

# Risk and Protection for HIV/AIDS in African American, Hispanic, and White Adolescents

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## Abstract

*African-Americans and Hispanics are disproportionately affected by HIV/AIDS in the United States. HIV infection is often acquired during adolescence, a time when risky sexual behaviors are at their peak. This study explored relationships among selected risk factors, protective factors, and risky sexual behaviors among African-American, Hispanic, and White adolescents, from a sample of adolescents from the National Longitudinal Study of Adolescent Health. African-Americans and Hispanics were more likely to have sexual intercourse without the use of birth control than were Whites. African-Americans were more likely to have sexual behavior with multiple sexual partners than either Hispanics or Whites were, and African-Americans had higher self-esteem than did Hispanics and Whites. In order to develop culturally sensitive, effective interventions to prevent HIV/AIDS in adolescents, racial differences in risk and protective factors must be examined.*

**Keywords:** Add Health, adolescents, African-American, Hispanics, HIV/AIDS, protection, risky sexual behavior

## Introduction

African-Americans have the highest rates of AIDS (CDC, 2006a) in the United States. In 2005, African-Americans made up only about 12% of the United States (US) population, but made up 50% of the new AIDS cases (CDC, 2006b). Further, the most rapidly rising rates of both HIV and AIDS are among African-American adolescents and young adults (CDC, 2000). Among Hispanics, the rate of AIDS cases is higher than it is among Whites (U.S. Department of Health and Human Services, 2005). In 2002, Hispanics accounted for 13% of the total U.S. population, but they accounted for 18% of the diagnosed AIDS cases and 20% of the new AIDS cases (National Center for Health Statistics, 2005).

## Background and Significance

HIV is often contracted through risky sexual behaviors (CDC, 2005). Engaging in behaviors like sexual intercourse

without a condom, sexual behavior with multiple sexual partners, sexual intercourse while under the influence of drugs or alcohol, and sexual behavior in exchange for drugs or money, puts individuals at risk for HIV/AIDS. HIV infection is often acquired during adolescence, when risky behaviors are at their peak. According to the Center for Disease Control (2002), half of all new HIV infections occur in individuals under 25 years of age.

Risk factors associated with risky sexual behaviors among different racial and ethnic groups has been a topic of study for years. Illicit drug and alcohol use have been found to be associated with risky sex behaviors among African-American male adolescents (Jemmott & Jemmott, 1993). Similarly, Crocket, Raffaelli, and Shen (2006) found in a sample that was greater than 50% African-American and Hispanic, that early substance abuse was a risk factor for risky sex. Cooper (2002) in a review article suggests that the relationship between alcohol use and risky sex is not a simple one, and that among other things, racial differences in the relationship must be examined. Cox (2006) found that aspects of the maternal relationship associated with condom use by adolescents differed between White and African-American adolescents. Cohen, Farley, Taylor, Martin, and Schuster (2002) found that among African-American adolescents, the lack of supervision by parents after school hours was associated not only with sexual intercourse, but also with substance abuse by these adolescents.

Among those who have studied protective factors and risky sex behaviors, Peterson (2006) found that attachment to fathers is related to less sex risk for African-American girls. Others have also found that aspects of good adolescent/parent relationships were associated with fewer risky sex behaviors among Hispanic and African-American adolescents (Fasula & Miller, 2006; Markham, Tortolero, Escobar-Chaves, Parcel, Harrist, & Addy, 2003).

There are racial and ethnic differences in risk and protective factors associated with risky sex behaviors among

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different groups. These differences must be identified in order to design culturally sensitive interventions to help different groups avoid engaging in risky sex behaviors that may result in very negative health outcomes in the future.

### Theoretical Framework – Problem Behavior Theory

Problem Behavior Theory (PBT) is an approach to examining risk and protective factors for problem behaviors in adolescents and their health-compromising consequences (Bartlett, Holditch-Davis, & Belyea, 2005; Donovan, 1996; Jessor, 1992, 1998; Jessor & Jessor, 1977). Adolescent problem behaviors do not occur randomly. There are complex linkages between risk factors, protective factors, and problem behaviors and these linkages change over time. According to Problem Behavior Theory (PBT), attention problems, low self-esteem, and friends with deviant behaviors are risk factors; and assertiveness, and positive maternal and paternal-adolescent relationships are protective factors. Both risk and protective factors contribute to an individual's propensity to engage in or to avoid problem behaviors (e.g., risky sexual behaviors) in adolescence and to develop or to avoid health-compromising outcomes (Bartlett et al., 2005).

