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Peer mentorship program on HIV/AIDS knowledge, beliefs, and prevention attitudes among orphaned adolescents: an evidence based practice

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Abstract

Adolescents and young adults in sub-Saharan Africa (SSA) are particularly vulnerable to human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) infection. Adolescents orphaned as a direct result of HIV/AIDS are at an elevated risk of acquiring HIV/AIDS and other sexually transmitted infections. However, limited empirical evidence exists on HIV knowledge and prevention programs, especially those designed to address HIV information gaps among adolescents. This study evaluates the effect of a peer mentorship program provided in addition to other supportive services on HIV/AIDS knowledge, beliefs, and prevention attitudes, among school-going orphaned adolescents in southern Uganda. We utilize data from the *Bridges to the Future Study*, a 5-year longitudinal randomized experimental study funded by the National Institute of Child Health and Human Development. Out of the 1410 adolescents enrolled in the study (average age = 12.7 at study initiation), 855 of them participated in a nine-session, curriculum based peer mentorship program. We analyzed data collected at baseline and 12-months post intervention initiation. The results from bivariate and regression analysis indicate that, controlling for socioeconomic characteristics, adolescents who participated in a peer mentorship program were more likely than non-participants to report increased scores on HIV/AIDS knowledge ($b = .86$, 95% $CI = .47 - 1.3$, $p = .001$); better scores on desired HIV/AIDS-related beliefs ($b = .29$, 95% $CI = .06 - .52$, $p = .01$); and better scores on HIV/AIDS prevention attitudes ($b = .76$, 95% $CI = .16 - 1.4$, $p = .01$). Overall, the study findings point to the potential role of a peer mentorship program in promoting the much-desired HIV/AIDS knowledge, beliefs, and prevention attitudes among orphaned adolescents. Future programs and policies that support AIDS-orphaned adolescents in sub-Saharan Africa should consider incorporating peer mentoring

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programs that provide correct, age, and culturally appropriate HIV information to help protect orphaned adolescents and reduce the risk of HIV infections.

Keywords

peer mentorship; bridges to the future; orphaned adolescents; Uganda; sub-Saharan Africa

Introduction

Adolescents and young adults in sub-Saharan Africa (SSA) are particularly vulnerable to human immunodeficiency virus (HIV) infection. In 2012, an estimated 2.1 million adolescents worldwide, between 10 and 19 years were living with HIV/acquired immune deficiency syndrome (AIDS); 81% (1.7 million) of these lived in SSA (UNAIDS, 2013). Several factors increase adolescents' vulnerability to HIV. These include: the lack of knowledge on HIV transmission and prevention, lack of educational and life skills, poor access to health services, early sexual debut, early marriages, sexual abuse, violence and exploitation, and growing up without parents (Awotidebe, Phillips, & Lens, 2014; Obidoa, M'Lan, & Schensul, 2012; Ross, Dick, & Ferguson, 2006). Unfortunately, AIDS-orphaned adolescents (defined as children who have lost one or both parents to HIV/ AIDS) living in AIDS-impacted communities are at an elevated risk for HIV infection. This is due to the negative effects of orphanhood, mainly, poor psychological functioning, lack of parental support, and poverty. These factors combine to increase the risk of sexual taking behaviors among this group of adolescents, exposing them to HIV/AIDS and other sexually transmitted infections (STIs) (Mufune, 2015; Nabunya & Ssewamala, 2014; Operario, Underhill, Chuong, & Cluver, 2011; UNAIDS, UNICEF, & USAID, 2004). Moreover, in 2012, 70% of all HIV new infections among adolescents between 15 and 19 years of age occurred in SSA, which is also home to over 85% of the global orphaned children due to HIV/AIDS under the age of 18 years (UNAIDS, 2013). Thus, efforts aimed at providing adolescents – especially orphaned adolescents in SSA with the correct, basic HIV information that is age and culturally appropriate, on how to protect themselves and their partners from acquiring HIV is very much needed.

