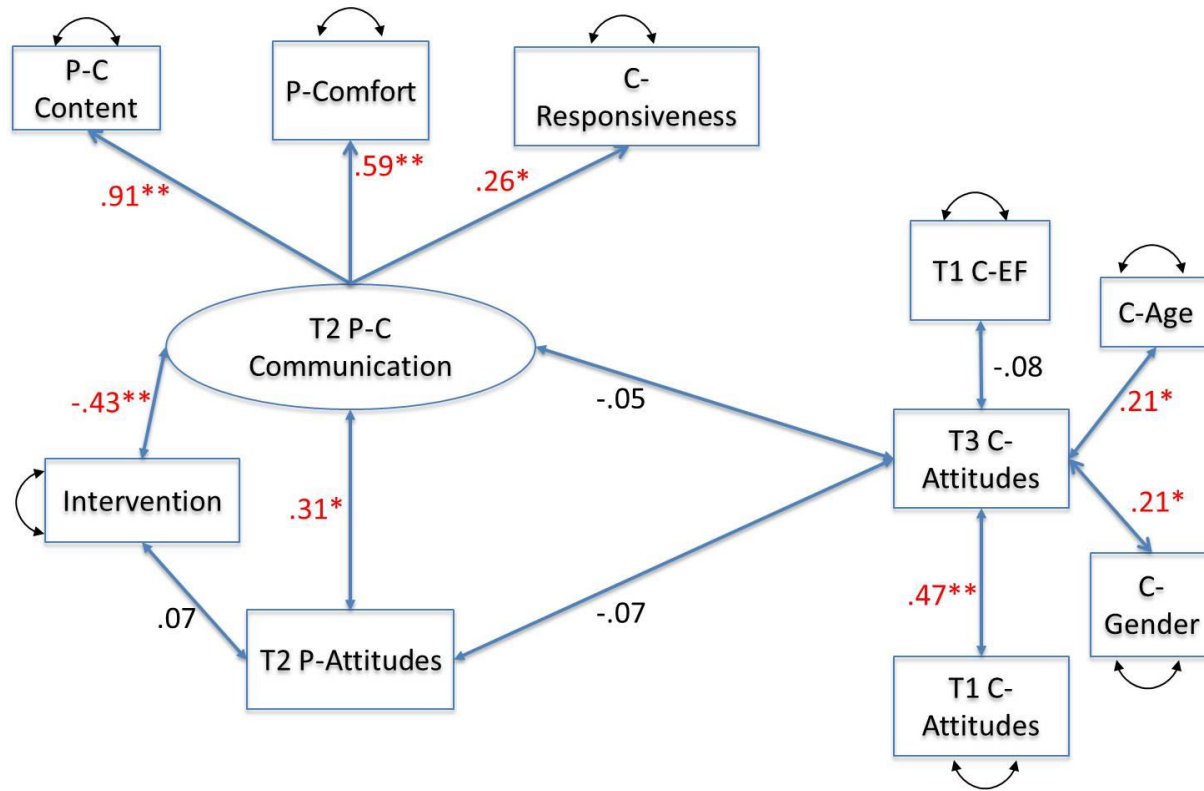


Figure 3. Measurement model with standardized correlation coefficients.

Note: $*p < .05$; $**p < .01$ Significant parameters denoted in red.

The structural model without the interaction is shown in Figure 4. The structural model depicts standardized, causal relationships between variables. As expected, a decrease in model fit was observed ($CFI=.93$, $RMSEA=.07$, $SRMR=.05$) when compared to the measurement model ($CFI=.96$, $RMSEA=.06$, $SRMR=.05$). Because imputed data were used in the analyses, a chi-square difference test could not be computed, and therefore, it is not possible to determine whether the structural model's decrease in model fit is statistically significant. Software capabilities limit the use of a chi-square difference test with imputed data, as this function has yet to be developed in Mplus (Muthen & Muthen, 2005). Condition significantly predicted Time 2 parent-child communication, $\beta = -.45$, $p < .01$, such that for those parents who participated in the intervention, both parents and children reported greater communication following the

intervention. A correlational relationship between Time 2 parent attitudes about sex and parent-child communication, $\beta=.41, p<.01$, continued to demonstrate the best fit in the model, as opposed to the proposed prediction of communication by parent sex attitudes. The main outcome, Time 3 child-reported sexual attitudes was predicted only by Time 1 child attitudes about sex, $\beta=.50, p<.01$. Child executive functioning did not significantly predict Time 3 child-reported sexual attitudes, $\beta=.09, p=.37$.