Demographic characteristics may be associated with risk factors, protective factors, and problem behaviors and may be useful for tailoring nursing interventions to particular at-risk adolescents. While it was understood that these racial groups are heterogeneous and should not be categorized as if they were homogeneous (Guthrie, 2007), the terms African-American and Hispanic were chosen in order to be consistent with the racial categories that were used in the original data set. More specifically, in this paper the term White means non-Hispanic White and African-American means non-Hispanic African-American. This study explored the relationships that included selected risk factors, protective factors, and risky sexual behaviors among African-American, Hispanic, and White adolescents. Risk factors based on PBT included low self-esteem and having few or no friends. Protective factors included maternal and paternal support. Risky sexual behaviors included sexual intercourse without a condom, sexual intercourse without the use of birth control, sexual behavior with multiple sexual partners, sexual intercourse while under the influence of drugs or alcohol, and sexual behavior in exchange for drugs or money.

### Methodology

#### Research Design

This present descriptive study used data from subjects in the National Longitudinal Study of Adolescent Health (Add Health), an ongoing federally funded study of health-related behaviors of adolescents (Udry, 1998). Begun in the mid-1990s, the Add Health study is a school-based study of adolescents who were in grades 7 to 12 when the study began. Information from multiple informants (adolescents, their parents, and peers) was collected using stringent data collection procedures. The original intent of the Add Health study was to explore the causes of

health-related behaviors with a special focus on the influence of the adolescents' social contexts. Given the amount and diversity of information collected on the subjects over time as well as the quality of the data collection procedures, the study offers a cost-effective way to study other problems as well. There have been more than 1,700 publications and presentations using the Add Health study data. The present study examined problem behaviors and the risk factors and protective factors for these problem behaviors within racial groups. Institutional Review Board approval was obtained prior to the original Add Health Study and prior to this secondary analysis of Add Health study data.

#### Sample

The sample used in this study was derived from in-school questionnaires that were obtained in the 1994-1995 school year, and from in-home interviews that were conducted in 1995 (Wave 1) and 1996 (Wave 2). Data from parents and peers were collected at Wave 1, and data from adolescents were obtained at Wave 1 and Wave 2. Only subjects with data from both waves were included in these analyses. The sample included 14,736 subjects with a mean age at Wave 1 of 15.8 years ( $SD = 1.6$ ). The age range was from 11.6 to 21.2 years of age. The gender of the participants in the sample was 49% boys and 51% girls. Whites comprised 53% percent of the sample, African-Americans comprised 22%, Hispanics comprised 17%, and others (e.g., Asians, Native-Americans) comprised 8%; race data were missing on less than 1%.

#### Measures

Risky sexual behavior variables were constructed from single questions and combinations of questions posed to the Add Health adolescents at each wave. Risky sexual behaviors included: sexual intercourse without a condom, sexual intercourse without the use of birth control, sexual behavior with multiple partners, sexual intercourse while under the influence of drugs or alcohol, and sexual behavior in exchange for drugs or money.

Maternal and paternal support variables were constructed from five items that asked participants:

- how close they felt to their mother or father;
- how much they thought she or he cared about them;
- whether most of the time their mother or father was warm and loving;
- whether they were satisfied with the way their mother or father and they communicated with each other; and
- whether overall, they were satisfied with their relationship (with their mother or father).

The mean value of the items was used as the participant's maternal and paternal support scores. The higher the mean value, the greater was the perceived maternal or paternal support. The range of scores was from one to five on these constructed variables. The maternal support variable was considered to be missing if no mother or

mother-like resident of the household was identified by the adolescent, and similarly for paternal support. About 30% of the adolescents did not have a resident father or father-like person in their household. The percentages of missing fathers were not evenly distributed among the racial groups in the sample (21-22% for Whites, 51% for African-Americans, and 30% for Hispanics).

Self-esteem was constructed from four items that asked respondents to indicate their degree of agreement with the following statements:

- "You have a lot of good qualities."
- "You have a lot to be proud of."
- "You like yourself just the way you are." and
- "You feel like you are doing everything just about right."

The range of scores for this variable was from one to five, with higher scores indicating greater self-esteem. The mean of the items was used as the self-esteem score. Cronbach's alphas for all constructed variables were in an acceptable range, 0.79 – 0.89.

The subjects were asked to nominate five female and five male friends, and the number of friendship nominations each student received during the in-school portion of data collection was used as that student's number of friends. Values for this variable ranged from 0-32. Two number-of-friends groupings were examined. "No friends" represented those with no friends and "few friends" represented those who had less than two friends.