School-based HIV interventions, especially those that are peer-led, are highly regarded among the efforts that decrease HIV prevalence among adolescents and young adults (Fonner, Armstrong, Kennedy, O'Reilly, & Sweat, 2014; Lazarus, Sihvonon-Riemenschneider, Laukamm-Josten, Wong, & Liljestrand, 2010). Specifically, HIV prevention programs are crucial while adolescents are still in school – especially primary schools, mainly because: 1) schools are the single best location where the largest proportion of young people can be reached, 2) most youth initiate sexual activity while they are still in school age (whether they attend school or not), and 3) interventions conducted prior to sexual debut are the most effective in reducing rates of STIs, including HIV/AIDS (Andersen, 2012; Fonner et al., 2014; Kim & Free, 2008; Kirby, Obasi, & Laris, 2006; Paul-Ebhohimhen, Poobalan, & Van Teijlingen, 2008; Tollo, 2012). Similarly, mentoring programs that connect adolescents with stable, caring, and supportive non-parental adults or peers have been credited for providing a context in which adolescents can develop self-

esteem and confidence in their abilities (Schwartz, Lowe, & Rhodes, 2012), improve academic performance (Herrera, Grossman, Kauh, & McMaken, 2011), and reduce delinquent behaviors (Tolan, Henry, Schoeny, Lovegrove, & Nichols, 2014). Unfortunately, not much empirical work has investigated peer mentoring programs geared toward HIV prevention among adolescents – specifically, orphaned adolescents in SSA.

Given that orphaned adolescents are at an elevated risk of acquiring HIV, we argue that, connecting them with caring and supportive peer mentors, who can provide the correct and culturally appropriate HIV information, has the potential to protect these adolescents against HIV and other STIs. In addition, peer mentorship programs have the potential to influence adolescents' safer sexual behavior choices. This study, therefore, evaluates the effects of a peer mentoring program known as Suubi & Bridges mentorship program – provided in addition to other supportive services, on the HIV/AIDS knowledge, beliefs, and prevention attitudes among AIDS-orphaned adolescents in Uganda. We hypothesize that participating in the peer mentorship program would result in improved HIV/AIDS knowledge, increase in correct HIV/AIDS beliefs and better HIV/AIDS prevention attitudes among orphaned adolescents.

The Suubi & Bridges mentorship program

The Suubi & Bridges mentorship program follows a nine-session curriculum, developed to aid orphaned adolescents in developing the ability to identify specific future goals and educational aspirations through building their self-esteem, working on improving their school attendance and grades, encouraging hopefulness, enhancing safe sexual decision-making, and decreasing sexual risk-taking behavior. The program was conducted by peer mentors over a period of 9 months, during the intervention period. A total of 855 adolescents (94% of adolescents in the treatment condition) attended the peer mentorship program. A detailed description of the Suubi & Bridges mentorship program is provided in a recent publication by Ssewamala and colleagues (Ssewamala, Nabunya, Mukasa, Ilic, & Nattabi, 2014).

Methodology

Study sample and location

The study utilizes data from the Bridges to the Future Study – hereafter *Bridges study*, a 5-year (2011–2016) longitudinal randomized experimental study funded by the National Institute of Child Health and Human Development. A total of 1410 adolescents ($n = 621$ boys, $n = 789$ girls), between 10 and 16 years (average age 12.7 years at study initiation) were enrolled in the *Bridges study*. Adolescents were eligible to participate if they: 1) identified as an AIDS-orphan, having lost one or both parents to HIV/AIDS, 2) lived within a family, not an institution, and 3) enrolled in grades 5 or 6 of a government-aided primary school. Adolescents were recruited from 48 public primary schools in four geopolitical districts of Masaka, Rakai, Kalungu, and Lwengo Districts in southern Uganda – a region heavily affected by HIV/AIDS. All schools included in the study have similar socioeconomic characteristics, including overall performance on the national standardized

Primary Leaving Examinations (PLE), and they attract students from similar socioeconomic backgrounds.

Study intervention

Bridges study respondents were randomly assigned to either the control ($n = 497$) or to two treatment conditions ($n = 913$). Respondents in the control condition received the usual care of services (counseling, food aid and scholastic materials) offered to orphaned children in the region. Respondents in the two treatment condition received the usual care of services mentioned above, plus three intervention components: 1) workshops on financial management, and microenterprise development; 2) a matched savings account in the form of a Child Development Account (CDA); and 3) the Suubi & Bridges Mentorship Program. A detailed explanation for the study intervention and implementation is provided elsewhere (see Ssewamala & Ismayilova, 2009). Although these components were provided as a bundle of services, this paper is concerned with the effect of the mentorship component only.