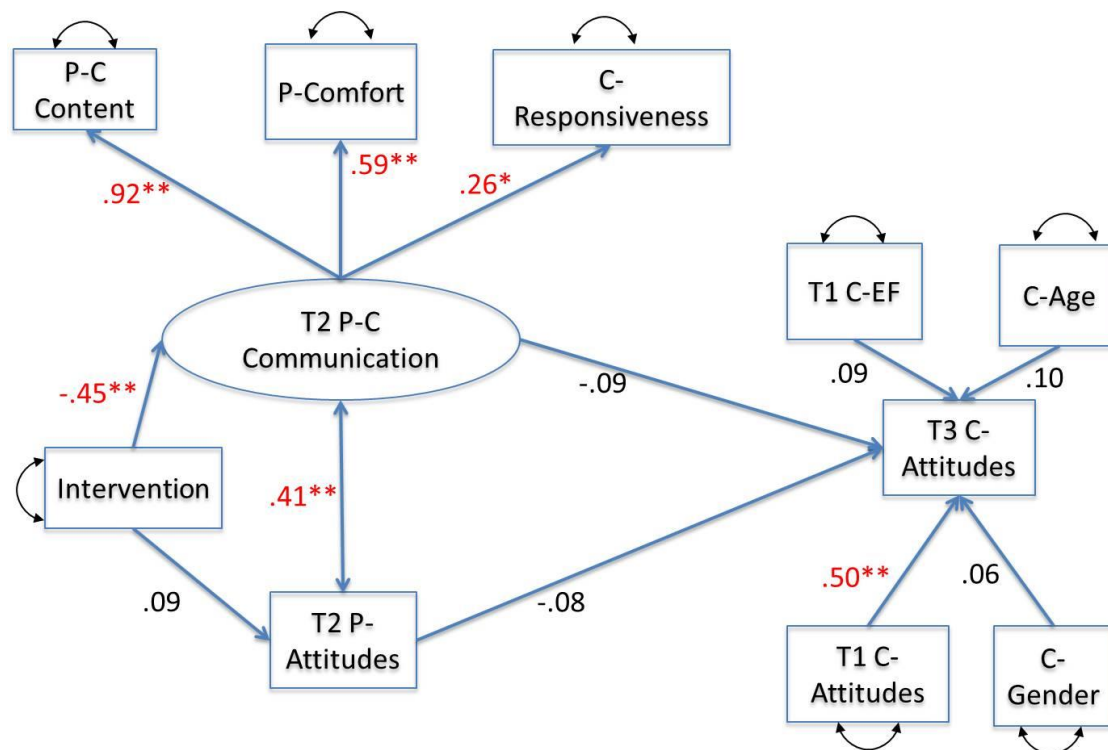


Figure 4. Structural model without interaction.

Note: $*p < .05$; $**p < .01$; Significant parameters denoted in red.

Figure 5 presents the structural model, including the hypothesized interaction. In order to analyze the interaction within the structural model, the syntax included the Mplus command

TYPE = RANDOM. Because the hypothesized interaction included a latent and observed variable, model fit and standardized correlation coefficient values could not be computed (Muthen, 2004). Although the interaction term of interest (Time 2 parent-child communication_X_executive functioning) did not significantly predict Time 3 child sexual attitudes, all other relationships remained constant within both structural models (Figures 4 and 5). Therefore, the structural model without the interaction (Figure 4) best represents the hypothesized relationships between variables.

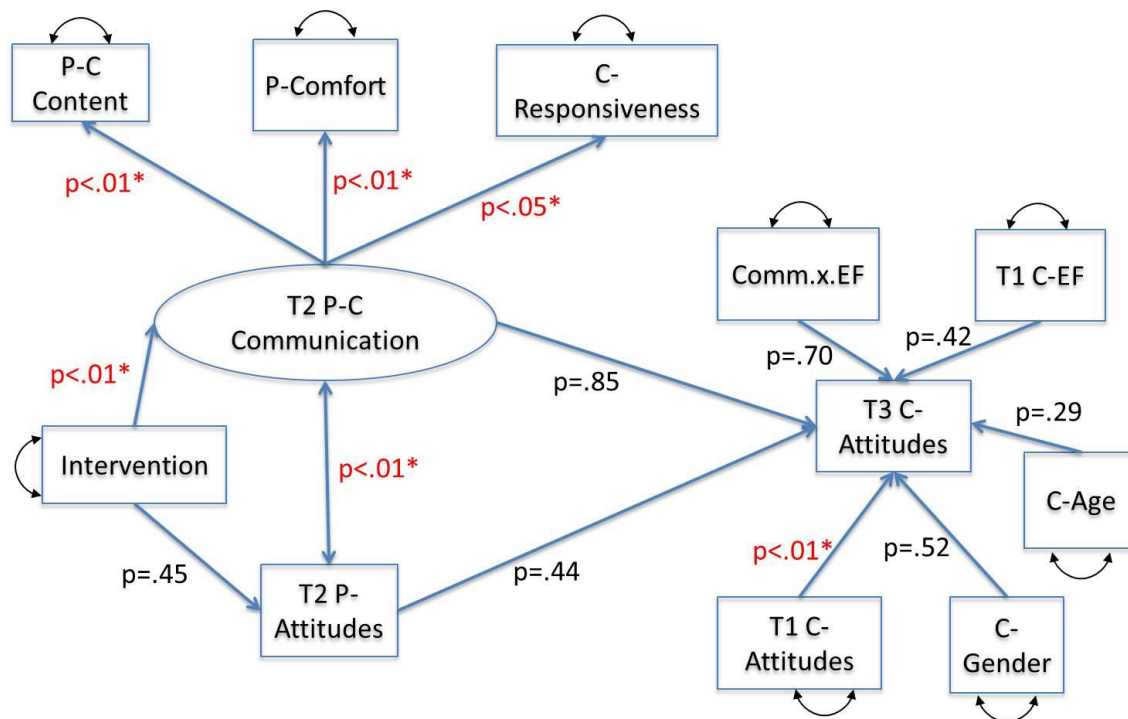


Figure 5. Structural model with interaction.

4 Discussion

The purpose of this study was to examine the role of black South African parents in helping their pre-adolescents develop protective sexual attitudes following a family-based HIV prevention intervention that targeted parent-child communication and relationships. Additionally, we assessed the influence of child executive functioning in the formation of protective sexual attitudes. For the selected age group of pre-adolescents, sexual attitudes are an appropriate outcome to target, given their documented link to sexual behaviors among youth in both U.S. and South African contexts (Basen-Engquist & Parcel, 1992; Richard & van der Pligt, 1991; Simbayi et al., 2005). Considerable U.S.-based research has confirmed direct links between parenting factors, such as communication with children about sex topics and parent attitudes about sex, and protective beliefs about sexual behavior (Chapman & Werner-Wilson, 2008; DiClemente et al., 2001; Donenberg & Pao, 2005; Hutchinson & Cooney, 1998; Fisher, 1986; Thornton & Camburn, 1987). Furthermore, previous evidence in U.S. samples supports the influence of executive functioning in both risky decision-making (Van Leijenhorst et al., 2010) and intervention-based belief changes (Fishbein et al., 2006), suggesting a potential role for child executive functioning in the current intervention's ability to influence child outcomes. However, very little research examining these relationships in a black South African context exists. Therefore, the goal of this research was to improve understanding of factors associated with development of protective sexual attitudes in black South African youth, a group very vulnerable to infection. The potential protective roles of parent variables and child executive functioning may aid in the development of HIV preventions tailored to these youth.