The subjects were then separated into racial groups based primarily on a question that inquired whether the subject was of Hispanic origin and on the imputational 4-category primary race variable provided by the Carolina Population Center. Respondents were able to mark more than one answer to five different racial categories however, they were placed in only one category in the race variable. If the respondent indicated that they were of Hispanic or Latino origin, that respondent was given a racial designation of "Hispanic" and that eliminated them from any race category that was marked. According to the National Longitudinal Study of Adolescent Health (National Longitudinal Study of Adolescent Health, 2004) website, "If the respondent marked 'Black or African American' and any other race, they were designated as black or African American, and eliminated from the other marked categories. The process was repeated for the remaining race categories in the following order: Asian, Native American, other, and white." This study only examined adolescents who were coded as African-American, Hispanic, or White.

The coding system used to determine socioeconomic status (SES) was based on parent-reported items about the mother's and father's occupation and their highest level of education. Separate mother and father SES scales were calculated. The range of scores was from 1 to 10. A family SES score was identified by determining the maximum of the two scales. A score of six was considered middle-class, and higher scores reflected a higher SES

(Bartlett et al., 2005; Bartlett, Holditch-Davis, Belyea, Halpern, & Beeber, 2006; Joyce Tabor, personal communication, July 22, 2002). Age for each adolescent was calculated based on their birth date and the date of their Wave 1 interview (National Longitudinal Study of Adolescent Health, 2005).

## Analysis

Descriptive summaries, ANOVA, and chi square tests were used to examine the data. The Add Health sample design was complex since the data were collected using cluster sampling and the clusters were sampled with unequal probability. Failing to account for the complex sampling design could result in incorrect parameter and variance estimates (Chantala & Tabor, 1999), and confound generalizability. Sampling weights were assigned to each person to account for this unequal sampling and potential non-response. Only those persons with weights at Wave 2 were used in the weighted analyses. Thus, SAS® software version 8.2 (SAS Institute, Inc., 2001) with a WEIGHT statement was used for most of the descriptive statistics about the sample, and SUDAAN® software version 9.0 (Research Triangle Institute, 2004) was used for all analyses. Inferential statistics were deemed statistically significant if  $p < 0.05$ .

## Results

Prior to examining risky sexual behaviors in different racial groups, the Add Health sample as a whole was examined, to identify those who had already been diagnosed with HIV or AIDS. At Wave 1, less than 50 adolescents reported that they had received one of these diagnoses and at Wave 2, 64 adolescents reported a diagnosis.

When examining the weighted percentages of adolescents in each racial group that reported engaging in each of the risky sexual behaviors it was noted that the least reported risky sexual behavior among all groups was sexual behavior in exchange for drugs or money (around 1% to 2%). One exception was that at Wave 1, less than 1% of the Hispanic adolescents reported sexual behavior while under the influence of drugs or alcohol. This percentage jumped to 13% for the Hispanic group at Wave 2. Overall, the risky sexual behavior reported most frequently by each racial group was sexual behavior with multiple sexual partners. At Wave 1, this was reported by 18% of Whites, 31% of African-Americans, and 17% of Hispanic adolescents. At Wave 2, this was reported by 25% of Whites, 41% of African-Americans, and by 25% of Hispanic adolescents. The second most frequently reported risky sexual behavior among all three racial groups was sexual intercourse without the use of birth control. African-Americans reported this more frequently than either of the other two groups did. At Wave 1, sexual intercourse without the use of birth control was reported by 26% of African-Americans, but by only 18% of Hispanics and by only 14% of Whites. At Wave 2, this risky sexual behavior was reported by 16% of Whites, by 25% of African-Americans and by 21% of Hispanics. Across all racial groups, the per-

centages of nearly all of the risky sexual behaviors increased in the year between Wave 1 and Wave 2 of data collection.

Each significance test of the risky sexual behaviors by racial group was performed on a sample of around 12,000 because some subjects were lost due to missing sample weights, the restriction to three race categories, and because of missing values for the particular risky sexual behavior. Racial groups significantly differed at both time points on sexual intercourse without the use of birth control and sexual behavior with multiple sexual partners ( $p < .001$ ). At Wave 1, boys were more likely to report sexual behavior with multiple sexual partners across all the racial groups. Fifty-three percent of Whites reporting this were boys, while 65% of African-Americans and 68% of the Hispanics reporting this behavior were boys. There were similar findings at Wave 2 regarding the gender of those who reported sexual behaviors with multiple sexual partners. At Wave 1, about an equal percentage of White boys and girls reported sexual intercourse without the use of birth control, while for African-Americans and Hispanics, a greater percentage of boys reported sexual intercourse without the use of birth control (55% and 54% respectively). At Wave 2, the percentage of boys reporting sexual intercourse without the use of birth control was 45% of Whites, 49% of African-Americans and 55% of Hispanic adolescents. For nearly every risky sexual behavior, White participants had the highest SES score, African-Americans the middle SES score, and Hispanics the lowest SES score.