Data collection

This study utilized data collected at baseline and 12-months post intervention. Data was collected using a 90-minute survey administered by trained Ugandan interviewers. Prior to child assessment, voluntary written consent was obtained from all caregivers allowing their children to participate in the study. Adolescents also gave voluntary written assent to participate.

Ethical considerations

All study procedures were approved by Columbia University Institutional Review Board (IRB) (AAAI1950) and from the Uganda National Council for Science and Technology (SS 2586). The study protocol is registered in the Clinicaltrial.gov database (ID #NCT01447615).

Measures

Dependent variables—HIV/AIDS knowledge was measured using 8-items, with 3 response categories: 3 = true, 2 = false, and 1 = not sure. A satisfactory internal consistency (Cronbach's alpha = .69 at baseline and .51 at 12 months follow-up) was observed. HIV/AIDS beliefs were measured using 5-items related to HIV transmission and myths, with 3 response categories: 3 = safe, 2 = unsafe, and 1 = not sure. The measure had a strong internal consistency (Cronbach's alpha = .83 at baseline and .76 at 12-months follow-up). HIV/AIDS prevention attitudes were measured using 5-items rated on a 5-point Likert scale, with 5 = agree a great deal to 1 = not agree at all to the statement. This measure had a satisfactory internal consistency (Cronbach's alpha = .60 at baseline and .66 at 12-months follow-up). Items in the inverse direction were reverse coded to create summated scores, with high scores indicating increased HIV/AIDS knowledge levels, correct beliefs, and prevention attitudes, respectively.

Independent variables—Participation in the Suubi & Bridges mentorship program was coded as “1” for participation and “0” for non-participation. Sociodemographic variables

including age, gender, orphanhood status, primary caregiver, and household composition were also measured.

Analysis procedures

Data analysis was performed using Stata 13. We analyzed respondents' sociodemographic characteristics reported at baseline, followed by bivariate analyses to ascertain the differences in the outcome variables between program respondents and non-respondents over time. Finally, we conducted regression analysis to examine the effect of participating in the peer mentorship program on HIV/AIDS knowledge, beliefs and attitudes, controlling for socioeconomic characteristics. All analyses accounted for clustering at the school level.

Results

Respondents' sociodemographic characteristics

The average age of study respondents was 12.7 years (standard deviation (SD) = 1.26). Fifty six percent (56%) of respondents were females and 44% were males (Table 1). The majority of the respondents (78.9%) were single orphans (had lost a biological father or mother) and 21.1% were double orphans (had lost both biological parents). Thirty nine percent (39.1%) of respondents reported a surviving biological parent as their primary caregiver, 36.6% reported a grandparent, and 24.3% reported another relative (aunt, uncle, sibling, etc.) as their primary caregiver. The average total number of people in the household was 6.35 with 3.18 children living in the household.

HIV/AIDS knowledge, beliefs, and prevention attitudes among program respondents and non-respondents over time

HIV/AIDS knowledge—At baseline, there were no statistical significant differences in HIV/AIDS knowledge between program respondents and non-respondents (Table 2). However, at 12-months follow-up, program respondents reported a high overall score ($mean = 18.28$, $SD = .14$) compared to non-program respondents ($mean = 17.42$, $SD = .12$). This difference was statistically significant ($t = 4.58$, $p = .001$). For this measure, program respondents reported high scores on all the 8-items at 12-months follow up, however, 5 were statistically significant (Table 3). Specifically, program respondents were more likely than non-respondents to report that: 1) there is no cure for HIV/AIDS ($mean = 2.18$ compared to 2.05 , $F = 5.66$, $p = .05$); 2) you cannot get HIV from a mosquito bite ($mean = 2.26$ compared to 2.09 , $F = 11.21$, $p = .01$); 3) you cannot get HIV from using the same washing basin with an infected person ($mean = 2.17$ compared to 2.01 , $F = 11.62$, $p = .001$); 4) there is a test to determine if a person has HIV/AIDS ($mean = 2.87$ compared to 2.78 , $F = 10.61$, $p = .01$); and 5) anyone can become infected with HIV/AIDS ($mean = 2.72$ compared to 2.60 ; $F = 10.85$; $p = .01$). No other significant differences were observed.