4.1 Descriptive Summary

Participants for this study were drawn from a sample of 99 South African parent-child dyads engaged in a parent study aimed at developing and evaluating a family-based HIV prevention intervention. A significant majority of the families were Xhosa-speaking, which is consistent with the demographic composition of Langa township and Cape Town more broadly (Statistics South Africa, 2001). Female parents were, on average, middle-aged, and the majority of families reported living in stable or brick housing, with limited material resources. Among youth participants, approximately half were males and had not yet reached teenage years. Additionally, an acceptable number of dyads, 81%, remained in the study across follow-up times. Intervention fidelity was also acceptable and intervention participants rated their groups as highly cohesive.

Among all participants at baseline, average reports of parent-child communication by both parents and their children indicated approximately four to five topics discussed. Children reported moderate experiences of communication quality (i.e., parent responsiveness to discussing sex topics), and parents reported moderate levels of comfort with sex communication at baseline. However, parent reported openness was lower on average than responsiveness and comfort.

Among all participants, baseline parent reports of attitudes about child sexuality were moderately protective. Most parents reported beliefs that their children should not trade sex for gifts (87%) and should use condoms when engaging in sexual behaviors (95%). Although marriage among black South Africans is relatively uncommon (Hunter, 2007; Lawson, 2007) and a significant number of youth have engaged in intercourse prior to age 18 (Gevers et al., 2013; Statistics South Africa, 2009; Pettifor, Rees & Steffenson, 2005), most parents believed youth

should wait until marriage to have sex (69%) and should only learn about abstinence (87%). Moreover, approximately one third of parents reported beliefs that teaching children about condoms implicitly gave youth permission to engage in sexual behavior and will prompt children's desire to have sex. Conflicting attitudes about youth sexuality (i.e. condom use vs. abstinence education) were prominent among this study's parent sample. Parents held beliefs that may date back to as early as pre-colonial traditions of strict adherence to abstinence before marriage, primarily for economic reasons. However, given the contemporary social and economic destabilization which prevents a majority of black South Africans from marrying (Hunter, 2007), it is likely that youth receive confusing messages from adults regarding expectations about appropriate sexual behavior, particularly with regard to abstinence before marriage.

At baseline, youths' mean score on protective sexual attitudes was comparable to parents (child $M=1.41$; parent $M=1.41$). Similar to parents, a majority of youth supported condom use (73%) and agreed that gifts should not be exchanged for sex (82%). However, fewer youth (68%) than parents (82%) supported talking about sex with an adult, and only 55% believed that they should wait until they are married to have intercourse. Although youth endorsed beliefs that are widely regarded as protective, such as supporting condom use, their beliefs regarding abstinence differ from parents in this study, possibly suggesting a gap in communication or disparity in beliefs about protective sex practices. A majority of the correlations were in the expected direction and consistent with earlier findings, particularly regarding relationships of youths' sexual attitudes with their gender and age (Anderson et al., 2004). Older and female youth reported more protective attitudes about sex. Developmentally, older youth may have already benefitted from HIV prevention efforts in the media, schools, and communities (Magnani

et al., 2005). Previous studies also suggested that in South Africa, particularly in Xhosa culture, females bear more of the responsibility with respect to protective sexual attitudes and behaviors due to the male-dominant gender role norms (Salo, 2006; Simbayi et al., 2005). Within this culture, males frequently have been socialized to maximize their sexual experiences with “loose” women and simultaneously hold a relationship with a steady partner, who is more conservative and appropriate for a child-bearing role (Salo, 2006). For example, males used condoms more with women who were presumed to have multiple partners, but avoided condom use with their steady partners under the presumption that steady partners would be loyal and not “wander with other men” (Salo, 2006; Simbayi et al., 2005). The latter findings, in conjunction with others (e.g., Pettifor, Measham, Rees, & Padian, 2004) and those of the current study, provide evidence that males may be a particularly important target for HIV prevention interventions.

4.2 Primary Findings

Turning to the study hypotheses, results were limited to few relations, which were as anticipated. Confirmatory factor analyses for the parent-child communication latent variable indicated a good fit for the data and suggested that the latent variable was strongly measured by parent-child content, child reported responsiveness, and parent reported comfort. Parent reported openness did not fit well with the other indicators in the parent-child communication latent variable, likely due to low associations with the other communication measures. Furthermore, the measurement model, which included the confirmatory factor analyses for the communication latent variable, fit well with the data and the structural model without the interaction fit closely with the measurement model. As reported in the primary outcome paper associated with this study (Armistead et al., 2014) and consistent with study hypotheses, the structural model supports strong relationships between the intervention and multiple study variables.

Consistent with the intervention's focus on strengthening parent communication skills, several communication variables were strongly associated with intervention participation, according to both parent and youth report. For example, parents who participated in the intervention discussed an average of two more topics than parents in the control group, as reported by parents. Similarly, participation in the intervention was also strongly related to communication quality variables. Youth with parents who participated in the intervention reported that their parents were more open to, confident and skilled at discussing sex topics. Additionally, parents who participated in the intervention indicated greater comfort with engaging in conversations about sex with their children. This finding is particularly promising given the cultural and societal barriers against discussion of sex topics between parents and children.

