

The Role of Multiple Identities in Adherence to Medical Appointments Among Gay/Bisexual Male Adolescents Living with HIV

Gary W. Harper · Isabel M. Fernandez ·
Douglas Bruce · Sybil G. Hosek · Robin J. Jacobs ·
The Adolescent Medicine Trials Network for HIV/AIDS Interventions

Published online: 1 November 2011
© Springer Science+Business Media, LLC 2011

Abstract Adolescents living with HIV require engagement with care providers in order to access the critical medical and psychosocial services they need. The current study sought to explore developmental determinants of adherence to medical appointments as one aspect of engagement in care among a geographically diverse sample of 200 gay/bisexual male adolescents (16–24 years) living with HIV, with a specific focus on ethnic identity, sexual orientation identity, and identity as a young man living with HIV. Ethnic identity affirmation (OR = 0.6; 95% CI: 0.3, 0.9), morality of homosexuality (OR = 1.7; 95% CI: 1.2, 2.5), and HIV-positive identity salience (OR = 1.5; 95% CI: 0.9, 2.4) were associated with significantly higher risk for missed appointments in the past 3 months. These findings highlight the importance of attending to

developmental factors, such as the development of multiple identities, when attempting to increase engagement in care for gay/bisexual male adolescents living with HIV.

Keywords Adolescents · Gay · Identity · Adherence · Engagement in care · HIV

Resumen Adolescentes que viven con HIV requieren el compromiso con médicos de cuidado de salud para acceder los servicios médicos y psicológicos críticos que ellos necesitan. El estudio actual exploró determinantes de adhesión a las citas médicas como un aspecto de compromiso en el cuidado entre un geográficamente muestra diversa de 200 adolescentes masculinos gay/bisexual (16–24 años) viviendo con HIV, con un enfoque específico en la identidad étnica, identidad sexual, e identidad como un hombre joven que vive con HIV. La afirmación de identidad étnica (OR = 0.6; 95% CI: 0.3, 0.9), moralidad de homosexualidad (OR = 1.7; 95% CI: 1.2, 2.5), y el “salience” (condición de ser prominente) de identidad HIV-positivo (OR = 1.5; 95% CI: 0.9, 2.4) era asociado con el riesgo significativamente más alto para las citas extrañadas en los últimos tres meses. Estos resultados resaltan la importancia de asistir a los factores de desarrollo humano, como el desarrollo de identidades múltiples, al intentar aumentar el compromiso en el cuidado para adolescentes gay/bisexual que viven con HIV.

G. W. Harper (✉)
Department of Psychology, DePaul University,
Room 420, Chicago, IL 60614, USA
e-mail: gharper@depaul.edu

I. M. Fernandez
Department of Public Health, College of Osteopathic Medicine,
Nova Southeastern University, Fort Lauderdale, FL, USA

D. Bruce
Master of Public Health Program, DePaul University,
Room 420, Chicago, IL 60614, USA

S. G. Hosek
Department of Psychiatry, Stroger Hospital of Cook County,
Chicago, IL, USA

R. J. Jacobs
Department of Psychiatry and Behavioral Medicine
and Department of Preventive Medicine,
College of Osteopathic Medicine,
Nova Southeastern University,
Fort Lauderdale, FL, USA

Introduction

Gay, bisexual and other men who have sex with men continue to bear a disproportionate burden of the HIV epidemic. Not only was male-to-male sexual activity the largest HIV transmission category in the United States

from 2001 through 2006, but it is the only group in which the number of new HIV/AIDS cases have been steadily increasing since the early 1990s [1]. What is even more alarming is how rapidly HIV infection from male-to-male sexual contact has been increasing among male adolescents and young adults, particularly those who identify as Black or Latino [2].

For instance, from 2001 to 2006, the highest increase in HIV/AIDS cases attributable to male-to-male sexual contact occurred among young men aged 13–24 [1]. Furthermore, black male adolescents and young adults had a 93% increase in the number of cases diagnosed, the most dramatic increase seen among young men in this age group. A majority of young men who acquired HIV infection from male-to-male contact (86–95%) self-identify as gay or bisexual [3]. Once diagnosed with HIV or AIDS, these gay/bisexual male adolescents and young adults must learn to live with a chronic health condition whose optimal management requires life-long engagement with the medical care system.

Importance of Engagement in Care

There is strong evidence that engagement in care improves medical outcomes for people living with HIV [4–7]. It also provides an opportunity to decrease viral transmission through risk reduction counseling and treatment to reduce viral load [8]. Notwithstanding these positive benefits, many newly diagnosed persons delay visiting a medical provider. For instance, 20–40% of HIV-infected individuals have not visited a clinic within 3–6 months after diagnosis [9, 10]. Once connected to a provider, sustained engagement is critical, as illustrated by Mugavero et al.'s [7] finding that the mortality rate for those who missed a medical visit in the first year of their diagnosis was 2.3 deaths per 100 person-years as opposed to 1.0 death per 100 person-years among those who attended all of their appointments.

Youth may be especially likely to delay or forgo care because of individual characteristics (e.g. stigma and shame, rejection of the diagnosis, low educational achievement, untreated psychosis, depression, substance abuse), family characteristics (e.g. lack of health care insurance, family dysfunction, past and current neglect/abuse), and health care system characteristics (e.g. costs to patients, services available, access, efficiency, and “youth-unfriendly” staff and services) [11]. Black and Latino youth may be even more vulnerable since there is evidence that racial and ethnic minorities experience greater delays in entering HIV care [11, 12] and are less likely to receive appropriate care and treatment for HIV than non-ethnic minorities [13–16]. Once they have entered a care system, it has been reported that young adults have poorer rates of

retention in care than older adults, suggesting that young adults are more at risk for being lost to follow-up [17, 18].

Developing a sound operational definition of engagement in care is difficult. Not only must it include measurable constructs, but also recognize the multiple aspects of HIV care. There is a continuum of professional, specialized health services that youth living with HIV need in order to monitor HIV disease status and progression, and to manage HIV-related medications and psychosocial services. Evidence-based guidelines for the management of people living with HIV stress the importance of continual medical assessment of HIV disease, including a general assessment of physical and mental health status, identification and treatment of other relevant age- and gender-specific health problems, provision of appropriate immunizations and preventive care, and assessment of CD4 counts and HIV viral load [19]. Widely accepted treatment guidelines from the Department of Health and Human Services (DHHS) have long recommended that adults and adolescents living with HIV be seen for evaluation of CD4 and viral load every 3–4 months [20].

