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Do People Know I'm Poz?: Factors Associated with Knowledge of Serostatus among HIV-positive African Americans' Social Network Members

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Abstract

We examined how functional social support, HIV-related discrimination, internalized HIV stigma, and social network structure and composition were cross-sectionally associated with network members' knowledge of respondents' serostatus among 244 HIV-positive African Americans in Los Angeles. Results of a generalized hierarchical linear model indicated people in respondents' networks who were highly trusted, well-known to others (high degree centrality), HIV-positive, or sex partners were more likely to know respondents' HIV serostatus; African American network members were less likely to know respondents' serostatus, as were drug-using partners. Greater internalized stigma among respondents living with HIV was associated with less knowledge of their seropositivity within their social network whereas greater respondent-level HIV discrimination was associated with more knowledge of seropositivity within the network. Additional research is needed to understand the causal mechanisms and mediating processes associated with serostatus disclosure as well as the long-term consequences of disclosure and network members' knowledge of respondents' serostatus.

Keywords

Disclosure; HIV; Social networks; Stigma

Introduction

People living with HIV can experience stigmatizing interactions with the same members of their social circle on whom they depend for social support. While they often gain support from social network members who know their serostatus (1–5), social network members may also stigmatize and discriminate against those whom they know to be positive (6–8). In the present study, we sought to understand how the composition (types of people, including their socio-demographics and extent to which they are stigmatizing) and structure (relationships among people) in one’s network are related to knowledge of one’s serostatus within the network. Identification of the confluence of factors important in understanding why a network member may know a person’s serostatus could ultimately contribute to the design of interventions to help people living with HIV garner greater support while minimizing the adverse effects of stigma.

Sharing information about serostatus is a person-to-person, or dyadic, action; to whom, why, or how a person discloses their own (or someone else’s) HIV serostatus, who knows a person’s serostatus, and what responses that knowledge engenders depend largely on the relationship between the discloser and the person to whom one discloses (9–10). Though anticipated HIV stigma (and other anticipated negative sequelae) may preclude active, voluntary disclosure of seropositivity (2, 11–14), social network members may still learn of individuals’ serostatus passively, through secondhand knowledge (e.g., via a mutual contact), contextual cues (e.g., pill bottles), or indirect discussion of HIV (e.g., at an HIV support group).

The realization that network members—often friends and family—know one’s serostatus has been described as “life-affirming,” providing a “sense of relief” (15), and has been positively correlated with increased levels of support (4, 16) and lower levels of depression (17). Studies examining knowledge of serostatus in social networks have focused on individuals of specific relationship types, finding that family (10, 18) and to some extent sexual partners (10, 19–21) are more likely to know an individual’s serostatus. The quality of the relationship between the respondent and network member has also been important in past studies, in which support and trust have been associated with knowledge of serostatus (3, 9), as were certain characteristics of network members, like being HIV-positive or a sexual partner (3).

Little prior research has examined social network members’ knowledge of serostatus (either from active or passive disclosure) from a network structural perspective (i.e., structural social support, or number and types of linkages within a social network). Position in the social network—like being well-connected or bridging otherwise unconnected regions of the network—can itself potentially affect knowledge of serostatus, above and beyond individual, relationship, and network member characteristics, a point which has not been examined in the literature to date. For example, well-connected network members may assume a central role in an individual’s network, controlling the flow of information about individuals’ HIV serostatus among other network members. Structural arrangements of network members, particularly the maintenance of isolated individuals or groups, can have important implications for flow of information or social support within the respondent’s

network (22). Understanding the characteristics of individuals who know a person's serostatus, their role and position in that HIV-positive person's social network, and their response to that knowledge (supportive or stigmatizing) is important to developing strategies that help seropositive individuals maximize social support, trust, and subsequent health outcomes while minimizing stigma and discrimination from social network members.