Contrary to hypothesis 2, parent attitudes were not significantly influenced by the intervention. Parents in the intervention group reported almost identical mean scores on the attitudes measure as their counterparts in the control group, as well as to the full sample mean at baseline, suggesting no modification in parent beliefs about their child's sex behaviors at Time 2 (1-4 weeks post intervention). As these beliefs were measured within one month of the intervention's conclusion, there may have been insufficient time for parents to modify their attitudes. Parents may require additional time and education or modeling, in addition to experience, to adequately modify their attitudes. Alternatively, parent beliefs were already moderately protective at baseline and may have little room for modification following intervention. Furthermore, although parent attitudes were strongly positively associated with parent-child communication at the bivariate level (Table 4), contrary to the second hypothesis and the theory of reasoned action (Fishbein & Ajzen, 1975), parent attitudes about sex did not

predict parent communication behaviors in the structural regression model. Intervention participation was a stronger predictor of parent communication behavior than parent attitudes in this sample of South African parents. Although Time 2 parent-child communication and parent sex attitudes were strongly correlated, a predictive relationship between the two variables may not have been strong enough to detect due to the effect of the intervention. Additionally, both variables were measured simultaneously, and therefore, a causal relationship may not most accurately represent the relationship between these variables. Furthermore, research on the link between attitudes and behaviors suggests that other contextual factors, such as situational events (Wallace et al., 2005), subjective norms, or perceived control may act together with attitudes to predict behavior (Ajzen, 1985).

Also contrary to hypotheses, the intervention did not influence the outcome variable, child sex attitudes at Time 3 (6 months post intervention), through either proposed mediator (parent-child communication & parent attitudes about sex). Several explanations can be considered in efforts to understand the intervention's lack of influence on child attitudes. The simplest is that, as with parents, children's attitudes were relatively protective at the outset of the study, and thus, there was little room for improvement in youth attitudes. Moreover, parents may not have had adequate time to influence child beliefs. Child attitudes were measured approximately 6 months following intervention. Although parents may initiate conversations about sex within the first six months following the intervention, more discussions over time may be required to influence youth beliefs. Youth may require additional time to formulate more protective beliefs as they mature, which may also be influenced or reinforced by other environmental factors, such as personal experience, messages from the media, and peer relationships. As IE primarily targets change in parenting behavior, the cascading effects of the

intervention onto child beliefs may yet occur at a later time. Among South African parent-child dyads, past studies have indicated that parents engage in little discussion of sex topics with their children (Namisi et al., 2009), which may prevent the transmission of protective sex attitudes from parents to children. However, the current sample indicates that the intervention helped to increase parent-child sex communication content, as reported by parents, but not children. It is possible that although parents attempt to engage in discussions of specific sex topics, such as condom use and dating, South African parents may not explicitly communicate all of their attitudes with children. Alternatively, parents may communicate their beliefs but engage in behavior that is inconsistent with their expressed protective beliefs. If parents are not modeling protective sexual behaviors (e.g., limiting the number of sexual partners), then children may be less likely to adopt parents' protective attitudes. The absence of data on parents' sexual behavior in the current sample, however, impedes our ability to empirically examine whether inconsistencies between parents' sexual behaviors and attitudes contribute variance to youth's adoption of protective attitudes. Finally, the lack of observed relationship between parent and child beliefs about sex may reflect cultural and intergenerational differences within the black South African communities, particularly around abstinence.

Limited research has examined the relations between executive functioning processes and sexual attitudes. The final hypothesis was unsupported as child executive functioning did not exert any main or interactive effects on child attitudes about sex at Time 3. In this study, youth demonstrated great variability in cognitive inflexibility. However, contrary to previous research (Fishbein et al., 2006), child executive functioning did not appear to influence the effect of parent-child communication on child sex attitudes. When evaluating attitude change, particularly with respect to risk behaviors, it is possible that other aspects of executive

functioning beyond cognitive flexibility alone may also be salient to attitudes. Studies which define executive functioning more broadly, including factors such as impulsivity, inhibition, and working memory, may result in more robust findings (Giancola, Shoal, & Mezzich, 2001; Moffitt & Henry, 1989), in contrast to studies that assess the contributions of individual measures (Fairchild et al., 2009; Romer et al., 2009). The use of only one measure of executive functioning may not be comprehensive enough to observe relations between executive functioning and attitude change. Also, as Gonzalez and colleagues (2005) suggested, executive functioning in combination with other non-neurocognitive factors, such as sensation seeking, may best predict youth outcomes. Alternatively, other youth outcomes may link more strongly with executive functioning, such as pre-coital behaviors and delinquent risk behaviors (Gonzalez et al., 2005; Nigg et al., 2004), in contrast to beliefs or attitudes. For example, previous research demonstrated a direct link between delinquent behaviors, such as substance abuse, and broader definitions of executive functioning (Nigg et al., 2004), that included measures of impulsivity, planning, and problem-solving (Giancola, Shoal, & Mezzich, 2001).