Although adolescents living with HIV may have their CD4 and viral load levels measured every 3–4 months, engagement in care for these youth typically involves additional appointments with multiple care providers that may occur at varying intervals. Although comprehensive medical care facilities may attempt to provide several different services to youth during regularly scheduled clinic visits, additional appointments with other care providers and diagnostic professionals (e.g. phlebotomists, radiologists, etc.) may be needed. When these appointments are missed, some youth may still remain engaged in care and thus return to the medical care system for subsequent visits, whereas others may disengage from care for varying lengths of time or never even return for care. Thus assessing retention and engagement in care is often complex, and may include consideration of a variety of factors including which types of medical visits are missed, how often patients receive medical care within defined time frames, and when patients return to care if they become disengaged [21].

The extant literature has identified a range of factors that impact engagement in medical care for people living with HIV, including HIV-related knowledge [22–26]; perceived and internalized HIV-related stigma [18, 26–29]; social support [30]; and mental illness and other forms of psychological distress [12, 31–35]. These studies have primarily been conducted with adults—relatively few studies have examined engagement in care specifically among adolescents and young adults, with even less among gay and bisexual youth.

The few youth-focused studies that have been conducted demonstrate the critical role of psychosocial factors in engagement in care among young people living with HIV.

Hosek et al. [32] found that HIV-positive adolescents who expressed hopelessness about their future due to HIV also reported difficulties with attending appointments and taking their antiretroviral medications. Naar-King and colleagues [34] reported that psychological distress was a significant predictor of non-adherence among HIV-positive youth. Magnus et al. [36] recently explored factors related to adherence to medical appointments among 224 primarily gay African American and Latino male youth living with HIV who were engaged in care at eight different sites and found that being <21 years old, having a history of depression, receiving program services, and feeling respected at the clinic were associated with retention; whereas having a CD4 count <200 at baseline and being Latino were associated with missed appointments. Although these studies provide important information, they did not address adolescent-specific developmental factors, such as identity development, which may play a critical role in overall engagement to care and adherence to medical appointments particularly among ethnic minority youth who are gay or bisexual.

Identity Development

The formation of an individualized identity is considered by many theorists to be the primary developmental goal of the adolescent years, [37, 38] and is one facet of adolescent development that may interact with receiving an HIV diagnosis [39]. For gay/bisexual male adolescents and young adults the identity formation process can be complicated by experiences of heterosexism, stigma, homophobia, and prejudice [3, 40, 41]. Stigma related to being gay/bisexual and the concomitant isolation, rejection, and discrimination that many of these youth face has been shown to be related to a range of negative behavioral, social and health outcomes [42–45]. On the other hand, there is evidence that acceptance of a gay identity and acculturation into a larger gay community can serve to buffer some of the negative effects of this stigmatization and lead to decreased participation in sexual risk behaviors for gay/bisexual youth [43, 46, 47].

During adolescent development, the value and importance of having a strong ethnic identity also becomes clear and the individual establishes a more coherent sense of personal identity that includes ethnic identity. For all youth, especially those from ethnic minority groups, integrating a sense of ethnic identity into their overall sense of self is an important developmental task [48]. A positive and clear ethnic identity can facilitate a sense of freedom, security, and comfort, whereas a negative and ambiguous identity may lead to confusion and ambivalence. The unsuccessful resolution of identity development for adolescents has been associated with a host of negative physical and mental health outcomes [49–53].

Ethnic minority gay/bisexual youth, in particular, face unique challenges to ethnic identity formation due to experiences of both individual-level and institutionalized racism [54]. Frequently, ethnic minority gay/bisexual youth must not only contend with the negative societal reactions to their sexual orientation, but also may experience racial prejudice, limited economic opportunities and resources, and limited acceptance within their own cultural community [55–57]. Unfortunately, ethnic minority gay/bisexual youth also may experience racial prejudice, marginalization, and sexual objectification within the larger predominantly White mainstream gay community [55, 57, 58].

Given the critical importance of adolescent identity development and the lack of data examining its influences on overall engagement in care among gay and bisexual adolescents and young adults living with HIV, the goal of this exploratory study was to examine the relationship among three identity-related factors (i.e. ethnic identity, sexual orientation identity, and identity as a young man living with HIV) and missed medical appointments in this population. Although we recognize that adherence to medical appointments is only one aspect of overall engagement in care, it provides a useful first step to initiate the process of examining the relationship between identity development and engagement in care. The data discussed in this paper were derived from a larger mixed-methods study (ATN 070: Psychosocial needs of HIV+ young men who have sex with men) investigating stressors, coping mechanisms, and health behaviors among a sample of young gay, bisexual, and other men who have sex with men living with HIV conducted through the Adolescent Trials Network for HIV/AIDS Interventions (ATN).

Methods

Study Design and Procedures

Data collection was conducted at 14 geographically and demographically diverse adolescent medicine clinical care sites (Baltimore, Bronx, Chicago (2 sites), DC, Ft. Lauderdale, Los Angeles, Manhattan, Memphis, Miami, New Orleans, Philadelphia, Tampa, San Francisco)—all sites are part of the ATN. The research protocol was approved by the institutional review boards at all institutions involved in the collection and analysis of data.

Male adolescents and young adults living with HIV who were receiving care within clinic settings at one of the ATN study sites were approached by study coordinators to assess study eligibility. Inclusion criteria for the study was (1) biologically male at birth and identifies as male at time of study participation, (2) HIV-infected as documented by medical record review or verbal verification with referring

professional, (3) HIV infection occurred through sexual or substance use behavior of the participant, (4) between the ages of 16 and 24 years at the time of informed consent/assent, (5) ability to understand both written and spoken English, and (6) history of at least one sexual encounter involving either anal or oral penetration (either receptive or insertive) with a male partner during the 12 months prior to study enrollment.