Gender groups also differed significantly at both time points on sexual intercourse without using a condom ( $p < .05$ ). At Wave 1, a greater percentage of girls than boys reported this behavior in the White and Hispanic groups (53% girls for each), but a greater percentage of African-American boys (54%) reported this behavior. At Wave 2, the percentage of girls versus boys reporting this behavior in the White group was about the same as for Wave 1 (52% of girls), about equal numbers of African-American boys and girls reported this behavior, but 53% of the Hispanics who reported this behavior at Wave 2 were boys. At Wave 1, the mean age for African-Americans reporting sexual intercourse without using a condom was younger (15.9 years of age) than for Whites (16.2 years of age) or for Hispanics (16.1 years of age) reporting this behavior.

The maternal and paternal support means at Wave 1 were based on samples of 11,836 and 8,732, respectively, since some participants were lost because of missing sample weights and for some subjects no parent or parent-like member of the household was identified. The corresponding sample sizes at Wave 2 were 11,586 and 8,829, respectively. While a few subjects did not indicate much parental support, at Wave 1, 85% and 75% of the sample had scores of four or higher for maternal and paternal support, respectively, on a scale of from one to five. Corresponding high support was seen at Wave 2 with 83% and 71%, respectively. Based on the ANOVAs used to examine for significant differences between racial groups on the risk and protective factors, maternal support was

significantly different between the groups at the  $p < .05$  level only at Wave 2. Girls were much more likely to report low maternal support (a score of less than 3) than boys across the three racial groups, but more so for African-Americans and Hispanics (78% and 76% girls) than for Whites (69% girls). Interestingly, the highest SES reported for any group for any of the risky sexual behaviors, or any of the risk or protective factors, was reported by Whites (6.54) reporting low maternal support. Paternal support was significantly different between the groups at both time points ( $p < .05$ ). At Wave 1, about 60% of the Whites reporting low paternal support (scores of less than 3) were girls, about 54% of the African-Americans reporting this were girls, and about 56% of the Hispanics reporting this were girls. The mean SES for those reporting low paternal support at Wave 1 was in the middle class range for both Whites and African-Americans (6.16 and 6.27, respectively), while for Hispanics the mean score was lower (4.54). At Wave 2, the percentage of girls reporting low paternal support was about the same for Whites as at Wave 1 (61%) but it was higher than at Wave 1 for African-Americans (64%) and for Hispanics (70%) girls. The mean SES scores for those reporting low paternal support for each racial group at Wave 2 were very similar to those at Wave 1.

The self-esteem variable was skewed, as evidenced by the high mean values: over 67% and 72% at Waves 1 and 2, respectively, had values of four or higher. Based on the ANOVAs, the racial groups significantly differed on the risk factors of low self-esteem and in number of friends at Wave 1 ( $p < .001$ ), and on low self-esteem (a score of 3 or less) at Wave 2 ( $p < .001$ ). Overall, African-Americans reported having higher self-esteem than Whites or Hispanics did. Among those with low self-esteem at the second time point, African-Americans were more likely to be the boys in the group than in the other two racial groups.

Overall, the number of friends was highest for Whites, with a mean of over five friendship nominations for this group. In the White group, those with few friends (two or less) were more likely to be boys than in either the African-American or the Hispanic group. Only 20% of the participants had either no friends or just one friend. Eighteen percent of Whites fell into this group, as opposed to 25% of African-Americans, and 25% of Hispanics. Seven percent of Whites, 11% of African-Americans, and 10% of Hispanics had no friends. Whites with no friends were also more likely to be the boys than the girls in either the African-American or the Hispanic group.

## Discussion

Because HIV/AIDS disproportionately affects minority groups in the United States, and particularly African-Americans and Hispanics, understanding these disparities is important in order to identify strategies to improve the health status of people in these groups. Further, understanding the role of the risk and protective factors that are associated with the risky sexual behaviors that put the individuals in different racial groups

at risk for contracting HIV will be useful for designing culturally appropriate interventions to address these health disparities.

Among this nationally representative sample of adolescents, African-Americans and Hispanics overall were more at risk for unprotected sexual behavior than Whites were. Hispanics were more at risk for sexual intercourse without a condom than either of the other two racial groups. African-Americans in this study were the most likely to engage in sexual behavior with multiple sexual partners. Sexual behavior with multiple sexual partners, coupled with sexual intercourse without a condom, magnifies the risk for contracting HIV. Low SES also appeared to be a risk factor for these risky sexual behaviors, although according to Santelli, Lowry, Brenner, and Robin (2000), these relationships are inconclusive and are often contradictory.

