

## Community, Family and School-based Interventions for HIV/AIDS Prevention in African American Adolescents

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### Abstract

This article examined HIV/AIDS interventions targeted towards African American adolescents published between 1992 and 2006. Fourteen interventions met the inclusion criteria of which eight were community-based, three were family-based and three were school-based. The most common focus of interventions was in 6th through 10th grades which seems logical as the average age of initiating sexual intercourse among adolescents is 16 years and in African Americans 13 years. Most of the interventions were based on behavioral theories, with social cognitive theory being the most prevalent. Theory-based interventions were more effective than the one's that were not. The components of the interventions included culturally specific materials, African American facilitators, and gender sensitivity. HIV/AIDS knowledge, risk reduction strategies, behavioral skills, condom use, self-efficacy, decision-making and goal setting were the main foci of the interventions. Behavioral change was found in seven of the interventions. Recommendations for enhancing the success of these interventions are discussed.

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*Keywords: Adolescent, African American, Blacks, HIV/AIDS*

AIDS was first identified in the United States in 1981. Since then the epidemic has spread to every part of the United States and to all sectors of the society. It is thought that more than one million people are living with HIV in the United States and that more than half a million have died after developing AIDS (U. S. Department of Health and Human Services [USDHHS], 2004). American HIV surveillance data are not comprehensive so many statistics must be based on reports of AIDS diagnoses. In interpreting such AIDS statistics, it is important to remember that they do not correspond to new HIV infections. Most people live with HIV for several years before developing AIDS. At the end of 2004, the Centers for Disease Control and Prevention (CDC) estimated that 415,193 people were living with HIV/AIDS in the United States. The number of deaths among people with HIV/AIDS remained relatively stable in the period 1999 to 2003, before dropping slightly to an estimated 15,798 deaths in 2004 (USDHHS, 2004).

The HIV/AIDS epidemic in the United States has expanded to affect an increasing number of populations, with those in the African American community being one of the most severely affected. According to the U. S. Department of Health and Human Services (2004) HIV/AIDS Surveillance Report 2004, African Americans are 10 times more likely to be infected with HIV/AIDS than Whites, 3 times more than Hispanics, and the disparity is said to be increasing. It is necessary to define the term HIV/AIDS to include persons with a diagnosis of HIV infection (not AIDS), a diagnosis of HIV infection and a later diagnosis of AIDS, or concurrent diagnosis of HIV infection and AIDS (Centers for Disease Control and Prevention [CDC], 2006).

In 2002, HIV/AIDS was among the top three causes of death for African American men 25 to 54 years and the number one cause of death for African American women 25 to 34 years (USDHHS, 2004). According to the 2000 United States Census, African Americans make up 12.3% of the population but an estimated 50% of

the new HIV/AIDS diagnoses. Adult African Americans are not the only ones being affected. African Americans who are twenty-five and under make up 61% of the estimated 18,849 Americans newly diagnosed during the 2001 to 2004 time period (USDHHS, 2004). Adolescents only represent 1% of all reported HIV/AIDS cases in the United States (CDC, 2006). However, according to Jemmott, Jemmott, and Fong (1992), this statistic may be misleading as adults in their 20's constitute 20% of all reported HIV/AIDS cases and most HIV/AIDS diagnoses take several years to occur. The overall infection rate amongst young black adults is 4.9 per 1,000 people, which compares to a rate of 0.22 per 1,000 people in all other racial groups (CDC, 2006).

Race and ethnicity are not themselves risk factors, but are related to other determinants of health. The HIV/AIDS Surveillance Report 2004 states that behavioral factors including risky sexual practices, drug use and abuse are the leading causes of infection in African Americans. It has been found that the average age of sexual intercourse among adolescents is 16 years; however, the mean age for sexual intercourse among African American youths is 13 years (USDHHS, 2004). Injection drug use is the second leading cause of HIV/AIDS in African American women and third in African American men (USDHHS, 2004). The sharing of needles is one risk attributed to infection. Also, there is an increase in high-risk behaviors, such as unprotected sex, when under the influence of drugs and/or alcohol (Williams, 2003).

Sexually transmitted diseases are also a risk factor for acquiring HIV/AIDS (Milhausen, Crosby, Yarber, DiClemente, Wingood, & Ding, 2003). According to the Sexually Transmitted Disease Surveillance 2004 by the United States Department of Health, the highest rate of STDs was found in African Americans. In 2004, the rate of Chlamydia among African-American females in the United States was more than seven times higher than the rate among White females (1,722.3 and 226.6 per 100,000, respectively). The Chlamydia rate among African American males was more than 11 times

higher than that among White males (645.2 and 57.3 per 100,000 population, respectively). In 2004, 69.6% of the total number of cases of gonorrhea reported to the CDC occurred among African Americans. In 2004, 41% of all cases of syphilis reported to the CDC occurred among African Americans.

Socioeconomic issues are also known to exist in the African American population. In 1999, nearly one in four African Americans was living in poverty. A higher HIV/AIDS incidence has been associated with lower income (Williams, 2003). Other determinants include inadequate knowledge, poor health attitudes, myths and misconceptions, as well as lack of education and prevention outreach programs (Williams, 2003). Williams also states that distrust in the formal health care system by African Americans can be limiting prevention and treatment options.