Study coordinators conducted a brief screening interview in a private room in order to determine eligibility. Upon verification of eligibility, study coordinators obtained signed consent/assent and enrolled participants in the study utilizing a confidential code that contained no identifying personal information. An appointment to complete an Audio Computer-Assisted Self-Interview (ACASI) was scheduled for each participant by study coordinators. All interviews were completed on portable laptop computers, and the average amount of time to complete the ACASI was 1.5 h. Data were saved in an encrypted format using ENTRUST encryption software and were not available for review by any clinical site personnel. The encrypted data were transmitted to a central data operations center where data were unencrypted and entered into a study database. Compensation for participation was determined by each site and was in line with typical incentives provided for similar studies at the site. Given differences in the types and locations of sites, the amount allotted for compensation ranged from \$20 to 140 (mode = \$60), with some of these amounts including funds for transportation and a meal or snack.

Measures

Demographics

Various demographic variables of interest were collected including age, race/ethnicity, housing status, relationship status, education, employment, and sexual orientation. In addition, self-reported HIV-specific demographic data were collected, including time since diagnosis, medication status, and current CD4 and viral load counts.

Ethnic Identity

Ethnic identity was assessed using the multi-group ethnic identity measure (MEIM) [59], a 14-item scale where three items are close-ended questions that require the participant to choose an ethnic group for himself, as well as for each parent. The remaining items are four-point Likert-scale responses. The measure has two major subscales, Ethnic Identity Search (a developmental and cognitive component) and Affirmation, Belonging, and Commitment (an affective component). Higher scores on each subscale indicate a stronger connection to one's ethnic identity. The

MEIM has been used in multiple studies with African American, Latino/Hispanic and European American youth and has consistently shown good reliability, typically with alphas above .80 across a wide range of ethnic groups and ages [50]. Cronbach's alphas for the current study were acceptable: Ethnic Identity Search ($\alpha = .72$); Affirmation, Belonging, and Commitment ($\alpha = .87$).

Sexual Orientation Identity

Sexual orientation identity was assessed using Mayfield's 23-item Internalized Homonegativity Inventory (IHNI) [60] which requires participants to respond to questions using a five-point Likert-scale. The measure contains three subscales: Personal Homonegativity ($\alpha = .89$; 11 items and measures negative emotions and negative attitudes towards one's own sexual orientation), Gay Affirmation ($\alpha = .82$; seven items and measures positive attitudes and feelings that being gay is an important part of one's life and the view that being gay is normal and fulfilling), and Morality of Homosexuality ($\alpha = .70$; five items and measures negative attitudes regarding the moral implications of same-sex attraction and behavior in general). Higher scores on each subscale represent stronger attitudes represented by each construct. All subscales have strong convergent, discriminant, and construct validity in prior studies [60]. Cronbach's alphas for the current study: Personal Homonegativity ($\alpha = .92$), Gay Affirmation ($\alpha = .81$), Morality of Homosexuality ($\alpha = .71$).

Identity as a Young Man Living with HIV

Participants' identity as young men living with HIV was assessed using two different measures. The Negative Self-Image subscale of the HIV Stigma scale was used to assess HIV-related self-image [61]. This subscale consists of 13 items rated on a four-point Likert scale, and has demonstrated high internal consistency ($\alpha = .91$) and test-retest reliability ($\alpha = .90$). Cronbach's alpha with the current sample was acceptable ($\alpha = .90$). The Salience subscale of the HIV-Positive Identity Questionnaire [62] was used to assess how central or salient living with HIV is to one's self-concept. Respondents rated their level of agreement with seven statements regarding thoughts/feelings about being HIV-positive on a five-point Likert scale. The factor structure, reliability, and convergent/discriminant validity of the full measure were all validated in a sample of 52 adolescents living with HIV [62]. Cronbach's alpha with the current sample was acceptable ($\alpha = .69$).

Adherence to Medical Appointments

Adherence to medical appointments in the prior 3 months was measured using a single self-reported item: How many doctor

appointments have you missed in the past 3 months? The time frame of “past 3 months” was used since optimal HIV care for adolescents typically involves interaction with health care providers every 3 months [19, 20] and to provide a short enough time frame to enhance accurate recall. Responses to this single item were dichotomized into “no missed appointments” and “one or more missed appointments” in order to create a dependent variable that represented perfect adherence to medical appointments during the past 3 months.

Given the complexity of defining and assessing engagement in care, especially with youth who may have multiple medical and psychosocial needs, adherence to medical appointments was viewed as one aspect of this larger construct. Although the single item that was used is limited since it was not specific with regard to the types of medical visits that were missed (e.g. HIV-specific care medical care, preventive care, mental health), did not assess visits with other diagnostic and care professionals who are not doctors, and did not assess whether or not the appointment(s) that were missed were rescheduled [21], it was the best measure of adherence to medical appointments available in the dataset. Also, it is acknowledged that unconfirmed self-reported data on visits to HIV primary care providers such as this do not provide the same level of accuracy as more rigorous methods such as medical record extraction, particularly with marginalized populations such as the youth involved in the current study [63].

Data Analysis

Data were examined for non-normality. None of the psychosocial variables showed evidence of skewness and/or kurtosis (value above 2.0). Pearson correlation analyses were performed to examine inter-correlations among the variables and no variables were inter-correlated. Logistic regression models were developed using SPSS v.17 statistical software given the characteristics of the data [64]. Because of the exploratory nature of this study, all identity-related variables described in the [Methods](#) section were entered in a backwards stepwise logistic regression statistically predicting participants’ reports of missed appointments in the past 3 months. This allowed for an exploration of the associations between multiple identities and adherence to medical appointments, as one aspect of engagement in care.

Results

Sample Characteristics

A total of 200 male adolescents and young adults living with HIV participated in the study. Data on the sample characteristics are presented in [Table 1](#). Two-thirds of the

sample identified as Black or African American and 98.5% self-identified as gay, bisexual, or some other sexual orientation identity category indicating same-gender sexual activity. Over half of participants were not employed, 37%

Table 1 Characteristics of the sample ($N = 200$)