In this study, we explored how a broad range of factors was associated with knowledge of serostatus in social networks of African Americans living with HIV in Los Angeles. Given negative effects of HIV-related stigma on disclosure (2) and mental health (20), understanding the kinds of social networks that may engender greater support can help to inform interventions that address the negative impact of stigma and discrimination from close others. Anticipated stigma and fear of discrimination within one's network may undermine social support, potentially because an individual fails to disclose and thus does not take advantage of the potential support available, or because an individual may end long-term relationships with important caregivers who are seen as stigmatizing. We add to the literature by identifying factors, both compositional and structural, upon which networks can be strengthened. We used multi-level modeling to examine how individual characteristics of the HIV-positive respondent (e.g., internalized HIV stigma), and characteristics of their social networks, including features of their relationships with their network members (e.g., support, trust) and network members' position within the network, related to knowledge of HIV serostatus. Based on previous research, and guided by the Disclosure Processes Model (13, 23), we hypothesized that (1) network members who provided greater support would be more likely to know a respondent's HIV serostatus; (2) HIV-related internalized stigma felt by the respondent and experiences with HIV-related discrimination would lead to fewer network members knowing a respondent's HIV serostatus; and (3) popular network members would be more likely to know a respondent's HIV serostatus, given their more central, well-connected position in the network.

Methods

Participants and Procedures

We recruited 248 HIV-positive African Americans in Los Angeles, California, an area of significant HIV prevalence for African Americans, to the Mednet study, which investigated relationships between social networks and HIV care, from August 2010 through September 2012. Two HIV social services agencies managed recruitment and data collection: SPECTRUM Community Services at Charles Drew University of Medicine and Science and AIDS Project Los Angeles, both of which facilitated recruitment of clients and non-clients of their agencies through direct contact and printed materials in outpatient clinics and waiting rooms and community food banks.

Those interested in participating called a dedicated project number for an initial screening or completed an onsite screening. A research assistant described the study, screened interested participants for information on age, race, gender, HIV serostatus, whether or not the person was currently in HIV care, and/or on antiretroviral therapy. Eligible participants scheduled a baseline interview, during which we obtained written informed consent. Inclusion criteria included being 18 years old or older, African American and HIV-positive. All participants

completed an audio computer-assisted interview for most survey measures, and an interviewer then guided participants through adherence and social network measures. Respondents received \$50 for participation. The Institutional Review Board of Charles Drew University of Medicine and Science and the Human Subjects Protection Committee of the RAND Corporation provided approval for the study.

Measures

Respondent-level Variables—Respondents reported their date of birth, gender (male, female, male-to-female transgender), unemployment status (1=yes, 0=no), income (1=income > \$10,000/year, 0=income <= \$10,000/year), education (did not complete high school, completed high school, education beyond high school), sexual orientation (lesbian/gay, straight, bisexual, other), and relationship status (1=single, 0=in relationship). Respondents completed the 7-item Personalized HIV Stigma Scale (e.g., “Being HIV positive makes me feel dirty.”), with response options “1, disagree strongly” to “5, agree strongly” and a midpoint of “3, neither agree or disagree” ($\alpha = 0.86$) (24). HIV-related discrimination was measured with the 10-item HIV-related perceived discrimination subscale of the Multiple Discrimination Scale (e.g., “In the past year, were you ignored, excluded, or avoided by people close to you because someone knew or suspected that you were HIV-positive?”) with response options “0, No” and “1, Yes” ($\alpha = 0.88$) (7, 25). Respondents’ most recent CD4 count was abstracted from medical records