To reduce these risk factors and the incidence of HIV/AIDS in the African American population, a focus on interventions is necessary. Funding for these communities has dramatically increased from \$11 million in 1988 to \$137 million in 1999. In the last year alone, funding for African American prevention programs grew by more than 50% (CDC, 2006). Stroman (2005) found that the single most important factor in the success of these interventions is initiation of community planning. Communication and collaboration must be looked at as an integral component of these interventions. Marcus et al. (2004) further supports the evidence in the importance of collaboration amongst health educators, church member stakeholders and university investigators.

One of the most common arguments cited by Jemmott et al. (1992) against HIV/AIDS education and prevention programs for adolescents has been that just exposing them to information about sex will encourage them to be sexually active. Research has shown that the opposite is true, with those participating in interventions to be less likely to engage in sexual activity and those that did engage in sexual activity were more likely to use protection. Recent studies provide evidence that HIV/AIDS prevention interventions have a

greater impact when focusing on a combination of factors. Knowledge, attitudes, perceived risks, skill-building and self-efficacy all need to be addressed in order to make an impact (Rotheram-Borus, Gwadz, Fernandez, & Srinivasan, 1998; Steers, Elliott, Nemiro, Ditman, & Oskamp, 1996; Stevenson, Davis, Weber, Weinman, & Abdul-Kabir, 1995). DiClemente et al. (2004) also notes the importance of utilizing theoretically derived interventions in order to successfully adopt the protective sexual behaviors among adolescents.

It is in this context that the purpose of this study to examine existing HIV/AIDS interventions targeted towards African American adolescents. Based on this assessment recommendations for developing such interventions will be developed.

### **Methods**

In collecting the materials for this study, a search of CINAHL, ERIC, Gender Studies, and MEDLINE databases was carried out for the time period of 1992-2006. Search terms included: HIV/AIDS, African American, Blacks, adolescents and intervention. The inclusion criteria for the studies were (1) focus on adolescents as opposed to general African American population; (2) limited to heterosexual populations; (3) publication in the English language; (4) publication in the time period 1992-2006; (5) location of the study in the United States (6) those not diagnosed with HIV/AIDS. Exclusion criteria included publications with a focus on adult populations, homosexual populations, those living with HIV/AIDS, publications not written in the English language, publications before the year 1992, and studies conducted outside of the United States. A total of 14 studies met the criteria.

### **Results**

Many types of interventions exist, however those which are represented in the following results include behavioral and social interventions. Behavioral interventions are those which are aimed to change individual behaviors only. Social interventions also attempt to change individual behaviors but additionally attempt to influence social and peer norms (Damond,

Breuer, & Pharr, 1993). There are many different modes of applying these interventions including community-based, family-based and school-based programs, which are represented in the following 14 interventions that are discussed in this paper and summarized in Table 1 ([Appendix A](#)). These have been arranged by mode of application of the intervention and then chronologically as published in the literature.

### **Community-based Interventions**

The first community-based intervention is the ARREST (AIDS Risk Reduction Education and Skills Training) intervention by Kipke, Boyer, and Hein (1993). This was designed in 1989 and evaluated in a group of inner-city African-American (36%) and Latino adolescents from New York City. The age of participants ranged from 12 to 16 years, with the mean age being 13.8 years. Participants (n = 87) were recruited from community-based after-school programs. The racial mix of the participants reflected the ethnic composition of the neighboring communities from which the participants were recruited. The intervention was designed around two health theories: Health Belief Model and Social Learning Theory. The intervention had several goals: to provide youth with information about HIV transmission and prevention; instruction and demonstration on how to purchase and properly use condoms with nonoxynol-9 spermicide; instruction on how to evaluate their level of risk and identify situations that are associated with risk behaviors; decision-making, communication and assertiveness training to help youth learn how to talk with friends and sexual partners about prevention and risk reduction; to establish peer groups that will support and encourage HIV prevention and risk reduction. Role play assessment techniques were used to assess participants' decision-making, assertiveness, and communication skills throughout the three 90-minute intervention sessions. Participants were also given take-home exercises each session to be discussed at the following session. Major findings of adolescents in the ARREST group include: there was a significant increase in knowledge,  $t=4.19$ ,  $p<0.001$ , and perception that adolescents are at risk for becoming infected,  $t=2.90$ ,  $p<0.01$ , and a significant decrease in negative attitudes about

AIDS,  $t=1.37$ ,  $p<.05$ . Also those in the ARREST group were observed to have increased ability to give a reason for refusing to engage in risk-related activities and proposing alternative lower-risk activities. The authors acknowledge the fact that although knowledge and attitudes about HIV transmission and prevention increased favorably, there was no change in self-efficacy or participation in risk-related sexual behaviors. There was no follow-up, post-test information was taken right away.