	M	SD	Range
Age in years	21.15 (mean)	1.91	16–24
Months since diagnosis	28.5 (mean)	1.1	2.0–96.0
Most recent viral load	127.0 (median)		0–294,000
Most recent CD4	436 (median)		12–1500
		<i>N</i>	%
Ethnic identity			
Black/African American		132	66.0
Hispanic/Latino		37	18.5
Non-Hispanic white		14	7.0
Native American		2	1.0
Asian American		1	0.5
Mixed race/other		14	7.0
Sexual orientation identity			
Gay/queer		156	78.0
Bisexual		24	12.0
Straight		3	1.5
Trade		5	2.5
Down low		3	1.5
Questioning		2	1.0
Other		7	3.5
Education			
Did not complete high school		53	26.5
High school graduate		74	37.0
Some college/technical school		62	31.0
College/technical school graduate		9	4.5
Graduate school, not yet completed		2	1.0
Employment			
Full-time		44	22.0
Part-time		47	23.5
Not employed		109	54.5
Living arrangement			
Has own house/apartment		66	33.0
At parents’ house/apartment		70	35.0
At another person’s house/apartment		25	12.5
Foster/group home/boarding/halfway house		20	10.0
Other place not mentioned		9	4.5
Relationship status			
In a relationship		41	20.5
Single		159	79.5
Medication status: on antiretroviral therapy			
Yes		95	47.5
No		105	52.5

reported graduating from high school, 31% had some college/technical school or were currently in college/technical school, and 26.5% had not completed high school. Approximately one in five participants reported currently being in a long-term relationship for 1 year or more. Slightly less than half of the sample was currently on antiretroviral therapy (47.5%), and the mean time since HIV diagnosis was 28.5 months.

Regression Analysis

The regression model examining the association between the identity factors and missed medical appointments in the past 3 months is presented in Table 2. Affirmation of ethnic identity, exploration of ethnic identity, personal homonegativity, gay affirmation, morality of homosexuality, HIV-related negative self-image, and salience of HIV identity were entered as predictor variables. The identity factors model significantly predicted the likelihood that a gay/bisexual young man living with HIV would miss one or more medical appointments in the past 3 months ($\chi^2 = 14.5$, $df = 3$, $P < .002$). Ethnic identity affirmation (odds ratio [OR] = 0.6; 95% confidence interval [CI]: 0.3, 0.9), morality of homosexuality (OR = 1.7; 95% CI: 1.2, 2.5), and HIV-positive identity salience (OR = 1.5; 95% CI: 0.9, 2.4) were associated with significantly higher risk for missed appointments in the past 3 months. The variable of HIV-positive identity salience was retained in the model because its proximity to significance and for theoretical reasons and as a cautionary prevention of a Type II error ($P = .077$).

Discussion

Ensuring that adolescents and young adults living with HIV attend their medical appointments and are engaged in medical care is critical for their long-term survival. Despite its importance, few studies have examined adolescent-specific factors that may play a role in promoting engagement in care among this population. Such information is especially needed for gay and bisexual male youth who may experience heterosexism in medical settings, and who represent the largest group of youth living with HIV in the United States [1, 2]. The current study sought to address this

need by focusing on the critical developmental factor of identity development in order to explore determinants of adherence to medical appointments among a diverse sample of gay/bisexual male youth living with HIV, with a specific focus on ethnic identity, sexual orientation identity, and identity as a young man living with HIV.

The Affirmation, Belonging, and Commitment component of ethnic identity was negatively associated with adherence to medical appointments, such that those adolescents with a stronger connection to their ethnic identity were less likely to have missed an appointment during the prior 3 months. Various studies with diverse groups of adolescents have supported the finding of two distinct but related components of ethnic identity measured by the MEIM, including a sense of belonging to one's ethnic group (affirmation) and the exploration of ethnic identity (exploration) [50, 59, 65–67]. The affirmation sub-scale which was found to be a significant predictor in this study is aligned with a solid commitment to one's ethnic group, and thus is considered to be a better indicator of the actual strength of ethnic identification [50].

The relationship between a stronger ethnic identification and greater adherence to medical appointments that emerged in this study is supported by literature in other areas of adolescent health; adolescents with a greater sense of belonging and commitment to their ethnic group demonstrate lower levels of negative emotional and behavioral outcomes [49–53]. Youth living with HIV who have a more solidified ethnic identity likely have less ethnic identity conflict and confusion, thus may be more well-grounded and able to manage other areas of their life such as keeping medical appointments. In addition, they may have connections to others in their ethnic community who can support their health-promoting behaviors. This finding not only supports the centrality of ethnic identity for gay/bisexual male adolescents living with HIV, but also highlights the importance of using multi-factorial measures when exploring complex identities such as ethnic identity.

The Morality of Homosexuality component of sexual orientation identity was positively associated with engagement in care, such that those adolescents with more negative attitudes toward gay/bisexual people in general were more likely to have missed an appointment during the prior 3 months. This was the only subscale from the IHNI that

Table 2 Regression model for missed appointment in the past 3 months ($N = 200$)

Parameter	df	Estimate	Standard error	χ^2	<i>P</i>	Odds ratio	95% CI	
							Lower	Upper
Ethnic identity affirmation	1	−.603	.281	4.595	<.05	0.6	0.3	0.9
Morality of homosexuality	1	.531	.191	7.740	<.01	1.7	1.2	2.5
HIV-positive identity salience	1	.408	.231	3.123	.077	1.5	0.9	2.4

demonstrated a statistically significant association; thus attitudes towards one's own gay/bisexual sexual orientation, whether positive or negative, were surprisingly not associated with missed appointments. This should also be viewed within the context that the vast majority (98.5%) of the participants in the study identified with some sexual orientation category other than "straight."

Fassinger and Miller have stressed the importance of differentiating between the development of an individual sexual orientation identity and the development of a group membership identity, which involves developing affiliations with others who are members of that group [68]. Those youth who have not developed a group membership identity are typically less far along in their gay/bisexual sexual orientation identity development process since they may have accepted their own sexual orientation, but have not been comfortable enough to connect with other gay/bisexual people [60, 68]. Thus, discomfort with gay/bisexual people and subsequent lack of connection with similar others may restrict these adolescents from gaining the sexual health protective benefits associated with having a strong connection to a larger gay community found in studies with HIV-negative gay/bisexual male youth [43, 46, 47]. For example, Rosario et al. [43] found that more positive attitudes toward same-gender sexual expression was related to decreases in unprotected sexual activity for youth, whereas Ridge et al. [46] found that young gay men who did not belong to gay organizations reported higher rates of recent unprotected anal intercourse. Data from the current investigation suggest that comfort (and perhaps connection) with the larger gay community also has protective effects for gay/bisexual male youth living with HIV.