HIV/AIDS beliefs—Similar to HIV/AIDS knowledge, no statistical significant differences were observed on the overall measure of HIV/AIDS beliefs at baseline (Table 2). At 12-months follow-up, however, the mean score for program respondents was 11.94 ($SD = .08$) compared to 11.65 ($SD = .08$) of non-respondents. The reported difference, although small, was statistically significant ($t = 2.58$, $p = .01$). Specifically, program respondents were more

likely than non-respondents to report not getting HIV by holding hands with an infected person (mean = 2.23 compared to 2.11, $F= 7.17$, $p = .01$); and touching objects such as toilet seats, spoons, cups or other objects after a person infected with HIV/AIDS (mean = 2.08 compared to 1.99, $F= 5.36$, $p = .05$) (Table 3).

HIV prevention attitudes—No statistical significant differences were observed between groups at baseline (Table 2). At 12-months follow-up, however, the overall mean score for program respondents was 20.06 (SD = .15) compared to 19.29 (SD = .28) of non-respondents. This difference was statistically significant ($F= 2.49$, $p = .001$). Analysis at the individual item level (Table 3) revealed that, at 12-months follow-up, program respondents were more likely than non-respondents to acknowledge that AIDS is a threat to their health (mean = 4.4 compared to 4.2, $F= 4.85$, $p = .05$), and that you should use condoms, even if you know your partner very well (mean = 3.86 compared to 3.69, $F= 3.75$, $p = .05$). No other significant differences were observed.

3. Effect of Participating in a Peer Mentorship Program on Study Outcomes—

The Results from the regression analysis (Table 4) indicate that controlling for respondents' sociodemographic characteristics, participating in the peer mentorship program was associated with an increase in correct HIV/AIDS beliefs ($b = .29$, 95% $CI= .06 - .52$, $p = .01$); improved HIV/AIDS knowledge ($b = .86$, 95% $CI= .47 - 1.3$, $p = .001$); and better HIV/AIDS prevention attitudes ($b = .76$, 95% $CI= .16 - 1.4$, $p = .01$) at 12-months follow-up.

Discussion

This study evaluated the effect of participating in a peer mentorship program (provided in addition to other supportive services) on respondents HIV/AIDS knowledge, beliefs and prevention attitudes. We hypothesized that participating in the peer mentorship program would result in improved HIV/AIDS knowledge, increase in desired HIV/AIDS beliefs and better HIV/AIDS prevention attitudes among orphaned adolescents. Our study results support this hypothesis. Specifically, at baseline, all adolescents started off with similar levels of HIV knowledge, beliefs and prevention attitudes. However, at 12-months follow-up, respondents in the mentorship program reported high mean scores on all three outcome measures (18.28 versus 17.42 for HIV knowledge; 11.94 versus 11.65 for beliefs; and 20.06 versus 19.29 for prevention attitudes) compared to non-program respondents. These findings are consistent with previous studies that evaluated sex-education programs that provided HIV/AIDS information to adolescents elsewhere (Fonner et al., 2014; Paul-Ebhohimhen et al., 2008; Tolli, 2012).

Adolescents are defined as having comprehensive HIV knowledge if: they correctly identify the two major ways of preventing the sexual transmission of HIV (using condoms and limiting sex to one faithful, uninfected partner); reject the two most common local misconceptions about HIV transmission (through mosquito bites and sharing food or utensils with an infected person); and know that a healthy-looking person can transmit HIV (Uganda Ministry of Health, 2012; UNAIDS, 2013). Findings from our study support this definition. Specifically, adolescents who participated in the peer mentorship program were more likely than non-respondents to report high scores on all indicators of comprehensive HIV

knowledge, three of which were statistically significant, namely: 1) more likely to report the importance of using condoms even if you know your partner very well; 2) less likely to report HIV transmission through mosquito bites; and 3) less likely to report HIV transmission through sharing items such as washing basins or utensils with an HIV infected person. Although not statistically significant, program respondents were also more likely than non-respondents to report high scores on the importance of using condoms each time one has sex, and more likely to report that you cannot look at a person and tell if they are infected with HIV/AIDS. These findings point to the potential of a peer mentorship program in promoting the correct HIV related information among adolescents, over and above the programs that schools currently provide.