The second intervention in this category is the one by St. Lawrence, Brasfield, Jefferson, Alleyne, and O'Bannon (1995) who conducted Project B.A.R.T. (Becoming a Responsible Teen). The project sampled adolescents from a local community health center ( $n=246$ ). The average age was 15 years and 72% of the adolescents were female. The intervention was based on the Social Learning Theory and placed an emphasis on participants' informational needs, motivational influences and behavior. To increase self-efficacy, the intervention included information, skill training, peer education and role plays during the eight weekly education and behavioral skill sessions which were 90 to 120 minutes in length. The sessions each had a specific focus: AIDS education, sexual decisions and values, technical competency skills, social competency skills, cognitive competency skills, social support and empowerment. The control group received the first session on AIDS education. Two co-facilitators, a male and a female, led the sessions in a small group format. A year later, those participating in the intervention group who were not sexually active had significantly later rates of onset for sexual activity than non-sexually active adolescents in the comparison group. Also those who completed the intervention demonstrated greater condom use and significantly lower frequency of unprotected intercourse than those in the comparison group, 11.5% versus 31.1%,  $p<.01$ . This study proved that change can be brought about with relatively long standing effects.

The third community-based intervention is by Gillmore, Morrison, Richey, Balassone, Gutierrez, and Farris (1997) who reached out to 396 adolescents, ages 14 to 19 years, from either

an urban county juvenile detention facility or an urban public health clinic. The intervention utilized a skill-based training in communicating and negotiating condom use with partners. There were three different modes of information transmission: (a) comic book (intended to serve as a control group); (b) videotape and comic book; (c) group skills training, videotape and comic book. The duration of each component was different. The comic book was a 16-page book containing basic information on STDs, attempted to alter misconceptions about STDs and negative beliefs about condoms, instructions on how to use a condom, communication skills, where to get condoms, testing of STDs and a list of resources. The videotape was 27 minutes long. The group skills intervention was split into two 4-hour sessions, separated by two to three days. A three and six month follow-up was conducted. There were very few significant differences among interventions in either the clinical or detention sample. There was no impact on behavioral outcomes such as the number of sexual partners in the past three months, condom use, or refusing sex without a condom.

The fourth community-based HIV risk-reduction intervention is Focus on Kids (FOK) which focused on peer influence. This was conducted by Fang, Stanton, Li, Feigelman, and Baldwin (1998) in the spring of 1993 in a large Eastern city. Participants, ages nine to fifteen years, were identified from nine recreation centers associated with three public housing developments. The intervention was to be delivered to naturally formed friendship groups, so only groups of friends rather than single individuals could be enrolled. The intervention was evaluated through a randomized control trial. There were 76 friendship groups ( $n = 382$ ) who were split into an intervention group and a control group. Using the premise of the Social Cognitive Theory and Protection Motivation Theory, the authors attempted to reduce risk behaviors for HIV/AIDS through the use of peer influence through friendship groups. The authors wanted to determine whether the similarity of behaviors among group members persists over time and whether the similarity is enhanced through a risk-reduction intervention. The

intervention was made up of eight weekly meetings (seven 1½ hour sessions conducted in the nine participating recreation centers and one daylong session conducted in a rural campsite). The groups were led by a pair of interventionists, the majority being African American. At least one of the two matched the gender of the friendship group. The intervention focused on decision-making with regard to abstinence and condom use. Participants developed community projects and intervention messages with specific target audiences in mind. A series of six monthly booster sessions were held following completion of the intervention trial and also at 15 months post intervention. Youth were invited to participate in a booster consisting of intervention reinforcement activities consisting of presentations, discussions, and games. The results showed that youth within groups were more similar compared to youth between groups with respect to sexual behaviors, expectations, and feelings. The intervention was effective in increasing condom use among sexually active youth, condom-use rates were 21% higher compared to control youth,  $p < .05$ . The results support the importance of peer groups on influence of long-term risk and protective sexual behaviors and perceptions. Evidence also suggests that the intervention may have been particularly effective among groups with a low prevalence of risk behavior at baseline.

The fifth intervention is by Rotheram-Borus and colleagues (1998) who implemented an HIV intervention in New York City. They recruited participants from the Door, a community-based agency which serves high-risk youth from local neighborhoods. Participants ( $n = 151$ , 53% African American) were randomly assigned to one of three groups: a) seven sessions of 1½ hour each, b) three 3 ½ hour sessions, and c) no sessions. The average age of the participants was 18 and in the tenth grade. Using cognitive behavioral intention the authors conducted baseline interviews assessing personal risk, social norms, outcome expectancies, self-efficacy, and behavioral skills. The participants were then split into the three groups. The content of each intervention condition included knowledge of HIV, social cognitive factors,

outcome expectancies, perceived risk of HIV, self-efficacy, negotiation skills, condom use and goal setting. Each session included a focused review of personal successes and ended with compliments shared among group members. Two facilitators co-led the groups and at least one of those facilitators was African American or Latino, and there was always one male and one female. The authors found that the number of sexual partners among those who attended the seven-session condition was significantly lower than among those who attended the three-session condition,  $F(9, 67) = 10.54$ ,  $p = .02$ . The results agree with the learning theory strategy of spacing intervention activities. When adolescents received approximately the same dose of an intervention, significant reductions in sexual risk were primarily found only for those who received the intervention spaced over seven sessions. Youths who received the same information spread over only three sessions did not change their sexual-risk behaviors.