Social Network Variables—To collect social network information (both network-wide summaries of structure and composition and relationship-specific information about network member characteristics and network position), we used a personal network approach, in which respondents named network members close to them, described those network members, and then defined how network members related to one another (26–27). Each respondent was asked to name 20 network members “...with whom they have been in communication in the past 30 days (by phone, email, in person, etc.), including kin (immediate and extended family), friends, acquaintances, neighbors, and people in service/helping positions (e.g., health care workers, counselors).” Research has shown that 20 network members are sufficient to capture structural and compositional variability in most personal networks (26). Respondents who were unable to spontaneously name 20 network members were probed using elicitation techniques (28). After eliciting network members’ names, respondents were asked how often each network member interacted with every other network member. Network members were connected to one another if the respondent said the pair of network members were “Almost always/always” in “...contact with each other in the past year, either face-to-face, by phone, mail, or email,” given answer choices “Never,” “Almost never,” “Sometimes,” or “Almost always/always.” For confidentiality reasons, we only collected pseudonyms or initials for network members. Network density was measured at the respondent level.

Our outcome of interest was the question, “Does [network member] know that you are HIV positive? It’s OK to tell me that you don’t know or are not sure.” This item assessed knowledge of HIV serostatus, inclusive of active or passive disclosure, and has been implemented in prior research (9–10).

Respondents provided socio-demographic information for each network member (age, gender, race, and whether the network member was a family member, sex partner, or drug partner) as well as respondent/network member emotional closeness (“How close are you to [network member] emotionally,” with responses “Not close at all,” “Somewhat close,” or “Very close”) and trust (“How much do you trust [network member],” with responses “Not at all,” “A little bit,” or “Very much”), frequency of interaction (“How much do you see, talk to, or email with [network member] in a typical month,” with responses “Never,” “About 1–3 times a month,” “About 1–2 times a week,” “Several (about 3–5) times a week,” or “Every day or nearly every day”), whether the network member knew the respondent’s HIV serostatus, and whether the network member was HIV-positive (and if yes, whether the network member was taking antiretroviral therapy).

Respondent and network member ages were treated as normalized variables over the range of age responses to account for both young and old outliers, similar to Latkin et al. (9). Because most network members were African American, network member race was dichotomized to be African American or not. Both emotional closeness and trust in a network member were dichotomized such that the respondent was either “very close to” or “trusted very much” the network member, respectively, or not. Interaction between the respondent and network member was dichotomized to “weekly interaction or greater” or not. We derived a variable, gender homophily, that was 1 if the respondent and the network member were the same gender and 0 if otherwise.

Network density and network members’ degree centrality were calculated in R 2.15.1 (29). Density measured the overall connectedness of one’s network, defined as the number of relationships among network members reported relative to all possible relationships among network members. Degree centrality indicated the extent to which a network member was “popular” in a respondent’s network. That is, the higher degree centrality, the more relationships the respondent reported that the network member maintained with others. Due to the nature of a personal network data collection, we calculated total degree centrality, which for any given network member can be a maximum of $n - 1$, where n is the total number of network members in a respondent’s personal network, rescaled by $n - 1$ so that degree was comparable across networks of different size. All network data were collected in Egoweb, an open-source software application for collecting personal network information (30–31).

Data Analysis

Because network members were nested within respondents, a standard logistic regression would not properly account for the correlation between network members of the same respondent (32). A hierarchical linear model can be used to analyze network members within respondents while allowing variation between respondents and capturing correlation between network members within respondents. For a dichotomous outcome, like knowledge of HIV serostatus, the hierarchical linear model can be fit as a generalized hierarchical linear model with a given distribution. In our case, we used a binomial distribution.

We modeled knowledge of serostatus as a function of respondent and network member demographic, behavioral, relationship, and network characteristics at both the respondent

and network member levels. We used a forward-selection process starting with demographic variables, adding behavioral characteristics, and finally introducing network measures. We checked within-step variable correlation, removing variables that were highly correlated (values of 0.6 or greater) or non-significant. For correlated variables, the variable with the stronger bivariate association with knowledge of serostatus was retained. We also estimated predicted probabilities of knowledge of HIV serostatus varying each significant predictor while retaining other significant predictors at their means, to identify the magnitude of a variable's association with a network member's knowledge of a respondent's HIV serostatus.