Under circumstances where data on actual behaviors cannot be directly measured or obtained, attitudes, beliefs or intentions (not measured in this study) are viewed as proximal determinants of engaging in subsequent behavior. Indeed, changes in attitudes and beliefs are viewed as an important goal in many AIDS prevention programs (Gallant & Maticka-Tyndale, 2004). In our sample, we did not have enough power to analyze the effect of the mentorship program on actual sexual behaviors given the small percentage of study respondents (6.7%) who reported being sexually active. However, the increase in desirable HIV/AIDS beliefs and prevention attitudes, combined with the increase in correct HIV/AIDS knowledge, point to the potential of safer sexual decision-making and behaviors among program respondents.

Regarding the overall peer mentorship program, research evidence suggests that successful school-based HIV prevention programs are those that are curriculum based, peer-led and utilize a randomized controlled design (Fonner et al., 2014; Kirby, 2011; Kirby et al., 2005, 2006). These three components are true to our mentorship program. Specifically, the Suubi & Bridges mentorship program adapted a nine-session curriculum developed and evaluated by the research team, study respondents and community stakeholders. The curriculum has specific learning objectives and goals for each session, includes a variety of illustrations, role-plays and exercises to enhance adolescents' learning. In addition, the program utilized peer mentors who were close in age with study respondents – some of which were former respondents in a similar study and went through the same mentorship program. Finally, the program utilized a randomized controlled design, which makes it possible to test and compare the effect of the peer mentorship program on study outcomes. These three components have been cited and recommended as important in the successful implementation and evaluation of school-based HIV prevention programs for adolescents (Fonner et al., 2014)

It should be noted that the Suubi & Bridges mentorship program does not solely provide HIV prevention knowledge to orphaned adolescents. The program helps adolescents to build self-esteem; identify and set future educational and career goals; learn about savings, asset accumulation and microenterprise development; identify and negotiate risky situations – issues that are important in adolescent and youth development (Herrera et al., 2011; Schwartz et al., 2012; Ssewamala et al., 2014; Tolan et al., 2014).

Study limitations

There are three major limitations to our study. First, outcome variables were self-reported by study respondents. These kinds of reports usually suffer from social desirability. Second, we do not evaluate the impact of the peer mentorship program on sexual behaviors, and whether increased HIV related knowledge reduces sexual risk taking behaviors for this sample, given the small percentage of respondents reporting being sexually active. However, we know from previous research that some school based sex-education and HIV prevention programs have been successful in reducing and/or delaying sexual activity among adolescents and promoting safer sexual choices (Fonner et al., 2014). Finally, we report findings at 12-months follow-up post intervention. We do not know the long-term impact of the mentorship program on respondents' HIV/AIDS knowledge, beliefs and prevention attitudes. Future analysis will focus on the long-term effect of the peer mentorship program on HIV knowledge related outcomes.

Implication and conclusions

The major implication of our study findings is that participating in a peer mentorship program – provided in addition to other services, has a potential to increase HIV/AIDS knowledge by dispelling common HIV myths, improve the desired HIV/AIDS beliefs and prevention attitudes among orphaned adolescents, over and above the information they currently receive in schools. These findings may not be surprising in high resource settings, however, in low resource communities affected by HIV, such as those in sub-Saharan Africa, connecting adolescents to peer mentors, with access to correct HIV transmission and prevention information may be an important step in the right direction to prevent and reduce HIV prevalence among adolescents. Future programs and policies that provide support to orphaned adolescents living in AIDS impacted communities in sub-Saharan Africa should consider incorporating peer mentorship programs that provide correct, age and culturally appropriate information regarding HIV/AIDS transmission and prevention, to help protect orphaned adolescents reduce HIV infections and promote safer sexual choices

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Table 1Demographic characteristics of the study sample ($N = 1410$).