For some male youth, receiving an HIV diagnosis may lead them to struggle with not only accepting their medical diagnosis but also accepting their gay or bisexual sexual orientation. They also may fear that disclosure of their HIV status to family and friends may be a disclosure of their sexual orientation [69]. If receipt of an HIV diagnosis leads some youth to examine and accept their same-gender sexual attraction before they were psychologically prepared to do so, this may contribute to some of these youth being less far along in their sexual orientation identity development process and less comfortable with a gay/bisexual sexual orientation. Lacking the psychological resources to address these dual issues, some youth may avoid the medical care system as a way to cope. In addition, youth who have a negative attitude toward a gay/bisexual sexual orientation and gay/bisexual people in general may feel less comfortable seeking medical care in a clinic where they may have contact with other gay/bisexual youth. This avoidance of other gay/bisexual youth also may restrict them from receiving the social support benefits of interacting with other youth who are living with HIV [70–72].

Although the finding related to identity as a young man living with HIV approached statistical significance, it was still retained given the exploratory nature of the study. The Salience component of the HIV-Positive Identity Questionnaire was positively associated with engagement in care, such that those adolescents for whom their HIV status was more salient or central to their self concept were more likely to have missed an appointment during the prior 3 months. This finding should be viewed with caution since the HIV-Positive Identity Questionnaire that was used for this construct was developed as part of a doctoral dissertation, and has not been used in subsequent studies [62]. However, it was the only instrument found that was specifically developed to assess HIV identity specifically among adolescents.

HIV identity among youth has been sparsely covered in the extant literature, thus this study represents one of the first investigations of the potential predictive role of HIV identity for youth living with HIV. HIV identity is inherently different from both ethnic identity and sexual orientation identity in that the latter two are types of identity that are part of the developmental process for all adolescents, and the successful achievement of these identities has been associated with positive health outcomes [43, 49, 53, 54]. HIV identity, on the other hand, is something that only those adolescents who are diagnosed with HIV will encounter and the impact of successfully developing such an identity is not clear.

The findings from the current study suggest that those adolescents with a more salient HIV identity may be more likely to miss medical appointments, and thus not receive the full benefit from their care providers. It may be that there is a non-linear relationship between HIV identity salience and adherence to medical appointments, whereby if young adults have not dealt with their HIV diagnosis and incorporated their status into their sense of self it may have negative ramifications; alternatively if they identify too much with their HIV diagnosis, it may become overwhelming and also negatively impact their ability to keep all of their medical appointments. Given that HIV is a health condition that is highly stigmatized in society [73, 74], it also may be that the development of a salient HIV identity can increase the likelihood that one experiences HIV-related stigma. An ever increasing body of literature supports the idea that stigma can have a direct negative impact on people living with HIV's engagement in healthcare [26, 28, 29], including adolescent-specific studies that have demonstrated the negative impact of stigma on youth's HIV-related treatment [27, 75, 76]. Thus, gay/bisexual adolescents living with HIV who have their HIV status as central to their overall identity may experience more negative health outcomes than those who do not.

Implications

This study demonstrates the critical importance of multiple forms of identity development among gay/bisexual male adolescents living with HIV, and their associations with adherence to medical appointments as a critical aspect of engagement in care. Although ethnic identity development and gay/bisexual sexual orientation identity development for male adolescents have been shown to occur concurrently, the actual processes involved with the development of each identity are often independent [54]. The manner in which an identity as a young man living with HIV fits into the identity development trajectory for gay/bisexual male adolescents living with HIV needs further investigation, although it appears that a salient HIV-positive identity may not have the same health-promoting influences as ethnic and sexual orientation identity.

Given the salience of ethnic and gay/bisexual sexual orientation identity for youth, care providers should attend to the role that these developmental factors may play in adherence to medical appointments. Providers are encouraged to talk with youth about their ethnicity and sexual orientation, and to explore both the strengths and challenges that may be associated with each of these identities. Given the association between negative attitudes toward gay/bisexual people and missed appointments, providers should be aware that some male clients may be uncomfortable discussing issues of sexual orientation and sexuality openly with other youth and thus may not be good candidates for group-based services. Training should be provided to health care providers to assure that they know how to address issues of ethnic identity and sexual orientation in their work with youth living with HIV.

Care environments should also be culturally appropriate and inviting to the wide diversity of youth living with HIV. Such settings may also increase adherence to medical appointments and general engagement in care for youth if they provide supportive role models and peer buddies that reflect the ethnicity and sexual orientation of the youth being served. This may help to increase the social support experienced by youth, a factor that has been demonstrated to be associated with more positive health outcomes among adolescents living with HIV [77, 78]. It is important to also be aware that male youth who are exploring their sexual orientation identity may have varying levels of comfort interacting with other gay/bisexual male youth.

Strengths, Limitations, and Future Directions

The current study examined the role of multiple identities on adherence to medical appointments as one aspect of engagement in care among a large sample of ethnically diverse male adolescents living with HIV. The sample

included youth from major HIV epicenters in the United States, and included a cross-section of young men from various geographic regions across the country. The vast majority of the measures used were well-established instruments with strong psychometric properties.

Despite these strengths, the study did possess limitations. The outcome measure which was used to assess adherence to medical appointments was only a single item measure of the number of missed doctors' appointments in the prior 3 months. This item was limited since it did not specify the types of medical visits that were missed (e.g. HIV-specific medical care, preventive care, mental health, etc.), did not assess visits with other diagnostic and care professionals who are not doctors (e.g. phlebotomists, case managers, etc.), and did not assess whether or not the appointment(s) that were missed were rescheduled [21]. Thus, youth may have interpreted this item in different ways. Nonetheless, it was the best measure of adherence to medical appointments available in the dataset.

Since the outcome variable was a self-report item assessing behavior in the prior 3 months, it also may have been subject to recall bias. It also may be that environmental or other contextual factors unrelated to identity impacted a youth's ability to attend his doctors' appointments in the three-month time period that was measured. In addition, the use of unconfirmed self-report data regarding medical visits does not provide the same level of accuracy as more rigorous methods such as medical record extraction, particularly with marginalized populations such as the youth involved in the current study [63]. Future studies focused on adherence to medical appointments and the larger construct of engagement in care should consider more comprehensive assessment measures [21, 63].

Another measurement limitation was the lack of research that has been conducted with the Saliency subscale of the HIV-Positive Identity Questionnaire [62]. Given the importance of identity development for adolescents, further investigation of this measure, as well as of the overall construct of HIV-positive identity among adolescents, is warranted. Since youth were recruited from adolescent medicine clinical care sites, participants were receiving some level of medical care for their HIV. Thus the results may not be generalizable to populations of gay and bisexual young men living with HIV who are not connected to any type of medical care facility, either because they have not yet engaged in care or because they were originally in care but did not maintain this connection. Future research efforts should attempt to sample participants outside of clinical care sites so as to include these non-connected young men in their studies, and attempt to follow them over time in order to assess longitudinal relationships between identity-related constructs and engagement in care.