Whites and Hispanics were more likely than African-Americans to report low self-esteem. Like Birndorf, Ryan, Auinger, and Aten (2005), who reported that females were more likely than males to report low self-esteem, low self-esteem was disproportionately reported by females across the racial groups in our study. Nearly 80% of the Hispanics who reported low self-esteem were females, higher than for both Whites and African-Americans. These findings are consistent with those of Ethier and colleagues (2006) who found a positive relationship between low self-esteem and increased risky sexual behaviors (e.g., age at first sexual intercourse, number of sexual partners in one year, and sexual intercourse with a high-risk partner) in a study of sexually active adolescents.

Maternal support was significantly different among the racial groups at Wave 2 of data collection. African-Americans reported higher maternal support than the other two groups did, but given the large sample size, this difference needs further study. In a study of non-sexually active African-American and Hispanic adolescents, Fasula and Miller (2006) found that the likelihood of delayed sexual intercourse improved with mother-adolescent communication about sexuality. Wilson and Donenberg (2004) found that the quality, not frequency, of these mother-adolescent interactions was a protective factor against risky sexual behavior in African-American, Hispanic, and White adolescents. Romo, Lefkowitz, Sigman, and Au (2002) also found that quality of maternal-adolescent communication was important in their study of Hispanic adolescents. Thus, designing interventions to educate mothers about the importance of their support regarding their daughters, and how to communicate effectively with their daughters, is an important area for further research.

While the groups were significantly different on the paternal support variable at both time points, and because there was a large number of missing values for this variable (that were not evenly distributed among racial groups), more research is needed. Markham and colleagues (2003) found that adolescents with greater family connectedness reported fewer risky sexual behaviors (e.g., sexual intercourse without a condom). In Markham's

study, African-American and Hispanic adolescents had higher family connectedness scores than White adolescents did. Thus, better understanding of the role of paternal support is an important area for further study, especially as it relates to how this protective factor may affect different racial groups.

In the present study, there were differences among the groups based on the number of friends they had. However, understanding the behaviors of the friends may provide more useful information than just counting the numbers of friends alone, since as Haglund (2006) found in a study of sexually abstinent teenage African-American girls, female friends can challenge abstinence instead of supporting it.

Adolescence and pre-adolescence are important developmental periods for targeted interventions to prevent these adolescents from contracting HIV infection, since adolescence is a time when risky sexual behaviors are most typically experienced. Preventive interventions should be especially targeted to African-American and Hispanic adolescents, given their increased risk for HIV/AIDS, and their increased rates of risky sexual behaviors like sexual intercourse without a condom, sexual intercourse without the use of birth control, and sexual behavior with multiple sexual partners. Low self-esteem may make female adolescents reluctant to express their wishes regarding safer sexual behavior; thus teaching assertiveness skills and providing female adolescents with opportunities to enhance their self-esteem may be fruitful.

A few interventions to help adolescent girls avoid HIV infection have been designed and tested. DiClemente and colleagues (2004) developed an HIV preventive intervention for African-American girls that taught the girls information about HIV and how to prevent contracting it along with good communication and healthy relationship skills. These were taught in an environment that emphasized the girl's pride in her race and gender. They found that the girls who participated in the treatment intervention had better condom use behaviors at six and at twelve months after the intervention. DiClemente and colleagues (2004) concluded that gender and culturally tailored interventions promoted behaviors that assisted African-American girls in avoiding HIV infection.

Coyle and colleagues (2001) found that the two-year *Safer Choices* school-based HIV, pregnancy, and other sexually transmitted diseases (STD) prevention program was effective among diverse populations in terms of condom use and HIV knowledge. In addition, its other outcome variables such as other STD knowledge and self-protective measures were also effective.

Some interventions that are directed toward the parents of adolescent girls that may be useful in helping them avoid HIV infection have also been tested (O'Donnell, Stueve, Agronick, Wilson-Simmons, Duran & Jeanbaptiste, 2005). Training for parents of inner-city African-American and Hispanic adolescent girls about normal teenage challenges and the changes brought about by puberty resulted in fewer behavioral risks that

might be precursors to risky sexual behaviors (e.g., kissing and hugging for a long time) among their daughters (O'Donnell et al.).

Despite the findings from these intervention studies and others, there remains a need to design and test cost-effective, culturally sensitive and culturally relevant interventions for African-American and Hispanic adolescents who are disproportionately affected by HIV and AIDS.

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