THE RELATIONSHIP BETWEEN SOCIAL NETWORK CHARACTERISTICS AND MENTAL HEALTH FOR WOMEN LIVING WITH HIV

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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ABSTRACT

As rates of infection increase in women, understanding the impact HIV/AIDS has on women has become important. Seeking social support is one strategy used to cope with HIV-related stress. Social support has been associated with positive emotional and health outcomes for people living with HIV. Yet, the social unacceptability of an HIV diagnosis may lead to self-imposed isolation and withdrawal. For individuals affected by HIV but who are uninfected it may be difficult to find or receive support as well. However, many women are able to counteract these outcomes by surrounding themselves with those who can provide various forms of support. The objective of the current study was to examine the relationship between the constellation of social networks and mental health for HIV-positive women. Specifically, this study investigated characteristics of social networks that may influence the mental health symptoms for positive women. This research, under an ecological systems framework, considered the relationship between social network characteristics and mental health indicators for women living with HIV/AIDS.

It appears that certain characteristics are significantly more predictive of mental health indicators than others. Network size was an indicator in all three of the models, significantly predicting levels of depressive symptoms as well as loneliness over the past few days and over the past few years. Participants’ dissatisfaction with their relationships
with these members was also an important predictor, as well as stability of network members over the course of the study. Continued exploration of the nature of these relationships, specifically dissolution decisions, may enhance the knowledge base on social network relationships for women living with HIV/AIDS. Results of the current study suggest several areas for future clinical work with women living with HIV/AIDS. The impact of network size on mental health indicators cannot be ignored, but clinicians may find more success by choosing to address the quality of the relationships with the network. As this group of women experiences mental illness at a higher rate than the general population research that is focused on developing interventions has become imperative.
This work is dedicated to those who came before me, who sacrificed so I could succeed.
ACKNOWLEDGMENTS

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CHAPTER 1

INTRODUCTION

History and Prevalence of HIV/AIDS

Human immunodeficiency virus (HIV), a member of the retrovirus family, is the virus that causes acquired immune deficiency syndrome (AIDS) (National Institute of Allergy and Infectious Diseases [NIAID], 2005). HIV attacks and destroys CD4+ T cells in the blood which interrupts the normal functioning of the immune system. When an individual’s CD4+ T cell count drops below 200 and/or the person develops certain opportunistic infections, HIV has progressed to AIDS (Centers for Disease Control and Prevention [CDC], 2003; NIAD, 2005).

Initial cases of HIV/AIDS in the United States were documented by the CDC as early as 1981 (Gottlieb, Schanker, Fam, Saxon, Weisman, & Pozalski, 1981). These cases included five self-identified homosexual males who had been diagnosed with what was then known as pneumocystis pneumonia (PCP). Gottlieb and colleagues noted that as PCP is usually evident in those with compromised immune systems, the only common risk factor these five men shared was homosexuality.
Thus, early efforts to understand and prevent the spread of HIV/AIDS were focused on men who have sex with men (MSM).

Due to advances in research, valuable information about the transmission, treatment, and prevention of HIV/AIDS have been discovered. Currently, HIV is primarily transmitted through unprotected sexual contact or sharing needles or syringes with an infected individual, though the virus could also possibly be transmitted through contact with contaminated blood products or from mother to child through pregnancy (NIAID, 2005). As such, preventive methods involve avoiding risky behaviors such as sharing needles or having sex without male latex or female polyurethane condoms, and acquiring knowledge about HIV (NIAID, 2005).

Despite efforts to curtail the spread of HIV, rates of infection remain steady among the poor, people of color, and individuals under 30 worldwide. Here in the US, women in these groups have become the hardest hit. Early on, cases of HIV/AIDS were found in relatively few women. The impact of the epidemic has changed, however, as rates of HIV infection among women continue to increase. In 2005, the CDC (2007) estimated that women made up 26% of the estimated new diagnoses of adults and adolescents, with 107,700 cases of AIDS and 97,080 cases of HIV infection among women. Currently African Americans make up over 60% of all cases of women diagnosed with HIV/AIDS. For this reason understanding the impact of HIV/AIDS on women has become critical and warrants continued focus and intervention.

Statement of the Problem
Seeking social support is one strategy used to cope with HIV-related stress. Managing an HIV diagnosis may be facilitated by social support that may be instrumental (e.g., providing transportation or monetary assistance) or emotional (e.g., providing positive feedback or giving advice). The burden of HIV-seropositivity can demand informal and institutional support both for the persons living with HIV and their partners (Folkman, Chesney, & Christopher-Richards, 1994). Social support has been associated with positive emotional and health outcomes for people living with HIV (Kalichman et al., 2003). Yet, the social unacceptability of an HIV diagnosis may lead to self-imposed isolation and withdrawal (Green, 1995).