We compared high- and low-centrality network members in subsequent analyses. High centrality network members were defined as those network members with the largest number of connections to other network members within a respondent's social network. If two or more network members had the same degree (e.g., number of connections), they were all included. Conversely, the network members with the fewest connections were also analyzed, again, allowing for multiple network members with the same low degree. However, respondents with a completely disconnected network (e.g., all network members were unconnected) were excluded from analysis. No network member was part of both the high- and low-centrality analysis and not every network member was analyzed in these subsequent analyses.

Results

Descriptive Statistics for Socio-Demographic Characteristics

Two hundred forty-four of the 248 respondents had complete social network data for analysis. Table I describes respondents and their networks. The average age of respondents was about 47 and almost three-quarters of respondents were male. Sixty-eight percent of respondents were unemployed and about one-third lived on more than \$10,000 per year. However, nearly half of respondents had some college-level education. On average, respondents named about 15 network members; about half of network members were isolates (i.e., unconnected to all other network members) within networks, suggesting high levels of network fragmentation, using our conservative measure of network connection (e.g., network members were "always/almost always" in touch with one another over the year). Networks were predominantly composed of African Americans, with approximately one-third of network members identified as family and about 60% as friends. About three-quarters of network members knew the respondent's HIV serostatus.

Regression Models Predicting Knowledge of Serostatus

Table II shows the generalized hierarchical linear model associations between network members' knowledge of respondent serostatus and respondent and network member demographics, behavioral characteristics, and network structural measures. Respondents who perceived greater HIV-related discrimination were more likely to report that network members knew their serostatus (OR=77.56) while respondents reporting greater internalized HIV stigma were less likely to report that network members knew their serostatus (OR=0.26). Network members were more likely to know a respondent's serostatus if the

network member was also HIV-positive (OR=63.40), was a sex partner (OR=6.47), or was highly trusted (OR=4.55), but less likely to know the respondent's serostatus if the network member was a drug partner (OR=0.47) or African American (OR=0.21). In addition, a network member's degree centrality (OR=7.04) was a significant predictor of knowledge of serostatus, indicating that the more connected the network member was to others in the respondent's network, the more likely he or she was to know the respondent's serostatus.

We estimated the predicted probabilities of knowledge of HIV serostatus for significant predictors in Table II, holding other model predictors at their mean. This provides, in addition to the odds of knowing the respondent's serostatus, the probability of knowing the respondent's serostatus for each of the significant model predictors at given levels of discrimination, stigma, network member seropositivity, sex partner status, trust, drug partner status, race, and network member popularity. The greatest difference in the probability that a network member knew a respondent's HIV serostatus was associated with internalized stigma. There was a 33% increase in the predicted probability when the level of internalized stigma was varied from a high to a low level of stigma. HIV-related discrimination was also associated with large differences in the probability a network alter would know a respondent's HIV serostatus (a 17% increase from no discrimination to the highest level). A similarly large difference in the probability that a network alter knew a respondent's serostatus was related to a network member's own serostatus (19% increase between negative and positive network members). Degree centrality, or being more popular in a person's social network, was associated with a 10% increase in a network member knowing the respondent's serostatus. Other, smaller differences were related to network member characteristics: being a sex partner (9% increase in probability between non-partners and partners), being highly trusted (9% increase when a network member was highly trusted), being a drug partner (5% decrease when a network member was a drug-using partner) and being African American (8% decrease when a network member was African American).

Network Member Centrality

As discussed above, popular network members were more likely to know a respondent's serostatus (see Table II). Therefore, we conducted supplementary analyses that explored network member characteristics relative to their centrality in the respondent's network. We compared both the highest and lowest centrality network members with all other network members. Table III presents network member-level means and proportions.