This paper represents the initial step in elucidating the relationship between identity development and engagement in care. Future research should further explore the relationship among various forms of adolescent identity development and more comprehensive operational definitions of engagement in care for gay/bisexual male adolescents living with HIV. This should include the use of qualitative and mixed-methods investigations to better understand the complexity of multiple identities and the potential mechanisms through which identity may be influencing engagement in care. Studies also should include a range of measures for assessing engagement in care, and also follow youth over time to see how changes in identity development may influence engagement in care. Other aspects of adolescent identity that were not included in the current study should also be examined in future studies, as well as other populations of adolescents living with HIV such as female adolescents and young adults.

Acknowledgments The adolescent medicine trials network for HIV/AIDS interventions (ATN) is funded by grants 5U01 HD 40533 and 5U01 HD 40474 from the National Institutes of Health through the National Institute of Child Health and Human Development (Bill Kappogianis, MD; Sonia Lee, PhD) with supplemental funding from the National Institutes on Drug Abuse (Nicolette Borek, PhD) and Mental Health (Susannah Allison, PhD; Pim Brouwers, PhD). Additional grants that supported this work at each of the ATN sites include: University of South Florida, Tampa FL: 5U01HD040497-09; Children’s Hospital of Los Angeles, Los Angeles CA: 5U01HD040463-09; Children’s National Medical Center, Washington, DC: ATN Core grant: UO1 HD040562-10, Westat subcontract: UO1 HD 040474-10; Children’s Hospital of Philadelphia, Philadelphia, PA: U01-HD040474; John H. Stroger, Jr. Hospital, the CORE Center, and the Cook County Bureau of Health Services, Chicago, IL: 5U01HD040515-09; Montefiore Medical Center, NY, NY: 2U01HD040474-10; Mt. Sinai Medical Center, NY, NY: HD40505-10; Univ. of San Francisco, San Francisco, CA: U01HD040474-09; Tulane University, New Orleans, LA: A46090A3; University of Maryland, Baltimore, MD: 2U01 HD040474-09; University of Miami, Miami, FL: #HD040494; Children’s Diagnostic and Treatment Center, Ft. Lauderdale, FL: 5U01HD040476-08. This study was scientifically reviewed by the ATN’s Behavioral Leadership Group (BLG). The authors wish to acknowledge the input and support of the ATN Coordinating Center for Network scientific and logistical support (Craig Wilson, MD; Cynthia Partlow, MEd); the ATN Data and Operations Center at Westat (Jim Korelitz, PhD; Barbara Driver, RN, MS); and the ATN Community Advisory Board and the youth who participated in the study.

References

1. CDC. Trends in HIV/AIDS diagnoses among men who have sex with men—33 states, 2001–2006. *MMWR Morb Mortal Wkly Rep.* 2008; 57:681–686.
2. CDC. HIV surveillance in adolescents and young adults. Atlanta, GA: US Department of Health and Human Services. Available at www.cdc.gov/hiv/topics/surveillance/resources/slides/adolescents/index.htm.
3. Harper GW. Sex isn’t that simple: culture and context in HIV prevention interventions for gay and bisexual male adolescents. *Am Psychol.* 2007;62(8):803–19.
4. Giordano TP, Gifford AL, White AC, Suarez-Almazor ME, Rabeneck L, Hartman C, et al. Retention in care: a challenge to survival with HIV infection. *Clin Infect Dis.* 2007;44(11):1493–9.
5. Heckman BD, Catz SL, Heckman TG, Miller JG, Kalichman SC. Adherence to antiretroviral therapy in rural persons living with HIV disease in the United States. *AIDS Care.* 2004;16:219–30.
6. Mugavero MJ, Lin HY, Allison JJ, Willig JH, Chang PW, Marler M, et al. Failure to establish HIV care: characterizing the “no show” phenomenon. *Clin Infect Dis.* 2007;45(1):127–30.
7. Mugavero MJ, Lin HY, Willig JH, Westfall AO, Ulett KB, Routman JS, et al. Missed visits and mortality among patients establishing initial outpatient HIV treatment. *Clin Infect Dis.* 2009;48(2):248–56.
8. Coleman SM, Rajabin S, Cabral HJ, Bradford JB, Tobias CR. Sexual risk behavior and behavior change among persons newly diagnosed with HIV: the impact of targeted outreach interventions among hard to reach populations. *AIDS Pat Care STDS.* 2009;23(8):639–45.
9. Del RC, Green S, Abrams C, Lennox J. From diagnosis to undetectable: the reality of HIV/AIDS care in the inner city. In: Program and abstracts of the 8th Conference on Retroviruses and Opportunistic Infections. Chicago, 2001 [abstract S21].
10. Gardner LI, Metsch LR, Anderson-Mahoney P, Loughlin AM, del Rio C, Strathdee S. Efficacy of a brief case management intervention to link recently diagnosed HIV-infected persons to care. *AIDS.* 2005;19(4):423–31.
11. Turner BJ, Cunningham WE, Duan N, Anderson RM, Shapiro MF, Bozette SA, et al. Delayed medical care after diagnosis in a US national probability sample of persons infected with human immunodeficiency virus. *Arch Intern Med.* 2000;160(17):2614–22.
12. Samet JH, Freedberg KA, Stein MD, Lewis R, Savetsky J, Sullivan L, et al. Trillion-virion delay: time from testing positive for HIV to presentation for primary care. *Arch Intern Med.* 1998; 158(7):734–40.
13. Giordano TP, Visnegarwala F, White AC Jr, Troisi CL, Frankowski RF, Hartman CM, et al. Patients referred to an urban HIV clinic frequently fail to establish care: factors predicting failure. *AIDS Care.* 2005;17(6):773–83.
14. Conviser R, Pounds MB. Background for the studies on ancillary services and primary care use. *AIDS Care.* 2002;14(Suppl 1): S7–14.
15. Halkitis PN, Parsons JT, Wolitski RJ, Remien RH. (2003). Characteristics of HIV antiretroviral treatments, access and adherence in an ethnically diverse sample of men who have sex with men. *AIDS Care.* 2003;15(1):89–102.
16. Shapiro MF, Morton SC, McCaffrey DF, Senterfitt JW, Fleishman JA, Perlman JF, et al. Variations in the care of HIV-infected adults in the United States: results from the HIV cost and services utilization study. *JAMA.* 1999;281:2305–15.
17. Ashman JJ, Conviser R, Pounds MB. Associations between HIV-positive individuals’ receipt of ancillary services and medical care receipt and retention. *AIDS Care.* 2002;14(Suppl 1):S109–8.
18. Naar-King S, Bradford J, Coleman S, Green-Jones M, Cabral H, Tobias C. Retention in care of persons newly diagnosed with HIV: outcomes of the outreach initiative. *AIDS Pat Care STDS.* 2007;21(Suppl 1):S40–8.
19. Aberg JA, Kaplan JE, Libman H, et al. Primary care guidelines for the management of persons infected with human immunodeficiency virus: 2009 update by the HIV medicine association of the infectious diseases society of america. *Clin Infect Dis.* 2009;49(5):651–81.
20. Panel on antiretroviral guidelines for adults and adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. 2011;1–166. Available at <http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf>. Accessed 19 June 2011.