4.3 Limitations

As previously mentioned, the sample size was limited with regard to the complex modeling in this study and missing data necessitated the use of imputation. Additionally, many of the measures implemented in this study were piloted with this sample without previously confirming reliability and validity. For example, the low Cronbach's alpha for parent report of sex attitudes may indicate that this measure did not reliably measure parent beliefs about child sexuality, which may have contributed to the lack of findings. This measure attempts to assess a broad range of attitudes about sex, including receiving sex education, condom use, and abstinence. These attitudes may contradict each other, which may impact reliability of the scale and

relationship with other measures, such as sex communication. Also, because the parent study primarily focused on psychosocial and behavioral components of HIV risk, evaluation of neurocognitive contributions was limited to one measure, the WCST (Heaton et al., 1993), a tool that is notable for its ease in administration and previous use in multiple international settings (Skuy et al., 2001). Although the WCST has previously been administered among South African youth, this measurement for executive functioning has been criticized for a lack of cultural congruency beyond the standardization populations (Skuy et al., 2001) and for lack of ecological validity (Burgess et al., 1998). Additionally, the WCST measures “cold” executive functioning abilities, exclusive of any emotional context or influence on cognitive flexibility or decision-making. As sexual attitudes and beliefs are emotionally laden, a measure of executive functioning that also accounts for the influence of emotional content on decision-making may be best. Further, an expanded assessment of executive functioning, which includes factors such as impulsivity, inhibition, and working memory, may offer a clearer picture of the role of executive functioning in youth outcomes however, flexibility was specifically chosen for this study based on previous research. Finally, given the wide cultural and language variability in South Africa, these results may not be generalizable to South African youth outside of the current study’s demographic. The measures and intervention were developed based in part on qualitative work with Xhosa-speaking, black South African youth. These concepts and relationships may appear different in the cultural contexts of colored or white South African children, or black families with other ethnic identities.

Future studies of sexual attitudes in South African early adolescents may benefit from examining other constructs that may impact the development of these beliefs. Parent sexual and dating behaviors should be assessed to determine their level of influence on the formation of

their children's sexual beliefs. Among other health behaviors, such as eating and smoking habits, parents' behaviors have been linked to child beliefs (Lau, Quadrel, and Hartman, 1990). Similarly, gender role beliefs may affect the degree and breadth of interactions between parents and children, which in turn may impact child attitudes (Salo, 2006; Simbayi et al., 2005). Examining the role of gender beliefs offers a more culturally relevant representation of the dynamics between parents and children, in addition to how these interactions contribute to child behavior outcomes. This may also include comparing parent communication practices and sexual attitudes across child gender.

Despite the study's limitations, it offers valuable information for those working in HIV prevention among South African youth. Little research has examined the contributions of parent-child communication practices to child sexual attitudes outcomes of black South African youth, and this is the first study to examine the role of neurocognitive functioning in South African attitudes. This study tested a model that built on previous literature to determine mechanisms by which family-based HIV-prevention interventions are successful among black South African families. A strength of the model was the inclusion of both parent and child factors as potential mechanisms. The results of this study provide insight into improving and further tailoring interventions for black South African families, with particular focus on communication practices and sexual attitudes. For example, focusing on disparities in sexual attitudes between parents and children may enhance the intervention. The potential long-term impact of similar interventions on child outcomes should be explored further. In particular, the effects of family-based interventions on child attitude outcomes may not be fully observed until more time has passed, as parents improve communication skills with practice and youth accumulate knowledge and experience.

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APPENDICES

Appendix A.1: Measures

Parent Report

HOUSEHOLD ECONOMIC AND SOCIAL STATUS INDEX (HESSI)

I am going to start of by asking you question about you, your family, and where you live.

1. What year were you born? _____
2. In what province were you born?
3. Which ethnic group do you best identify with?
 - a. Zulu
 - b. Xhosa
 - c. Sotho
 - d. Tswana
 - e. Pedi
 - f. Ndebele
 - g. Swati
 - h. Tsonga
 - i. Venda
 - j. Other _____
4. What is your marital status
 - a. Never married and not living with a partner
 - b. Married and not living with a partner
 - c. Widowed
 - d. Never married and living with partner
 - e. Married and currently living with partner at least four nights per week
5. Now I will ask you some questions about each of the people that live in your household.

<u>First Name</u>	<u>Age</u>	<u>Gender</u>	<u>Highest grade</u>	<u>Relationship to target child</u>	<u>Relationship</u>
			<u>In school</u>		<u>to caregiver</u>

				<u>Primary caregiver</u>	
				<u>Target Child</u>	

6. In what type of house/home do you live?
- None, homeless
 - Shack
 - Hostel
 - Room, garage
 - Flat, cottage
 - Home shared with other family(ies)
 - Home that is not shared with other families
7. Does your home have
- A Separate Kitchen? No Yes
 - A Separate Bathroom? No Yes
8. In your home how many separate rooms are there just for sleeping?
- 0 1 2 3 4 or more
9. What type of toilet facilities does your home have?
- None
 - Pit or Bucket
 - Outside flush toilet
 - Inside flush toilet
10. Do you own or rent a home?

Note that this measure will inquire about communication over the previous six months for the six month follow-up assessment.

COMMUNICATION ABOUT SEX TOPICS – Parent Questions

Items:

Next you will be asked whether you and your child have ever talked about different things and what kinds of things you might have said to him or her. Some of the topics are sensitive topics, like sex. Remember, your answers are private and will not be shown to anyone.

Never = 1

Once or twice = 2

Lots of times = 3

- 1) How many times have you ever talked to TC about dating or going out with a boy/girl?
IF YES, When you talked about dating, have you ever told TC
 - 1a) S/he is not allowed to date now?
 - 1b) It's OK to date now?
 - 1c) S/he can only go on group dates or double dates?
 - 1d) S/he can only date boys/girls that you know?
- 2) How many times have you ever talked to TC about puberty or physical development?
 Puberty is how TC's body will change when s/he gets older.
- 3) How many times have you ever talked to TC about what sex is?
- 4) How many times have you ever talked to TC about reproduction or how babies are made?
IF YES, When you talked about reproduction, have you ever told TC
 - 4a) A baby can be made when a male and female have sex?
 - 4b) A female can get pregnant the first time she has sex?
- 5) How many times have you ever talked to TC about what to do to keep from getting pregnant?
IF YES, Have you ever told TC
 - 5a) S/he can keep from getting pregnant by not having sex?
 - 5b) S/he can keep from getting pregnant by using birth control?
- 6) How many times have you ever talked to TC about abstinence or waiting to have sex?
IF YES, Have you ever told TC
 - 6a) Wait until s/he is older or more grown up before having sex?
 - 6b) S/he should not have sex now?
 - 6c) S/he should wait until s/he is married before having sex?
 - 6d) S/he should wait until s/he is finished school before having sex?