Variable	Total sample ($N = 1410$)	Control ($n = 497$)	Treatment ($n = 913$)	t -test or χ^2
<i>Age (Mean, SD)</i>	12.7(1.26)	12.8(1.23)	12.6(1.27)	-1.55
<i>Gender</i>				.565
Male	44.3	16.1	28.2	
Female	55.7	19.1	36.5	
<i>Orphanhood status</i>				6.97**
Single Orphan	78.9	26.5	52.5	
Double orphan	21.1	8.8	12.3	
<i>Primary caregiver</i>				
Biological parent	39.1	12.5	26.7	5.02
Grandparents	36.6	14.0	22.6	
Other relatives	24.3	8.7	15.5	
<i>Household composition</i>				
Number of people in the household (Mean, SD)	6.35(2.79)	6.46(2.97)	6.29(2.69)	-1.07
Number of children in the household (Mean, SD)	3.18(2.20)	3.20(2.32)	3.17(2.14)	-.264

Note:

**
 $p < .01$.

Table 2

HIV/AIDS knowledge, beliefs, and prevention attitudes between program respondents and non-respondents.

Outcome	Non-respondents (<i>n</i> = 539)			Mentorship respondents (<i>n</i> = 780)		
	Baseline	12-months follow-up	<i>t</i> -test	Baseline	12-months follow-up	<i>t</i> -test
HIV/AIDS Knowledge	17.47(.30)	17.42(.12)	0.0	17.30(.24)	18.28(.14)	4.58***
HIV/AIDS Beliefs	9.59(.10)	11.65(.08)	0.94	9.60(.08)	11.94(.08)	2.58**
HIV/AIDS Prevention Attitudes	17.58(.43)	19.29(.28)	0.41	17.77(.19)	20.06(.15)	2.49***

Note:

Due to attrition and missing information at 12-months follow-up, the sample was reduced from 1410 to 1319 (539 non-respondents and 780 program respondents).

**
p .001.

p .001.

Table 3

HIV/AIDS knowledge, beliefs, and prevention attitudes between program respondents and non-respondents: individual item analysis.