The sixth intervention has been by Stephens and colleagues (1998). This was considered to be a pilot study, the intervention attempts to utilize hip-hop music in adolescents as the cultural entry point to this population in hopes to enhance the learning process. The use of hip-hop music can help the listener to personalize the message attached to the lyrics. The premise is that the lyrics are culturally sensitive and that the adolescents were more likely to listen to the songs after the intervention, thereby increasing the exposure to the information. During four 1½ hour small group sessions, participants would receive information on condoms, consistent condom use and sexual communication, as well as the messages they hear that relates to risky sexual practices. HIV positive peer educators ran the small groups. Significant difference were found with respect to health self-efficacy,  $F(2, 47) = 9.81$ ,  $p < .001$ . According to the authors and the supportive findings, these culturally explicit messages could be just the way to target at-risk populations.

The seventh intervention has been by DiClemente and colleagues (2004) who implemented a randomized control trial of 522

sexually experienced African American girls between the ages of 14 and 18 years old. The participants were recruited from four community health centers in Alabama. The intervention was based upon Social Cognitive Theory and the Theory of Gender and Power. An emphasis was placed on ethnic and gender pride, HIV knowledge, communication, condom use skills, and healthy relationships. The intervention group received this information during four 4-hour sessions implemented on consecutive Saturdays. The control group received the same duration, four 4-hour sessions on consecutive Saturdays, but with information on exercise and nutrition. Role play and cognitive rehearsal were used to teach the information. The intervention was conducted by a trained African American female health educator and two African American female peer educators. The peer educators were responsible for demonstrating and in creating group norms that were supportive of HIV/AIDS prevention. Data was collected beginning in December 1996 and continued through April 1999 for the six and twelve month follow-up. Participants in the intervention reported using condoms more consistently, 75.3% versus 58.2% and a significance at the  $p=0.003$  level. Interventions for African American adolescent girls that are gender tailored and culturally specific can enhance HIV-preventive behaviors and skills.

The eighth intervention is by Marcus and colleagues (2004) who evaluated Project BRIDGE, a faith-based intervention to prevent substance abuse and risky sexual behaviors in middle school students, ages 13 to 14 years. Community-based participatory research was the premise of the program, which was comprised of four components: Life Skills Training, Spreading the Word, Choosing the Best, and a faith component which was woven throughout the other components as well. Facilitators included volunteers from the church population, with a majority being African American. They also worked with the team from the university which did consist of White students. The intervention first began in 1999 in Houston, Texas and lasted for three years. Participants included those adolescents who had already had at least one year of BRIDGE programming ( $n =$

34) and a comparison group from another local church ( $n = 27$ ). Results show that there was no difference in HIV/AIDS knowledge between groups, but there were practical differences at times addressing attitude towards HIV/AIDS which were not statistically significant,  $\chi^2 = 5.28, p=0.071$ . The BRIDGE students were more likely to talk to their parents/guardian  $\chi^2 = 6.91, p=0.032$  about questions and concerns. BRIDGE has positively affected the youth it serves (the goal of preventing drug use was met, which was not discussed in this review). However in terms of HIV/AIDS, there was not a significant finding regarding increase in knowledge, attitudes, or behaviors. It is important to note that the program was evaluated after the first year, and that each year targeted specific information, with the third year having a focus of sexuality. After the first year, the intervention was adapted to what the adolescents stated they would benefit from more, including peer groups.

### **Family-based Interventions**

The first family-based intervention is the American Red Cross HIV/AIDS education course for African American youth and families evaluated by Damond and colleagues (1993). This was completed in Los Angeles, California in late 1989 through early 1990. All youth were between the ages of 13 to 18 years. A stratified sample of 339 youth was randomly selected from the total youth population reached by the Los Angeles Red Cross chapter. Stratification was based on student ethnicity and location of the presentation. Four types of classrooms were reached: (a) predominantly African American, (b) predominantly Latino, (c) predominantly White, (d) mixed. The Theory of Reasoned Action was to develop this culturally specific prevention program with the goal of providing African American teens and their families sound, unbiased information about HIV/AIDS. The focus of the program was to enhance decision-making skills and promote behaviors that reduce one's risk for becoming infected with HIV. An emphasis was placed on life experiences rather than on statistics and fear messages. The instructors were trained to deliver messages in a nonjudgmental and culturally sensitive way. Of the 66 African American adolescents, 98% of them had African American

instructors. The course length ranged between one and two hours. Major findings of the program include: there was a significant increase in both knowledge,  $t(98) = 5.0$ ,  $p < .001$  and behavioral intent,  $t(98) = 3.81$ ,  $p < .0001$ ; students in ethnically homogeneous classrooms reported higher posttest knowledge scores than did those in more ethnically mixed classrooms,  $F = 23.18$ ,  $p < .0001$ . The authors conclude that overall youth's knowledge and behavioral intent scores improved after participation in the course. Interestingly, knowledge scores on pre and posttests were relatively high and behavioral intent scores were relatively low. Youth are capable of reporting the facts about HIV but are not likely to change their behaviors based on what they know. There was a greater impact on African Americans with respect to knowledge and attitudes in comparison to Latinos and Whites. This indicates that the more homogeneous the classroom, the more culturally specific the course could be. No behavior changes were significant and there was no long-term follow-up.