High and low centrality network members significantly differed from the overall population of network members on several characteristics. High-centrality network members were more likely to know a respondent's serostatus, and to be female, African American, HIV-negative, of a different gender than the respondent, a family member of the respondent, emotionally close to the respondent, and someone with whom the respondent interacted with weekly. Low-centrality network members exhibited opposing characteristics to high centrality members and were also more likely than the overall population of network members to be sex partners of the respondent and to be less trusted.

Discussion

We examined how demographic, behavioral, and network characteristics of those living with HIV and their social network members were related to a network member's knowledge of a respondent's HIV serostatus. Experiences with discrimination were associated with a greater likelihood of network members' knowledge of a respondent's HIV serostatus (changing the probability by 17%). We also found that African American network members were less likely to know respondents' serostatus, but that sexual partners were more likely, consistent with prior research (9–10, 19). Moreover, highly trusted and more popular network members were more likely to know a respondent's HIV serostatus.

Our finding that internalized HIV-related stigma was associated with lower knowledge of respondents' HIV among network members was similar to prior research (2–3) and likely represents an individual, psychological barrier to disclosure. Indeed, internalized stigma might change the probability of a network member knowing a respondent's HIV serostatus by nearly 33%.

Considering network-member and relationship-level variables, as in Latkin et al. (9), our results indicated that knowledge of a respondent's HIV serostatus was higher if the network member was HIV-positive or a sexual partner. Strikingly, we found close to a 19 percentage-point increase in knowledge of HIV serostatus if the network member was also HIV-positive. HIV-positive network members may have been better suited to provide support, comfort, or advice than others in the network. Our finding about sex partners' knowledge of HIV serostatus may indicate respondents' desire to protect their partners, with disclosure of HIV serostatus among the recommended behaviors associated with reduced transmission of HIV from partner to partner; however, sexual partners were also less likely to be well-connected to other members of the network, and such isolation may decrease the overall ability of the network to provide support.

Our results indicate that knowledge of HIV serostatus is also associated with popularity (as measured by how well connected a network member is to other network members in a respondent's network), suggesting that network position—over and above the specific relationship between the individual and their network member or specific network member characteristics—may impact network members' knowledge of serostatus. Previous research has shown that more popular network members tend to have more (and more accurate) information about the people with whom they are connected (33). Our finding regarding knowledge of HIV serostatus and a network member's degree of centrality may further support this general pattern. This finding encouraged us to explore the characteristics of the most connected (and conversely, least connected) network members. Overall, results indicated central network members were more likely to be female, someone the respondent interacted with at least weekly, and someone to whom the respondent felt very close, characteristics often associated with support provision in previous research (1–2, 12). This may indicate that support stems from the interaction of network position and knowledge of the respondent's HIV serostatus. Central network members may become more involved in an individual's life when HIV serostatus is known, helping the respondent to realize positive reinforcement or providing greater social support.

Although network members who were HIV-positive were more likely to know a respondent's HIV serostatus, these network members were less central to respondents' networks. It could be that HIV-positive network members emerged from a secondary social context, such as affiliation with an HIV service provider or support group, and thus that they interacted less frequently with the most important members of respondents' networks. Or, it may be that participants attempted to control who knows whom to protect themselves from discrimination associated with passive serostatus disclosure from HIV positive network members to other network members. Further, preferably longitudinal, research is needed to examine these competing explanations.

Most respondents' networks contained a large percentage of African Americans, and African Americans tended to occupy central roles in the networks. However, controlling for other factors, being an African American network member was negatively associated with knowledge of HIV serostatus. African American communities, disproportionately affected by HIV, exhibit high levels of HIV stigma (5, 7, 14, 34–35), which can lead to lower levels of disclosure (11). Respondents may choose not to disclose to African American network members due to anticipated stigma, unless those network members occupy another role, like family member, a central network position, or also being HIV-positive, and thus might be able to provide greater social support.