21. Horstmann E, Brown J, Islam F, Buck J, Agins BD. Retaining HIV-infected patients in care: where are we? Where do we go from here? *Clin Infect Dis*. 2010;50(5):752–61.
22. Baker DW, Parker RM, Williams MV, Clark WS. Health literacy and the risk of hospital admission. *J Gen Intern Med*. 1998; 13(12):791–8.
23. Davis TC, Arnold C, Berkel HJ, Nandy I, Jackson RH, Glass J. Knowledge and attitude on screening mammography among low-literate, low-income women. *Cancer*. 1996;78(9):1912–20.
24. Kalichman SC, Ramachandran B, Catz S. Adherence to combination antiretroviral therapies in HIV patients of low health literacy. *J Gen Intern Med*. 1999;14(5):267–73.
25. Rumpitz MH, Tobias C, Ralabian S, Bradford J, Cabral H, Young R, et al. Factors associated with engaging socially marginalized HIV-positive persons in primary care. *AIDS Pat Care STDS*. 2007;21(Suppl 1):S30–9.
26. Tobias C, Cunningham WE, Cunningham CO, Pounds MB. Making the connection: the importance of engagement and retention in HIV medical care. *AIDS Pat Care STDS*. 2007; 21(Suppl 1):S3–8.
27. Rao D, Kekwaletswe TC, Hosek S, Martinez J, Rodriguez F. Stigma and social barriers to medication adherence with urban youth living with HIV. *AIDS Care*. 2007;19(1):28–33.
28. Waite KR, Paasche-Orlow M, Rintamaki LS, Davis TC, Wolf MS. Literacy, social stigma, and HIV medication adherence. *J Gen Intern Med*. 2008;23(9):1367–72.
29. Wolitski RJ, Pals SL, Kidder DP, Courtenay-Quirk C, Hotgrave DR. The effects of HIV stigma on health, disclosure of HIV status, and risk behavior of homeless and unstably housed persons with HIV. *AIDS Behav*. 2009;13(6):1222–32.
30. DiMatteo MR. Social support and patient adherence to medical treatment: a meta-analysis. *Health Psychol*. 2004;23(2):207–18.
31. Basta T, Shacham E, Reece M. Psychological distress and engagement in HIV related services among individuals seeking mental health care. *AIDS Care*. 2008;20(8):969–76.
32. Hosek SG, Harper GW, Domanico R. Psychological and social difficulties of adolescents living with HIV: a qualitative analysis. *J Sex Edu Ther*. 2000;25:269–76.
33. Joyce GF, Chan KS, Orlando M, Burnam MA. Mental health status and use of general medical services for persons with human immunodeficiency virus. *Med Care*. 2005;43(8):834–9.
34. Naar-King S, Templin T, Wright K, Frey M, Parsons JT, Lam P. Psychosocial factors and medication adherence in HIV-positive youth. *AIDS Pat Care STDS*. 2006;20(1):44–7.
35. Palacio H, Shiboski CH, Yelin EH, Hessel NA, Greenblatt RM. Access to and utilization of primary care services among HIV-infected women. *J Acquir Immune Defic Syndr*. 1999;21(4): 293–300.
36. Magnus M, Jones K, Phillips G, Binson D, Hightow-Weidman LB, Richards-Clarke C, et al. Characteristics associated with retention among African American and Latino adolescent HIV-positive men: results from the outreach, care, and prevention to engage HIV-seropositive young MSM of color special project of national significance initiative. *J Acquir Immune Defic Syndr*. 2010;53(4):529–36.
37. Adams GR, Gullotta TP, Montemayor R. Adolescent identity formation. Newbury Park: Sage; 1992.
38. Erikson EH. Identity, youth, and crisis. New York: Norton; 1968.
39. Hosek SG, Harper GW, Robinson WL. Identity development in adolescents living with HIV. *J Adolesc*. 2002;25(4):355–64.
40. Harper GW, Schneider M. Oppression and discrimination among lesbian, gay, bisexual, and transgendered people and communities: a challenge for community psychology. *Am J Community Psychol*. 2003; 31(3/4):243–52.
41. Ryan C, Futterman D. Lesbian and gay youth: care and counseling. New York: Columbia University Press; 1998.
42. Blake SM, Ledsy R, Lehman T, Goodenow C, Sawyer R, Hack T. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: the benefits of gay-sensitive HIV instruction in schools. *Am J Public Health*. 2001;91(6):940–6.
43. Rosario M, Hunter J, Maguen S, Gwadz M, Smith R. The coming-out process and its adaptational and health-related associations among gay, lesbian, and bisexual youths: stipulation and exploration of a model. *Am J Community Psychol*. 2001;29(1):113–60.
44. Rotheram-Borus MJ, Reid H, Rosario M, Kasen S. Determinants of safer sex patterns among gay/bisexual male adolescents. *J Adolesc*. 1995;18(1):3–15.
45. Waldo CR, Hesson-McInnis MS, D’Augelli AR. Antecedents and consequences of victimization of lesbian, gay, and bisexual young people: a structural model comparing rural university and urban samples. *Am J Community Psychol*. 1998;26(2):307–34.
46. Ridge DT, Plummer DC, Minichiello V. Young gay men and HIV: running the risk? *AIDS Care*. 1994;7(1):108.
47. Waldo CR, McFarland W, Katz MH, MacDellar D, Valleroy LA. Very young gay and bisexual men are at risk for HIV infection: the San Francisco young men’s survey II. *J Acquir Immune Defic Syndr*. 2000;24(2):168–74.
48. Phinney J. Ethnic identity in adolescents and adults. *Psychol Bull*. 1990;108(3):499–514.
49. Phinney J, Chavira V. Ethnic identity and self-esteem: an exploratory longitudinal study. *J Adolesc*. 1992;15(3):271–81.
50. Roberts RE, Phinney JS, Mase LC, Chen YR, Roberts CR, Romero A. The structure of ethnic identity of young adolescents from diverse ethnocultural groups. *J Early Adolesc*. 1999;19(3):301–22.
51. Rotheram-Borus MJ. Adolescents’ reference-group choices, self-esteem, and adjustment. *J Pers Soc Psychol*. 1990;59(5):1075–81.
52. Schwartz SJ, Mason CA, Pantin H, Wang W, Brown CH, Campo A, et al. Relationships of social context and identity to problem behavior among high-risk Hispanic adolescents. *Youth Soc*. 2009;40(4):541–70.
53. Street J, Harris-Britt A, Walker-Barnes C. Examining relationships between ethnic identity, family environment, and psychological outcomes for African American adolescents. *J Child Fam Stud*. 2009;18(4):412–20.
54. Jamil OB, Harper GW, Fernández MI. Adolescent trials network for HIV/AIDS interventions. Sexual and ethnic identity development among gay/bisexual/questioning (GBQ) male ethnic minority adolescents. *Cultur Divers Ethnic Minor Psychol*. 2009;15(3):203–14.
55. Díaz RM. Latino gay men and HIV: culture, sexuality, and risk behavior. New York: Routledge; 1998.
56. Harper GW, Jernewall N, Zea MC. Giving voice to emerging science and theory for lesbian, gay, and bisexual people of color. *Cultur Divers Ethnic Minor Psychol*. 2004;10(3):187–99.
57. Martinez DG, Sullivan SC. African American gay men and lesbians: examining the complexity of gay identity development. *J Hum Behav Soc Environ*. 1998;1(2/3):243–64.
58. Han C. There’s something about being gay and Asian...that’s special. *Int Examiner*. 2001;28(19):12.
59. Phinney J. The multigroup ethnic identity measure: a new scale for use with adolescents and young adults from diverse groups. *J Adolesc Res*. 1992;7:156–76.
60. Mayfield WM. The development of an internalized homonegativity inventory for gay men. *J Homosex*. 2001;41(2):53–76.
61. Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: psychometric assessment of the HIV stigma scale. *Res Nurs Health*. 2001;24(6):518–29.
62. Carter TJ. HIV-positive identity and health behaviors in adolescents living with HIV. (Doctoral dissertation, University of Miami, 2005). Dissertation Abstracts International: Section B. 2005;66(8-B):4475.
63. Sohler NL, Coleman SM, Cabral H, et al. Does self-report data on HIV primary care utilization agree with medical record data for