The second family-based intervention is the Parents Matter! Program, by Armistead and colleagues (2004) and is promoted by CDC. It targets families with children nine to twelve years old. The intervention uses components from many theories: Social Learning Theory, Problem Behavior Theory, Theory of Reasoned Action and Social Cognitive Theory. A sample of 1,128 African American families were assigned to one of three intervention groups in a community-based trial: the enhanced skills building group which was comprised of five three-hour sessions focusing on communication about sexuality education and sexual risk reduction; the brief skills building group which consisted of a single condensed session covering the same content as the enhanced intervention; and the general health (control), which was also a single session, however focusing on general health issues. Relative to the control group, the enhanced group had higher levels of parent-reported sexual communication,  $p < .01$  and parent-reported responsiveness,  $p < .01$  at all assessments following intervention. The enhanced and controls also differed on child-reported sexual communication,  $p < .01$  at post-

intervention, and child-reported responsiveness,  $p < .05$  at post-intervention and six-month follow-up, but not at 12-month follow-up. Through this intervention, it is observed that family-based prevention programs can help promote sexual communication between parents and pre-adolescent children and is associated with reduced sexual intentions, the primary predictor of initiation of sexual intercourse.

The third family-based intervention is by Dancy, Crittenden, and Talashek (2006). They used *The Mother/ Daughter Risk Reduction Intervention* (MDRR), a community-based family intervention for African American low-income adolescent girls, which trains mothers to be their daughters' primary HIV educators. The girls, in 4th to 10th grade with a median age of 12 years, were recruited from three sites in Chicago which had been targeted as communities with great needs. A total of 262 daughters participated and were divided into three groups: the MDRR, the MDHP (covered nutrition and exercise which included mothers as teachers) and the HERR (taught the same as the MDRR curriculum, but with health experts as the instructors). The intervention had several goals which were based on Bandura's self-efficacy, behavioral intentions and community-other-mothers (African American women who through modeling and support mentor non-biological children). The goal was to decrease daughter's report of sexual intercourse, increase HIV transmission knowledge and increase self-efficacy to refuse sex. Mothers were taught the information over a 12-week period. They were then responsible to teach a portion of the curriculum within the six weekly classes. Each class lasted two hours and was delivered in a group format. Mothers were required to attend each session, even if they were not teaching that day, in order to promote connectedness. The daughters in the MDRR had significantly higher HIV transmission knowledge (Mean = 25.10/22.66,  $p < .01$ ), self-efficacy to refuse sex (Mean = 1.69/1.43,  $p < .01$ ), intention to refuse sex (Mean = 3.31/2.81,  $p < .05$ ), and were less sexually active (Mean = .05/.14,  $p < .10$ ) than daughters in the intervention group. The intervention was effective in enhancing adolescent daughter's ability to protect them against HIV. When mothers are

provided with comprehensive and correct information about sexuality and responsible decision-making, they can help to deter their adolescent daughters' high-risk sexual behavior. Improving mother and daughter connectedness can be an effective intervention in itself.

### **School-based Interventions**

The first school-based intervention is by Jemmott, Jemmott, and Fong (1992). This was an AIDS risk reduction program with black male adolescents, in the 10th to 12th grade ( $n = 157$ , Mean age = 14.64 years). The intervention took place during October 1988 in a local school in Philadelphia, PA. The intervention attempted to answer the question whether those randomly assigned to an AIDS risk reduction intervention would have greater knowledge and less positive attitudes and intentions regarding risky sexual behavior than would those assigned to a control intervention on career opportunities. It was also examined whether risky sexual behaviors would decline in the intervention condition, relative to the control condition, during the three months after the intervention. Previously pilot tested materials that were deemed culturally and developmentally appropriate were used to reinforce learning and encourage active participation during the 5-hour intervention. Facilitators were educated and trained African American male and females. It was found that immediately after the intervention, participants had greater knowledge about AIDS,  $F(1, 151) = 19.58$ ,  $p < .0001$ , expressed less favorable attitudes toward risky sexual behaviors,  $F(1, 150) = 8.42$ ,  $p < .004$  and reported weaker intentions to engage in such behavior,  $F(1, 150) = 4.26$ ,  $p < .04$ . Three months after the intervention, the increase in knowledge, less favorable attitudes and weaker intentions remained similar to initial results. Also, participants in the AIDS condition reported engaging in less risky sexual behavior in the 3 months after the intervention,  $F(1, 135) = 6.48$ ,  $p < .01$ . So, those involved in the intervention had lower intentions of engaging in sexual behaviors which would increase their risk of contracting or spreading HIV and the effects were sustained over a three month period. There was no significant difference between male and female facilitators.

The second school-based intervention is by Workman, Robinson, Cotier, and Harper (1996) who implemented an HIV/AIDS intervention in African American and Latina females, ages 14 to 17, recruited from an inner-city all female parochial high school. They were randomly assigned to either the HIV/AIDS prevention group or a womanhood intervention, which was considered the control group. The intervention was based on the cognitive-behavioral theory and used modeling and skills training throughout the 12 weekly, 30-minute sessions. Significant ethnic differences were found, with African American adolescents reporting higher levels of sexual assertiveness and comfort in discussing AIDS prevention behaviors. Knowledge of HIV/AIDS was increased compared to the control group. There was no significant change in AIDS preventive behavior, but baseline levels were already quite high, and a high percentage of the sample was not yet sexually active (68%). Limitations of this intervention were noted, the follow-up period was only one week following the intervention, which did not allow sufficient time to observe long-standing behavior change.