Items	Baseline (mean, 95% confidence interval)			12-months follow-up (mean, 95% confidence interval)			Design-Based F	Design-Based F
	Total (N = 1410)	Non-respondents (n = 555)	Program respondents (n = 855)	Total (N = 1319)	Non-respondents (n = 539)	Program Respondents (n = 780)		
HIV/AIDS Knowledge								
You can look at a person and tell if they are infected with HIV/AIDS	1.69(1.6, 1.8)	1.74(1.6, 1.9)	1.66(1.6, 1.7)	1.76(1.7, 1.8)	1.73(1.7, 1.8)	1.79(1.7, 1.8)	1.18	1.91
A pregnant woman who has HIV/AIDS can give her unborn baby the virus	2.45(2.4, 2.5)	2.46(2.4, 2.5)	2.45(2.4, 2.5)	2.43(2.4, 2.5)	2.39(2.3, 2.5)	2.46(2.4, 2.5)	0.04	1.25
There is a cure for HIV/AIDS	1.99(1.9, 2.1)	2.01(1.9, 2.1)	1.97(1.9, 2.1)	2.13(2.1, 2.2)	2.05(2.0, 2.1)	2.18(2.1, 2.3)	0.61	5.66*
If a woman is using birth control pills, she is protected from HIV infection	1.71(1.6, 1.8)	1.75(1.6, 1.8)	1.68(1.6, 1.8)	1.81(1.8, 1.9)	1.77(1.7, 1.8)	1.84(1.8, 1.9)	1.17	2.28
You can get HIV from a mosquito bite	2.12(2.0, 2.2)	2.10(2.0, 2.2)	2.13(2.0, 2.2)	2.18(2.1, 2.2)	2.09(2.0, 2.2)	2.26(2.2, 2.3)	0.23	11.21**
You can get HIV from using the same washing basin with an HIV infected person	2.01(1.9, 2.1)	2.01(1.9, 2.1)	2.0(1.9, 2.1)	2.10(2.0, 2.2)	2.01(1.9, 2.1)	2.17(2.1, 2.2)	0.07	11.62***
There is a test to determine if a person has HIV/AIDS	2.78(2.7, 2.8)	2.80(2.7, 2.9)	2.77(2.7, 2.8)	2.83(2.8, 2.9)	2.78(2.7, 2.8)	2.87(2.8, 2.9)	0.35	10.61**
Anyone can become infected with HIV/AIDS	2.63(2.6, 2.7)	2.61(2.5, 2.7)	2.65(2.6, 2.7)	2.67(2.6, 2.7)	2.60(2.6, 2.7)	2.72(2.7, 2.8)	1.03	10.85***
HIV/AIDS Beliefs								
Sharing needles or syringes with an HIV infected person	2.75(2.7, 2.8)	2.74(2.7, 2.8)	2.76(2.7, 2.8)	2.87(2.8, 2.9)	2.85(2.8, 2.9)	2.88(2.8, 2.9)	0.32	1.00
Having unprotected sex with an infected person	2.76(2.7, 2.8)	2.76(2.7, 2.8)	2.75(2.7, 2.8)	2.85(2.8, 2.9)	2.84(2.8, 2.9)	2.86(2.8, 2.9)	0.08	0.21
Holding hands with an HIV infected person	1.98(1.9, 2.0)	1.95(1.9, 2.0)	1.99(1.9, 2.1)	2.18(2.1, 2.2)	2.11(2.0, 2.2)	2.23(2.2, 2.3)	0.63	7.17**
Touching toilet seats, spoons, cups or other objects after a person infected with HIV/AIDS	1.91(1.9, 2.0)	1.93(1.9, 2.0)	1.90(1.8, 2.0)	2.04(2.0, 2.1)	1.99(1.9, 2.0)	2.08(2.0, 2.1)	0.39	5.36*
Kissing a person who is infected with HIV/AIDS	1.89(1.9, 1.9)	1.90(1.9, 1.9)	1.88(1.8, 1.9)	1.88(1.8, 1.9)	1.86(1.8, 1.9)	1.89(1.8, 1.9)	0.46	0.93
HIV/AIDS Prevention attitudes								
As teenager, I think AIDS is threat to my health	3.78(3.7, 3.9)	3.69(3.5, 3.9)	3.84(3.7, 4.0)	4.32(4.2, 4.4)	4.20(4.0, 4.4)	4.4(4.3, 4.5)	2.05	4.85*
I think all people my age who have sex should use condoms	3.32(3.2, 3.4)	3.33(3.1, 3.6)	3.31(3.2, 3.4)	3.66(3.6, 3.8)	3.64(3.4, 3.8)	3.67(3.6, 3.8)	0.04	0.11

Items	Baseline (mean, 95% confidence interval)				12-months follow-up (mean, 95% confidence interval)			
	Total (N = 1410)	Non-respondents (n = 555)	Program respondents (n = 855)	Design-based F	Total (N = 1319)	NonRespondents (n = 539)	Program Respondents (n = 780)	Design-Based F
I think the best way to avoid getting AIDS is to not have sex	3.62(3.5, 3.7)	3.62(3.5, 3.8)	3.62(3.5, 3.8)	0.00	4.05(4.0, 4.1)	3.95(3.8, 4.1)	4.12(4.0, 4.2)	3.45
Even if you know your partner very well you should use a condom	3.39(3.3, 3.5)	3.35(3.1, 3.6)	3.42(3.3, 3.5)	0.41	3.79(3.7, 3.9)	3.69(3.5, 3.8)	3.86(3.8, 4.0)	3.75*
I think it is very important to use condoms every time one has sex	3.59(3.5, 3.7)	3.60(3.4, 3.8)	3.59(3.5, 3.7)	0.01	3.93(3.8, 4.0)	3.82(3.6, 4.0)	4.0(3.9, 4.1)	3.63

Note:
 * p .05
 ** p .01
 *** p .001.

Table 4Regression results: effect of participating in a peer mentorship program on study outcomes ($N=1319$).

Outcome	<i>b</i>(<i>SE</i>)	95% CI	<i>F</i> – <i>value</i>(<i>df</i>)
HIV/AIDS Knowledge	.86 ^{***} (.13)	.47–1.3	3.03 ^{**} (8)
HIV/AIDS Beliefs	.29 ^{**} (.11)	.06–.52	0.95(8)
HIV/AIDS Prevention attitudes	.76 ^{**} (.30)	.16–1.4	1.00(8)

Note:

^{**}
p .01^{***}
p .001.