For individuals affected by HIV but who are uninfected it may be difficult to find or receive support as well. Wight and colleagues (1995) reported that, for caregivers of HIV-positive loved ones, use of social support was lower for those who were HIV-negative. Among HIV-serodiscordant couples, HIV-infected partners were more likely to report having family support compared to support reported by uninfected partners (Kennedy, 1995). Female partners reported more distress than male partners, even if they were the uninfected partner. It may be that certain individuals who provide support to an HIV-positive woman also find it difficult to cope with the diagnosis without support from others, thus impacting the amount of support they can offer.

Women who share their HIV or AIDS diagnosis with family or friends risk stigmatization, which may include reactions of fear, shock, and blame. They may also experience isolation or desertion as a result of others’ fears of casual transmission. These women may also face potential loss of self-esteem due to self-blame for contracting the
virus and lack of confidence that they will be able to survive with this disease. However, many women are able to counteract these outcomes by surrounding themselves with those who can provide various forms of support.

While the importance of social support for individuals with HIV/AIDS has been explored, the association between social networks and mental health of HIV-positive individuals is still largely unknown. Social support and social networks are two mutually exclusive constructs. Though support may be provided by members of a social network, not all interactions between network members are deemed to be positive. Little is known however, of the pathways through which these persons are able to provide support to women with HIV/AIDS. Prior research on HIV and social support suggests that women with adequate amounts of perceived social support have more favorable outcomes (Kalichman et al., 2003).

Purpose of the Study

The objective of the current study was to examine the relationship between the constellation of social networks and mental health for HIV-positive women. Specifically, this study investigated characteristics of social networks that may influence the mental health symptoms for these women. This is important because women with HIV have been found to use their social networks to cope with their diagnosis, but little is known about the specific characteristics that maintain positive mental health.

The long range goal of this research is to advance the knowledge of how the organization and composition of social networks interacts with the mental health of women. The study attempted to relate certain social network factors to the promotion of
mental health outcomes. For this study, a social network is defined as an organization of people interconnected through their ties to one specific person.

The study was innovative because, though many studies have examined the presence of social support on mental health, there is a deficiency in the knowledge of social support and its importance for HIV-positive women that warrants an exploration of social network characteristics. This study will advance the understanding of how relationships between network members impact mental health of HIV-positive women. No study to date has provided a solid analysis of the networks of relations which support or undermine the mental health of HIV-positive women. This knowledge can be used to develop future interventions that promote positive mental health outcomes for HIV-positive women that specifically focus on social networks.
CHAPTER 2

REVIEW OF THE LITERATURE

Social Networks

For several decades research on psychological distress and mental health has emphasized the importance of viewing the individual in a social context. These researchers have argued for the necessity of studying system and interactional variables in trying to understand and prevent symptoms of mental illness (Stokes, 1983). Organizing these variables into a quantitative description, or social network, may be useful for further analysis of this environment. According to Wellman (1981), a social network is a set of people connected by a set of ties (e.g., relations of some sort). These ties can encompass personal, familial, or community-level connections, radiating from one individual.

For example, Gottlieb (1981) has distinguished three levels of analysis: macro (community integration/participation approach), mezzo (social networks approach), and micro (intimate relationships approach). Similarly, Lin (1986) argued that the individual’s linkage to the social environment can be represented at three distinct levels: the community, the social network, and intimate and confiding relationships.
Social integration, as part of the emotional dimension of social networks, refers to the existence, quantity, and quality of social relationships one experiences among relatives and friends, and frequency of contacts (Gracia & Herrero, 2004). Integration into a social network of family and friends that includes positive affect of one person toward another and affirmation of another person’s behaviors has been associated with beneficial outcomes related to physical and emotional well-being. The degree that one’s social network provides one with technical and tangible assistance or emotional support may impact occurrence or severity of mental distress symptoms.

There are a number of variables which can be used to describe the structure of a network. The most obvious is the size of the network, or the number of persons with whom an individual interacts (Stokes, 1983). While larger networks may have greater potential for giving support, they may also place increased demands on the individual or create potential for negative, non-supportive interactions. In fact, research suggests that over a certain size, larger social networks are likely to produce distress due to the pressures and responsibilities of maintaining a large number of relationships (Stokes, 1983). According to Polister (1980), a curvilinear relationship exists between network size and satisfaction with support. That is, increases in size of a social network may not be helpful beyond a maximum size for each individual.

Numerous researchers have examined the relationship between network size and mental health outcomes. It appears that, for the most part, number of relationships has not been a significant predictor of mental health (Stokes, 1983; Vandervoort, 1999). This has been mirrored in research conducted with HIV-positive samples (Kadushin, 1999; Semple et al., 1996; Serovich, Kimberly, Mosack, & Lewis, 2001). These findings
suggest that other variables of social networks must have an influence on the perception of support that is received, thus affecting mental health.