The final school-based intervention is by Jemmott, Jemmott, and Fong (1998) who implemented the Spruce Adolescent Health Promotion Project in sixth and seventh grade students (Mean age = 11.8 years,  $n=659$ ) from schools serving low-income African Americans in Philadelphia, Pennsylvania. Participants were stratified by gender and age and randomly assigned to one of three interventions. The abstinence intervention stressed delaying sexual intercourse, the safer-sex intervention stressed condom use, and the control intervention concerned health issues unrelated to sexual behavior. Using the Social Cognitive Theory and the Theory of Reasoned Action, the intervention attempted to evaluate the effects of abstinence and safer-sex interventions when implemented by adult facilitators as compared with peer co-facilitators. The intervention consisted of eight 1-hour modules divided equally over two consecutive Saturdays. A follow-up was also included at three, six and twelve months. Major findings include the fact that those participants in the abstinence intervention were less likely to report having sexual intercourse in the three

months after the intervention than were control group participants (12.5% vs. 21.5%,  $p = .02$ ), but not at six or 12-month follow-up (17.2% vs. 22.7%,  $p=.14$ ; 20.0% vs. 23.1%,  $p=.42$ ). Individuals in the safer-sex intervention reported significantly more consistent condom use than did control group participants at three months,  $OR = 3.38$ , with a 95% Confidence Interval, 1.25-9.16. The intervention had the strongest effect on those students with previous sexual experience. There were no differences in intervention effects with adult facilitators as compared with peer co-facilitators although the participants who had peer co-facilitators rated the intervention and facilitator more favorably. In conclusion, both abstinence and safer-sex interventions can reduce HIV sexual risk behaviors, but safer-sex interventions may be especially effective with sexually experienced adolescents and may have longer-lasting effects.

## Discussion

The purpose of this study was to appraise existing HIV/AIDS interventions targeted towards African American adolescents published between 1992 and 2006. Based on a review of these 14 interventions, it is evident that there is a need for more interventions that specifically target the adolescent population, since the high-risk sexual behaviors have been found to be predisposing factors to HIV/AIDS. The age range of participants was from 9 to 19 years old, with a majority of the interventions focusing on 6th to 10th grade. It has been found that the average age of sexual intercourse among adolescents is 16 years; however, the mean age for sexual intercourse among African American youths is 13 years (CDC, 2004). Hence, the focus on 6th to 10th grade is quite logical. Further each intervention targeted a set age range and used the developmentally appropriate concepts for that specific level.

Community-based, school-based, and family-based interventions have all been found to be effective. Of the interventions found, eight were community-based, three were family-based and three were school-based. Of the community-based interventions four out of seven found significant behavior change (one did not assess). Family based interventions found significant

behavior change in one out of two interventions (one did not assess). Finally, school-based interventions were successful in changing behavior in two out of the three interventions.

Most of the interventions, 10 out of 14, were based on some behavioral theory. The Social Cognitive Theory was utilized the most and typically more than one theory was used. The other popular theories used were the Health Belief Model and Theory of Reasoned Action. The use of theory in planning interventions has been found to be more successful in an attempt to change behaviors (DiClemente et al., 2004). The results of these interventions support that argument. Of the three interventions that did not utilize a theory, or mention it, none of the three resulted in behavior change. Hence, it becomes mandatory for future interventions to reify behavioral theories.

The duration of the interventions varied a great deal comparing length of the session (1 to 5 hours), number of sessions (1 to 12) and time span the interventions were carried out over. Three of the interventions attempted to assess the difference of session duration on knowledge and behavioral changes. They found that the more frequent the intervention, for example seven versus three sessions with the same total instructional time (Rotheram-Borus et al., 1998) the intervention with seven sessions was more likely to see a behavior change. Hence, it can be said that if learning is spread out over a longer period of time then more effective behavior change occurs.

The content within each intervention appeared similar, just approached in different manners. The main information that was focused on included HIV/AIDS knowledge, risk reduction strategies, behavioral skills, condom use, self-efficacy, decision-making and goal setting to name a few. A majority of the interventions utilized role play, modeling, skills training with an emphasis on interaction. Other unique methods used were comic books, developing projects, and use of hip-hop music.

Varying approaches were evaluated to see the effectiveness on different cultures and genders.

Nine of the interventions were strictly geared towards African Americans. The goal of ethnic specific interventions includes specificity of cultural values and beliefs. There were three interventions that were female-only and one that was male-only; the other 10 were a combination of males and females. Gender specific interventions can lead to behavioral changes, as it allows the material to be tailored to gender beliefs and associated risk factors.

Most of the interventions relied on adult facilitators, however three relied on peer facilitators, and one relied on parental educators. The interventions that were most successful relied on African American facilitators. When the adolescents can relate to the facilitators, they are more likely to take the information to heart and follow through with the positive behaviors.