7) How many times have you ever talked to TC about condoms?

IF YES, Have you ever told TC

- 7a) That condoms give protection against diseases and pregnancy?
- 7b) That s/he should not need condoms because s/he should not be having sex?
- 7c) That s/he should use condoms if you have sex?
- 7d) That s/he should not use condoms because they don't work?
- 7e) How to get and use a condom ?
- 7f) That s/he should carry condoms with her/him?

8) How many times have you ever talked to TC about HIV/AIDS?

IF YES, Have you ever told TC

- 8a) How a person gets AIDS?
- 8b) Only certain people get AIDS ?
- 8c) That you can protect yourself from AIDS by not having sex?
- 8d) That you can protect yourself from AIDS by using a condom when you have sex?

9) How many times have you ever talked to TC about other sexually transmitted diseases or STDs other than HIV or AIDS? Some STD's are syphilis, chlamydia, or the clap.

Responsiveness to Sex Communication: Parent Report

Items:

*The next series of questions ask about how you talk to your child about different sex topics. By **sex topics**, we mean all the topics we just asked you about: puberty, when to start having sex, HIV/AIDS, condoms, birth control, sexual orientation, reproduction, and so on.*

Now, thinking about all of these topics about sex, use the scale below to indicate how much you agree with each statement by saying how true the statement is for you.

1 = not at all true

2 = a little true

3 = very true

1. If my son/daughter asked me a question about a sex topic I would get mad or angry. (R)
2. If my son/daughter asked me a question about a sex topic I would be glad s/he asked.
3. If my son/daughter asked me a question about a sex topic I would answer his/her question.
4. If my son/daughter asked me a questions about a sex topic I would tell him/her that s/he didn't need to know the answer. (R)
5. I feel comfortable talking to my son/daughter about sex topics.
6. My son/daughter is not allowed to ask me questions about sex topics. (R)
7. My son/daughter feels comfortable talking to me about sex topics.
8. I don't know enough about sex topics to talk to TC. (R)
9. I avoid talking to TC about sex topics because s/he might ask a question I don't want to answer. (R)
10. When I talk to TC about sex topics, I warn or threaten him/her about the consequences of sex. (R)
11. I know how to talk to TC about sex topics.
12. TC and I talk openly and freely about sex topics.
13. If I talk to TC about sex topics, he will think it's okay to have sex. (R)
14. I am doing or will do a good job telling TC what S/he needs to know about sex topics.
15. If TC talked to me about sex topics, I would think S/he was having sex. (R)
16. If I don't know the answer to TC question about a sex topic, I could find out.
17. I feel prepared to talk with TC about sex topics as S/he grows up.

[(R) indicates reverse-scored item]

18. TC is ready to begin learning about sex topics.
19. It's my job to make sure TC knows about sex.
20. It's the school's job to make sure TC knows about sex.
21. I wish my child's doctor would talk to me about my child's sexuality and how to deal with it.

22. Have you ever gotten information to help you understand or teach your child about sexuality?

Yes/No

23. *If yes*, where have you gotten info? List of choices, check all apply

- a. Other parents/friends
- b. Family members
- c. TV or movies
- d. Magazines
- e. Newspapers
- f. Child's school
- g. Child's Doctor
- h. Internet
- i. Library
- j. Telephone hotline
- k. Health department or organization
- l. Someone else

24. If you wanted information to help you understand or teach your child about sexuality, where would you get it (check all that apply)?

- a. friends or other parents
- b. Family members
- c. TV or movies
- d. Newspapers
- e. Magazines
- f. Child's school
- g. Child's Doctor
- h. Internet
- i. Library
- j. Telephone hotline
- k. Health department or organization
- l. Someone else

Attitudes About Sex

Items:

The next questions ask you about your attitudes about people having sex. Please read each sentence and tell us how true it is in your opinion. Remember, all your answers are private and will not be shown to anybody.

Not at all true = 1

A little true = 2

Very true = 3

1. People should have sex only if they are married.
2. It is all right for people to have sex before they are married.
3. Even if they are not married, it's OK for two people to have sex as long as they love each other.
4. Even if they are not married, it's OK for two people to have sex as long as they have known each other for a long time.

Next are some questions about teenagers and dating and sex. You will be asked some questions about adolescents of different ages. Please tell us your opinion by saying how true each statement is for you.

5. I think it is OK for adolescents ages 10-12 to have a boyfriend or girlfriend.
6. I think it is OK for adolescents ages 10-12 to go on a date alone with a boy or girl.
7. I think it is OK for adolescents ages 13-15 to have a boyfriend or girlfriend.
8. I think it is OK for adolescents ages 13-15 to go on a date alone with a boy or a girl.
9. Adolescents ages 13 to 15 should not have sex under any circumstances.
10. I think it is OK for adolescents ages 13-15 to have sex as long as they protect themselves from STDs and pregnancy.
11. I think it is OK for adolescents ages 16 to 18 to have a boyfriend or girlfriend.
12. I think it is OK for adolescents ages 16 to 18 to go on a date alone with a boy or a girl.
13. Adolescents ages 16 to 18 should not have sex under any circumstances.
14. I think it's OK for adolescents ages 16 to 18 to have sex as long as they protect themselves from STDs and pregnancy.
15. If teens have sex, it is important that they use condoms.
16. If teens have sex, it is important that they use birth control.
17. If teens have sex, they should use condoms even if the girl uses birth control.
18. If teens have sex, they should use condoms even if the two partners know each other very well.