This research must be considered in light of several limitations. Our outcome measure incorporated active disclosure and passive disclosure (in which network members may have learned of respondents' serostatus without being told by the respondent personally). More information about the disclosure process would help to strengthen similar research, would separate active and passive processes (36), and would give a clearer idea of whether the associations we found differed based on active or passive disclosure. For example, we would be able to determine whether disclosure mechanisms differ for popular versus unpopular network members. Although knowledge of HIV serostatus is not synonymous with active disclosure, we believe that associations between respondent, network member, and social network factors, and knowledge of HIV serostatus would be stronger were only active disclosure considered, since active disclosure is under greater control of the respondent and thus is more strongly associated with the variables we explore in this personal network study. The behavioral impact of learning that someone is HIV-positive (support or discrimination) is likely similar regardless of whether the respondent disclosed their serostatus or the network member found out through other means. In addition, while our research indicated that network popularity was associated with knowledge of respondent serostatus, additional data would help better explain the findings. Understanding from where respondents received HIV-related emotional, informational, and tangible support in their networks could more fully explain how network structure and composition affected knowledge of serostatus. Learning whether respondents received support from more popular network members would help us to determine whether disclosure to less popular members might be motivated by other strategies or goals. Further, our work is limited to a recent time frame, in that respondents were asked to name network members with whom they had been in contact in the previous 30 days. There may be network members who were important but with whom respondents had not corresponded recently. If such individuals were sources of

support or discrimination, our findings may not truly represent the impact one's network has on support, discrimination, stigma, and disclosure.

Importantly, our results do not indicate causality; they represent associations between individual and network characteristics and whether network members know a respondent's HIV serostatus. Due to the nature of the cross-sectional network data, we were unable to explore certain mechanisms like reciprocal disclosure (e.g., choosing to disclose to someone because they disclosed their own serostatus) or social influence processes (e.g., choosing to disclose after seeing others receive social support due to disclosure). We also cannot determine the timing of certain events (e.g., whether discrimination follows knowledge of serostatus, or support precedes such knowledge). Understanding network dynamics over time would be useful and is an important area for future research. In addition, data were egocentric and thus not confirmed with network members, although Green et al. (37) demonstrated that respondents' perceptions of network members were generally accurate and displayed low response bias. Finally, we could not assess overlap in network members among respondents due to ethical concerns in obtaining identifying information for each network member. However, other studies have found that the likelihood of overlap in at-risk samples was fairly low (38–39) and we believe that the research design and analytic strategy minimizes the impact of overlap on our results.

Limitations notwithstanding, our findings provide critical information regarding the kinds of individuals who are aware of an HIV-positive person's serostatus, with implications for interventions that aim to improve the disclosure process among people living with HIV. The probability that a network member knows a respondent's serostatus is likely the result of a number of competing factors; this could indicate that respondents employ multiple strategies of, and motivations for, disclosure within their network. For example, respondents may be willing to disclose to sex partners at higher rates, even though they are often peripheral actors in their network, out of a desire to protect their partners' health, which may have little to do with increasing social support. Disclosing to some network members and not others is clearly one intervention approach that maximizes positive conditions and minimizes negative outcomes (13, 23).

Interventions that take a more nuanced perspective on disclosure could help individuals better manage their social network connections, in order to ensure that disclosure engenders support and protects health over the long-term. Based on our findings, identifying trusted network members who are already central to one's network may be a potential disclosure strategy. Alternatively, identifying supportive network members to disclose to and then working with those network members to reinforce existing relationships or build new ties to other supportive individuals may lead to a similar result (40).

Significantly, our results shift the role of serostatus knowledge from a sexual context (e.g., disclosing to a sex partner may predominantly be a way to keep them safe) to a social one (e.g., disclosing to someone else who is HIV-positive and connected to other such people may be a way to garner greater social support). Sharing information about one's serostatus may allow a person to meet multiple aims; for example, disclosing to a central network member may rally additional support from not just the central network member, but those

around them, which in turn may lessen the level of stigma one feels about their serostatus. We believe our findings have the potential to contribute to the development of interventions that help individuals to understand and develop disclosure strategies to improve health in multiple dimensions, such as protecting others' health, maximizing social support, or increasing levels of care from others. In fact, our findings suggest that individuals may already be using them.