A majority of the interventions focused on individual level behavior change. One did attempt to use peer groups. The use of peer groups can be helpful in attempting to change the social norms. This intervention found that the similarity of behaviors among group members persists over time and the similarity is enhanced through a risk-reduction intervention (Fang et al., 1998). Evidence also suggests that the intervention may have been particularly effective among groups with a low prevalence of risk behavior at baseline.

Behavioral change was found in seven of the interventions. Of those seven, all but one had a longer follow-up, be it three, six or 12 months. Four of the interventions that did not see a significant behavior change did not attempt to do a long-term follow-up. Behavioral change cannot be measured the same day as the intervention. Significant amount of time needs to be given to see if the intervention really was effective in behavior change. Those that sustain a long-term behavior change are deemed to be the most successful interventions.

### **Limitations**

It is important to note the limitations of this review. This is a narrative review and not a quantitative meta analysis. Hence comment on aspects such as effect sizes, correlation coefficients and other quantitative measures

cannot be made. Further, the interventions included were limited to heterosexual populations and those not currently diagnosed with HIV/AIDS. Also, the articles must have been published in the English language, published between 1992 and 2006 and the location of study must have been in the United States. This precluded interventions from other countries especially from Africa.

### **Recommendations for Improving Interventions**

Even though there were varying types of interventions, those that were successful included certain components. Changing knowledge with regards to HIV/AIDS is important, but does not necessarily translate to positive behavioral changes. Common elements in the successful interventions included: adequate operationalization of theory, cultural sensitivity, gender sensitivity, interventions longer in duration (number of sessions) and those that included skills training.

Characteristics of the youth and the environment must be considered when decisions are made about how to teach African American Youth. Many of the interventions were developed around this culturally specific premise. Use of African American facilitators and appropriate materials can be beneficial in the outcome of behavior change. However, cost and feasibility must also be taken into consideration.

The use of theory in designing an intervention has been noted to be one of the stronger components of successful interventions (DiClemente et al., 2004). This review supports the fact that theory is important. However it is important to note, that stating one is using a theory is not enough. It must be thoroughly researched and all components of the theory must be integrated into the intervention for it to be most effective. It is also important to measure theoretical antecedents so that it can be identified what component of the theory works and to what extent.

Follow-up surveys and/or interviews are essential for measuring behaviors and the actual influence the program had on behavioral intent

(Damond et al., 1993). For the interventions which did not measure follow-up, it is impossible to truly know if increases in behavioral intent will actually transmit to real world experience. It can be difficult to get people to participate in follow-up. The use of incentives and great planning can help to decrease the attrition rate.

One common argument against AIDS education programs for adolescents and children has been that exposing them to information about sex will encourage them to engage in sexual activity. Many of the interventions counter that argument, those who received the safe-sex or HIV/AIDS intervention were less likely to engage in sexual activity, and those who did were more likely to engage in safer sexual activity (Jemmott et al., 1992). Safer-sex interventions may have longer effects (Jemmott et al., 1998). For very high risk groups, a friendship-based intervention may not be the most effective method of educating youth (Fang et al., 1998).

Trying to focus on more than one behavior change, such as drug use and sexual activity, may not be a good idea. In the intervention which took this approach, HIV/AIDS components were not found to be significant. However, it was also a faith-based program which focused primarily on the fact that AIDS was bad and used fear tactics to keep the

individuals from participating in risky sexual behaviors (Marcus et al., 2004). These are two factors that need to be looked at separately to see the implications.

Family-based prevention programs can help promote sexual communication between parents and pre-adolescent children and is associated with reduced sexual intentions, the primary predictor of initiation of sexual intercourse (Damond et al., 2004). Including either a strictly family approach or integrating that into another type of program may have beneficial results. Using parents as educators can also be cost effective.

### **Conclusion**

It is clear that providing information to at-risk adolescents on HIV/AIDS has improved knowledge about the effects and the behaviors that place them at risk. However, successful interventions are those that change behaviors. Through the reviewed interventions, we have seen that a variety of methods, strategies, and components have been utilized and deemed effective. The most important thing is that encouraging adolescents to adopt a behavior change goes beyond just educating. They must be exposed to interventions which are multi-faceted, theory-based, culturally appropriate, and time-intensive that enable them to own and personalize their risk of HIV/AIDS.