The next questions ask about how important it is for teens to know certain things before they have sex. Please tell us how important you think much you agree with each sentence by saying how true that sentence is for you.

19. It's important that teens know how to get and use birth control before they begin to have sex.
20. It's important that teens know how to get and use a condom before they begin to have sex.
21. It's important that teens be able to talk about sex with an adult before they begin to have sex .
22. It's important that teens be able to talk with their partner about pregnancy and diseases like HIV before they begin to have sex.
23. It's important that teens understand how a female gets pregnant before they begin to have sex.
24. It's important that teens know how alcohol and drugs can affect their ability to make decisions before they begin to have sex.

Next you will be asked questions about your attitudes about your child's behavior when it comes to dating and sex. We realize that some questions may not be so appropriate for your child, but we have to ask everyone the same questions. Please answer each as best you can.

25. I think it is OK for TC to have a boyfriend now.
26. I think it is OK for TC to go on a date by her/himself with a boy/girl now.
27. I think TC should wait until s/he is older to have sex.
28. I think TC should wait until s/he is in love to have sex.
29. I think TC should wait until s/he is in a committed relationship to have sex.
30. I think TC should wait until s/he is married to have sex.
31. I think TC should use condoms if s/he has sex.

Instructions: Now you will be asked some questions about what you think about teaching teens about sex. Please answer each as best you can.

32. When it comes to sex, teens should be taught only about abstinence or not to have sex.
33. Teens having sex is against my moral or religious beliefs.
34. The main problem with teens having sex is the negative consequences that can result, like diseases and pregnancy.
35. Teens should be taught about condoms and birth control before they have sex.
36. Teaching teens about condoms and birth control is just giving them permission to have sex.
37. Teaching teens about condoms and birth control will make them want to have sex.

Child Report

COMMUNICATION ABOUT SEX TOPICS – Child Questions

Items:

Next you will be asked whether you and your parent have ever talked about different things. Some of them are sensitive topics, like sex. Remember, your answers are private and will not be shown to anyone. If you don't understand a question, please call a Parents Matter staff.

Press "Next Question" to go on.

If asking co-parent questions

You will be asked each question first about the parent in the program with you, and then about another adult who helps raise you. Press "Next Question" to go on.

We've never talked about it1

We've talked about it once or twice2

We've talked about it lots of times.....3

- 1) How many times has your **parent** ever talked to you about **dating or going out with a boy/girl?**
Skip next question if no co-parenting questions are to be asked
- 2) How many times has your **co-parent** ever talked to you about **dating or going out with a boy/girl?**
- 3) How many times has your **parent** ever talked to you about **how your body will change when you grow up or get older?** This is called **puberty.**
Skip next question if no co-parenting questions are to be asked
- 4) How many times has your **co-parent** ever talked to you about **how your body will change when you grow up or get older?** This is called **puberty.**
- 5) How many times has your **parent** ever talked to you about **what sex is?**
Skip next question if no co-parenting questions are to be asked
- 6) How many times has your **co-parent** ever talked to you about **what sex is?**
- 7) How many times has your **parent** ever talked to you about **waiting to have sex?**
This is called **abstinence.**
Skip next question if no co-parenting questions are to be asked
- 8) How many times has your **co-parent** ever talked to you about **waiting to have sex?** This is called **abstinence.**
- 9) How many times has your **parent** ever talked to you about **how babies are made or where babies come from?** This is called **reproduction.**
Skip next question if no co-parenting questions are to be asked
- 10) How many times has your **co-parent** talked to you about **how babies are made or where babies come from?** This is called **reproduction.**

- 11) How many times has your **parent** ever talked to you about **what to do to keep from getting pregnant/getting a girl pregnant?**
Skip next question if no co-parenting questions are to be asked
- 12) How many times has your **co-parent** ever talked to you about **what to do to keep from getting pregnant/getting a girl pregnant?**
- 13) How many times has your **parent** ever talked to you about **condoms?**
Skip next question if no co-parenting questions are to be asked
- 14) How many times has your **co-parent** ever talked to you about **condoms?**
For condom question, add "I don't know what condoms are" as a response.
- 15) How many times has your **parent** ever talked to you about **HIV or AIDS?**
Skip next question if no co-parenting questions are to be asked
- 16) How many times has your **co-parent** talked to you about **HIV or AIDS?**
For HIV/AIDS questions, "I don't know what HIV/AIDS is" has been added as a response.
- 17) How many times has your **parent** ever talked to you about other diseases you can get when you have sex? This are called **sexually transmitted diseases or STDs.** Some STD's are syphilis, chlamydia, or the clap?
Skip next question if no co-parenting questions are to be asked
- 18) How many times has your **co-parent** ever talked to you about other diseases you can get when you have sex? This are called **sexually transmitted diseases or STDs.** Some STD's are syphilis, chlamydia, or the clap?
For STD questions, "I don't know what STDs are" has been added as a response.

Communication about Sex Topics: Child Report

Items:

Next you will be asked to think about what it would be like to talk to your parent about different sex topics. By sex topics, we mean many of the topics we just asked you about including what sex is, how your body changes when you get older, how babies are made, how to keep from getting pregnant, diseases you can get when you have sex, HIV/AIDS, and condoms. Now think about asking the parent that it in this program with you a question about sex, and answer each item, Yes, No, or Don't Know.

Now think about asking your parent that is in the program with you a question you had about a sex topic when you answer the next question. Now press "Next Question" to go on.