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Table I

Social Network and Compositional Characteristics of a Sample of HIV-positive African Americans in Los Angeles, California from 2010 to 2012

Variable	N (Mean)	% (SD)
Respondent-level Variables		
N	244	
Average Age (in Years)	(46.66)	(10.02)
Male	181	0.74
Female	50	0.20
Transgender	12	0.05
Unemployed	166	0.68
Income > \$10,000/Year	76	0.31
< High School Education	54	0.22
High School Education	78	0.32
> High School Education	111	0.45
Latest CD4 Count	(544.82)	(328.23)
HIV Stigma (0=Low, 5=High)	(2.77)	(1.12)
HIV Discrimination (0=Low, 1=High)	(0.14)	(0.23)
Homosexual	109	0.45
Heterosexual	87	0.36
Bisexual	38	0.16
Other Sexual Orientation	9	0.04
Single	184	0.75
Density	(0.13)	(0.18)
Network Member-level Variables		
N	3474	
Degree	(2.13)	(3.80)
Isolates	1736	0.50
African-American	2937	0.85
Family	1115	0.32
Friend	2040	0.59
Sexual Partner	173	0.05
Drug Partner	291	0.08
Know Respondent's Status	2599	0.75
Average Age (in Years)	(44.33)	(13.81)
Male	1914	0.55
Female	1463	0.42
Transgender	94	0.03
HIV-positive	645	0.19
On ART (if HIV-positive)	528	0.82

Variable	N (Mean)	% (SD)
Same Gender (as Respondent)	2012	0.58
Weekly Interaction	2211	0.64
Close with Respondent	1848	0.53
Trusted by Respondent	2011	0.58

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Table II

Generalized Hierarchical Linear Model Predicting Knowledge of HIV Status by Selected Covariates at the Individual and Social Network Level¹

Variable	Odds Ratio	95% Confidence Interval
Respondent-level Variables		
HIV Discrimination	77.56**	(3.22, 1867.57)
Stigma	0.26***	(0.14, 0.48)
Network Member-level Variables		
HIV Positive	63.40***	(28.81, 139.53)
Degree Centrality	7.04**	(1.80, 27.47)
Sex Partner	6.47***	(2.24, 18.70)
High Trust	4.55***	(2.90, 7.13)
Drug Partner	0.47*	(0.23, 0.96)
African American	0.21***	(0.11, 0.40)

¹ Model fit using a generalized hierarchical linear model with a binomial link function. Odds ratio and 95% confidence interval reported.

A * represents significance at the 0.05 level,

** at the 0.01 level, and

*** at the 0.001 level

Selected Characteristics of Individuals with High and Low Centrality in a Respondent's Social Network²

Table III

Variable	All Network Members		High Centrality Network Members		Low Centrality Network Members	
	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)
Total N	3474		614		1762	
Age	(44.33)	(13.81)	(44.33)	(15.87)	(44.53)	(12.28)
Male	1914	0.55	290	0.47*	1070	0.61*
Female	1463	0.42	312	0.51*	636	0.36*
Transgender	94	0.03	12	0.02	54	0.03
African-American	2937	0.85	555	0.90*	1436	0.81*
HIV-positive	645	0.19	98	0.16*	383	0.22*
Same Gender	2012	0.58	310	0.50*	1123	0.64*
Family	1115	0.32	323	0.53*	303	0.17*
Sex Partner	173	0.05	22	0.04	121	0.07*
Drug Partner	291	0.08	41	0.07	155	0.09
Interact Weekly	2211	0.64	452	0.74*	995	0.56*
Very Close	1848	0.53	421	0.69*	753	0.43*
High Trust	2011	0.58	380	0.62	885	0.50*

² A * represents significance at the 0.05 level between the centrality group and the total network.