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## Appendix A

### Summary of HIV/AIDS interventions

First Author & Study	Year	Age/Grade & Population	Theory	Intervention Components	Duration	Major Findings
<b>Community based interventions</b>						
Kipke <i>ARREST</i>	1989	12-16 yrs. Inner-city African American & Latino adolescents	Health Belief Model Social Learning Theory	Evaluate risky behavior, resist peer pressure, information on HIV trans- mission  Prevent, instruct and demonstrate how to purchase and use condoms using role plays	Three (1 ½ hrs.) sessions	Increase knowledge (p<.001), perception of risk for infection (p<.01)  No change in self- efficacy or participation in risk-related sexual behaviors
St. Lawrence <i>Project BART</i>	1995	15 yrs./10 <sup>th</sup> grade Low-income African American adolescents	Social Learning Theory	Increase self- efficacy through skill training, peer education and role play	Eight (1 ½ - 2 hrs.) vs. One (2 hrs.) sessions	Later rates of onset for sexual activity  Greater condom use and significantly lower incidence of unprotected intercourse  Communication and negotiation skills also increased significantly at follow-up
Gilmore <i>Skill-based intervention on condom use</i>	1997	14-19 yrs. African American adolescents from urban public health clinics and juvenile detention facility	Health Belief Model	Skill-based training in communication and negotiating condom use	Two (4 hrs.) sessions separated by 2-3 days	No impact on behavioral outcome
Fang <i>Focus on Kids (FOK)</i>	1993	9-15 yrs. African American Adolescents- naturally formed peer groups	Social Cognitive Theory  Protection Motivation Theory	Reduce risk behaviors through the use of peer influence in naturally formed peer groups	Eight (1 ½ hrs.) weekly meetings  Monthly booster at 6 & 15 months	Increase in condom use, 21% higher (p<.05) Youths within groups were more similar compared to youth between groups
Rotheram- Borus  <i>The Door Community Center</i>	1998	10 <sup>th</sup> grade 53% African American adolescents	Cognitive Behavioral Intention	Baseline interviews assessing risk, social norms, etc. Focused review of personal successes	a) Seven (1 ½ hrs.) b) Three (3 ½ hrs.) c) none	Those participating in 7 sessions had significantly lower numbers of sex partners (p=.02)
Stephen	1996-1999		n/a	Using hip hop	Four (1 ½	Increase in self-

First Author & Study	Year	Age/Grade & Population	Theory	Intervention Components	Duration	Major Findings
<i>Hip Hop Music</i>		African American adolescents		music to enhance the learning process, culturally specific	hrs.) sessions	efficacy (p<.001)
DiClemente <i>Randomized Control Trial</i>	2004	14-18 yrs. African American adolescent girls	Cognitive-behavioral Theories	Focus on ethnic and gender pride	Four (4 hrs.) sessions	Condom use more consistent (p=.003)
Marcus <i>Project BRIDGE</i>	1999-2002	13-14 yrs. African American adolescents	No theory-used components of community-based participatory research	Life skills training, spreading the word, choosing the best all with a faith-based component	Program divided into 3 (1 yr.) components	Participants more likely to talk to parents (p=.032)  No significant difference in knowledge or attitudes
<b>Family-based interventions</b>						
Damond <i>American Red Cross HIV/AIDS Education Course</i>	1989-1990	13-18 yrs. African American youth & families	Theory of Reason-ed Action	Homogenous vs. heterogenous groups  Culturally specific  Enhance decision making skills  Focus on life experiences	One (1-2 hrs.) session	Increase in knowledge (p<.001)  Decrease in behavioral intent to participate in risky sexual behaviors (p<.0001)  Homogenous groups greater knowledge increase at post-test (p<.0001)
Armistead <i>Parents Matter!</i>	2004	9-12 yrs. African American families	Social Learning Theory  Theory of Reasoned Action  Social Cognitive Theory	Family-based communication on sex education and sexual risk reduction	Five (3 hrs.) vs. 1 (3 hrs.) session	Increase level of parent communication and responsiveness (p<.01)
Dancy <i>Mother/Daughter Risk Reduction (MDRR)</i>	2006	4 <sup>th</sup> -10 <sup>th</sup> grade African American low-income adolescent girls	Social Learning Theory	Community-based, trains mothers to be the primary HIV educators	Six (2 hrs.) weekly sessions	Increase in knowledge (p<.01), self-efficacy (p<.01)  Decrease in sexual activity (p<.10)
<b>School-based interventions</b>						
Jemmott <i>Male Adolescent Risk Reduction</i>	1988	10 <sup>th</sup> -12 <sup>th</sup> grade African American adolescent males	Theory of Reasoned Action	Utilize culturally and developmentally appropriate	One (5 hrs.) session	Increase in knowledge (p<.001)

First Author & Study	Year	Age/Grade & Population	Theory	Intervention Components	Duration	Major Findings
				materials		<p>Less favorable attitudes towards HIV (<math>p &lt; .004</math>)</p> <p>Weaker intentions to participate in risky sexual behaviors (<math>p &lt; .04</math>)</p> <p>Participated in less risky sexual behaviors at 3-month follow-up (<math>p &lt; .01</math>)</p>
Workman <i>School-based Intervention</i>	1996	14-17 yrs. African American & Latino adolescent girls	Social Cognitive Theory	Modeling skills training	12 (30 mins.) weekly sessions	<p>Increase in knowledge</p> <p>Behavior change could not be assessed due to short follow-up.</p>
Jemmott <i>Spruce Adolescent Health Promotion Project</i>	1998	6 <sup>th</sup> -7 <sup>th</sup> grade low-income African American adolescents	Social Cognitive Theory  Theory of Reasoned Action	<p>3 groups: abstinence, safer-sex and control</p> <p>Compare the effects of adult vs. peer facilitators</p>	Eight (1 hr.) modules on 2 consecutive Saturdays	<p>Abstinence intervention decreased sexual intercourse at 3-month follow-up (<math>p = .02</math>), but not at 6 or 12-month follow-up</p> <p>Safer-sex group had more consistent condom use at 3-month follow-up (<math>p = .01</math>)</p> <p>No difference with adult versus peer facilitators</p>