- socially marginalized populations in the United States? *AIDS Pat Care STDS*. 2009;23(10):837–43.
64. SPSS. The statistical package for the social sciences (Version 17.0) [Computer software], Chicago. 2008.
 65. Dandy J, Durkin K, McEvoy P, Barber BL, Houghton S. Psychometric properties of multigroup ethnic identity measure (MEIM) scores with Australian adolescents from diverse ethnocultural groups. *J Adolesc*. 2008;31(3):323–35.
 66. Pegg PO, Plybon LE. Toward the theoretical measurement of ethnic identity. *J Early Adolesc*. 2005;25(2):250–64.
 67. Yancey AK, Aneshensel CS, Driscoll AK. The assessment of ethnic identity in a diverse urban youth population. *J Black Psychol*. 2001;27(2):190–208.
 68. Fassinger RE, Miller BA. Validation of an inclusive model of sexual minority identity formation on a sample of gay men. *J Homosex*. 1996;32(2):53–78.
 69. Zea M, Reisen C, Poppen P, Bianchi F, Echeverry J. Predictors of disclosure of human immunovirus-positive serostatus among Latino gay men. *Cultur Divers Ethnic Minor Psychol*. 2007;13(4):304–12. doi:10.1037/1099-9809.13.4.304.
 70. Hosek SG, Harper GW, Lemos D, Martinez J, ATN. An ecological model of stressors experienced by youth newly diagnosed with HIV. *J HIV AIDS Prev Child Youth*. 2008;9(2):192–218.
 71. Lam PK, Naar-King S, Wright K. Social support and disclosure as predictors of mental health in HIV-positive youth. *AIDS Pat Care STDS*. 2007;21(1):20–9.
 72. Macdonell KE, Naar-King S, Murphy DA, Parsons JT, Harper GW. Predictors of medication adherence in high risk youth of color living with HIV. *J Pediatr Psychol*. 2010;35(6):593–601.
 73. Alonzo AA, Reynolds NR. Stigma, HIV and AIDS: an exploration and elaboration of a stigma trajectory. *Soc Sci Med*. 1995;41(3):303–15.
 74. Herek GM, Capitano JP, Widaman KF. HIV-related stigma and knowledge in the United States: prevalence and trends, 1991–1999. *Am J Public Health*. 2002;92(3):371–7.
 75. Hosek SG, Harper GW, Domanico R. Predictors of medication adherence among HIV-infected youth. *Psychol Health Med*. 2005;10(2):166–79.
 76. Swendeman D, Rotheram-Borus MJ, Comulada S, Weiss R, Ramos ME. Predictors of HIV-related stigma among young people living with HIV. *Health Psychol*. 2006;25(4):501–9.
 77. Naar-King S, Kolmodin K, Parsons JT, Murphy D, ATN 004 Protocol Team, Adolescent Trials Network for HIV/AIDS Interventions. Psychosocial factors and substance use in high-risk youth living with HIV: a multi-site study. *AIDS Care*. 2010;22(4):475–82.
 78. Rotheram-Borus MJ, Lee MB, Murphy DA, Futterman D, Duan N, Bimbaum JM, et al. Efficacy of a preventive intervention for youths living with HIV. *Am J Public Health*. 2001;91(3):400–5.