0=No

1=Yes

2=Don't know

1. If I asked, my **parent** would get mad or angry. (R)
2. My **parent** would be glad I asked.

*Keep thinking about asking your **parent** a question you had about a sex topic.*

3. If I asked, my **parent** would answer my question.
4. If I asked, my **parent** would tell me I didn't need to know the answer. (R)

*Keep thinking about asking your **parent** a question you had about a sex topic.*

5. I would be comfortable asking my **parent** a question.
6. I would be afraid to ask my **parent** because I am not allowed. (R)

[(R) indicates reverse scored item]

Now we want you to think about what it would be like to talk to the other adult who helps raise you about different sex topics. Remember, by sex topics we mean topics like what sex is, how your body changes when you get older, how babies are made, how to keep from getting pregnant, diseases you can get when you have sex, HIV/AIDS, and condoms.

OK, now think about asking this other adult a question about sex, and answer the each item, Yes, No, or Don't Know. Press "Next Question" to go on.

7. If I asked, my **co-parent** would get mad or angry. (R)
8. My **co-parent** would be glad I asked.

*Keep thinking about asking your **co-parent** a question you had about a sex topic.*

9. If I asked, my **co-parent** would answer my question.
10. If I asked, my **co-parent** would tell me I didn't need to know the answer. (R)

Keep thinking about asking your co-parent a question you had about a sex topic.

11. I would be comfortable asking my **co-parent** a question.
12. I would be afraid to ask my **co-parent** because I am not allowed. (R)

[(R) indicates reverse scored item]

Now we'd like to know if you ever had a question about a sex topic.

13. Have you ever asked your **parent** about a sex topic? Yes No I Don't Know
14. (*If enough contact with co-parent*) Have you ever asked your **co-parent** about a sex topic? Yes No
I Don't Know

Next are a few questions about how kids learn about sex and how you think kids should learn about sex.

*1=Not at all true
2=A little true
3=Very true*

15. I feel that I am ready to learn about sex.
16. My **parent** is the best person to ask about sex.
17. (*If enough contact with co-parent*) My **co-parent** is the best person to ask about sex.
18. It's my **parent's** job to make sure I know about sex.
19. (*If enough contact with co-parent*) It's my **co-parent's** job to make sure I know about sex.
20. It is my **school's** job to make sure I know about sex.
21. Who would you go to first if you have a question about sex (check one)?
 - a. Mother
 - b. Stepmother
 - c. Father
 - d. Stepfather
 - e. Brother
 - f. Sister
 - g. Grandparent
 - h. Aunt
 - i. Uncle
 - j. Friend
 - k. Boyfriend/Girlfriend
 - l. Minister/Priest
 - m. Teacher
 - n. Doctor
 - o. Someone else
 - p. No one

22. Where do you get most of your information about sex? Pick one.
- a. Parents
 - b. Other adults
 - c. Brothers or sisters
 - d. Close friends
 - e. Kids at school
 - f. TV or movies
 - g. Magazines
 - h. School
 - i. Doctor or nurse
 - j. Internet
 - k. Music
 - l. Somewhere else
 - m. Nowhere
23. Where else do you get **any** information about sex, even if it's just a little? Check as many boxes as you want.
- a. Parents
 - b. Other adults
 - c. Brothers or sisters
 - d. Close friends
 - e. Kids at school
 - f. TV or movies
 - g. Magazines
 - h. School
 - i. Doctor or nurse
 - j. Internet
 - k. Music
 - l. Somewhere else
 - m. Nowhere

Items:

The next questions ask you about your attitudes about people having sex. Please answer each question as best you can. Remember, all your answers are private and will not be shown to anybody.

Press "Next Question" to go on.

1. Attitudes about having sex

Not at all true = 1

A little true = 2

Very true = 3

2. Questions 1-4 will be asked of all kids

1. People should have sex only if they are married.
2. It is all right for people to have sex before they get married.
3. Even if they are not married, it's OK for two people to have sex as long as they love each other.
4. Even if they are not married, it's OK for two people to have sex as long as they have known each other for a long time.

3. Ask 5-10 only to kids who have not had sex and have thought about sex at least once

4.

The next questions ask you about what might happen if you were to have sex. Please pick the answer that is most true for you.

Press "Next Question" to go on.

5. If I had sex I would feel bad about it.
6. If I had sex kids at school would think I'm cool.
7. If I had sex I would worry about getting a disease.
8. If I had sex, I would worry about getting AIDS.
9. If I had sex I would worry about getting pregnant/getting a girl pregnant.
10. If I had sex it might mess up my plans for school or a job.

5. Ask 11-16 only to children who have had sex

The next questions ask you how you felt after you had sex for the first time. Please answer each as honestly as you can. Press "Next Question" to go on.

- 11. I felt bad about having sex.
- 12. Because I had sex, kids at school think I'm cool.
- 13. When I had sex, I worried about getting a disease.
- 14. When I had sex, I worried about getting AIDS
- 15. When I had sex, I worried about getting pregnant/getting a girl pregnant
- 16. Having sex messed up my plans for school or a job

6. Attitudes about birth control, condoms and responsibility

7. Ask 17-22 only to kids who have ever thought about having sex or who have had sex

The next questions ask how important it is for teenagers to know certain things before they have sex. Please tell us how true each sentence is for you.

Press "Next Question" to go on.

Not at all true = 1

A little true = 2

Very true = 3

- 17. It's important that teens know how to get and use birth control before they begin to have sex.
- 18. It's important that teens know how to get and use a condom before they begin to have sex.
- 19. It's important that teens be able to talk about sex with an adult before they begin to have sex
- 20. It's important that teens be able to talk with their partner about pregnancy and diseases like HIV before they begin to have sex.
- 21. It's important that teens understand how a female gets pregnant before they begin to have sex.
- 22. It's important that teens know how alcohol and drugs can affect their ability to make decisions before they begin to have sex.