Social Network Density

The density of a social network is another structural variable that has been identified by researchers as descriptive of the nature of an individual’s network. Density will be defined for the current study as the proportion of ties in an individual’s reported social network relative to the total number possible. Higher density or close-knit networks have been thought to have stronger norms and better communication, control, and protection (Kadushin, 1983). These functions have been reported to maintain health and well-being by promoting identity maintenance in the individuals within such networks (House, Umberson, & Landis, 1988). Resources are mobilized quickly through the network, and members tend to feel safe and protected from external demands (Wellman, 1981). At the same time, such tight boundaries may limit the ability of members to access additional resources should current network resources become limited or insufficient.

Sparsely knit networks are thought to be better structured to acquire additional external resources through direct and indirect ties. Thus, change in identity or social role, and hence the health and well-being during this change, is facilitated by networks with weaker ties and lower density (House et al., 1988). Members typically have the freedom to seek out other forms of support. However, networks with low density have few definite supports already in place, requiring flexibility on the part of the members.
As evidenced, there are both beneficial and detrimental characteristics of both high and low density social networks. Previous research on HIV-positive individuals would suggest that women would benefit more from high density networks. These women tend to report smaller social networks (Semple et al., 1996), and receive less informal support than their gay male counterparts (Green, 1996). In addition, researchers have found that HIV-positive women who are isolated have higher levels of depression (Simoni, Montoya, Huang, & Goodry, 2005). If tight-knit, highly dense networks provide a built-in support network, the assumption may be that women would feel less isolated within such a close network, regardless of size.

Composition

For the purposes of this study, composition indicates the types of members present within an individual's network including family of origin, partners, and friends. Previous research suggests that the specific source of support may be more important than the amount or type of support available in maintaining positive mental health.

For women with HIV, the presence of a significant other, particularly a spouse, is generally associated with perceived social support (Primomo, Yates, & Woods, 1990; Walen & Lachman, 2000). In addition, research suggests that the emotional support provided by husbands has a marked impact on how their wives cope with chronic, disabling conditions. Studies among couples with cancer, like those that have investigated other illness populations, consistently show that the spouse is the most important source of support (Rose, 1990).
For women with HIV, specifically African American women, having family members present can increase perceived support. In a qualitative study of 18 African American women living with HIV, Owens (2003) examined the impact of family support on stress maintenance. The women reported that experiencing the commitment of family members that provided support not only aided in stress management but eased HIV-related fears. An interesting feature of this study, however, is that the women reported stress related to family involvement. Many were afraid of straining family resources or becoming a burden on others.

Hough and colleagues (2005) noted a similar phenomenon in their study of HIV-positive mothers living in urban neighborhoods. The study asked participants to list those network members who were closest to them, then rank them as belonging to the participant’s inner, middle, or outer circle of associates. Mothers who listed higher than the median number of family members in their inner circles reported dissatisfaction with their overall social support. It appears that these findings mirror those of other researchers that indicate that a larger proportion of family members within a social network may be related to emotional distress (Dean, Kolody, & Wood, 1990; Primomo et al., 1990). Researchers have noted the importance of several types of support persons available in the network in relationship to quality of support perceived (Knowlton, 2003; Schrimshaw, 2002). An important component that many studies have overlooked is how these network characteristics are related to mental health indicators.

Ecological Systems Theory
A theory that may be useful in understanding the importance of social networks is ecological systems theory. Developed by Bronfenbrenner (1979, 1999), this schema is one of the first and most influential models for understanding the complex nature of the environment that impacts the behavior and life experience of individuals. His investigation of the role environment plays in shaping human development and behavior is in itself an ever evolving model that has been utilized by many researchers as a framework for understanding growth within the context of the larger environment.

Bronfenbrenner’s original model locates the individual in the center of successively broadening concentric circles that represent successively larger layers of the environment. The four original levels of the environmental system described by Bronfenbrenner include the microsystem, mesosystem, exosystem and macrosystem (Bronfenbrenner, 1979).

Bronfenbrenner’s microsystem is the level of the environment in which an individual experiences face-to face contacts with influential others. Examples of microsystem settings include the family, school, peer group, church and work place. At this level relationships are bi-directional, in that the behavior of the woman at the center of the system is impacted by those around her just as much as she impacts others. Behavior may be impacted at this level by the ways an individual is regarded by others, accepted, reinforced and exposed to role diversity (Berk, 2000). Though bi-directional influences occur among all levels of the environment, Bronfenbrenner explains that these influences are strongest and have the greatest impact on the woman at the microsystem level.
The mesosystem is the environmental level that includes relationships between microsystems, or connections between situations. Examples of mesosystem connections are home-friend relationships, workplace-family, and school-neighborhood relationships. Issues such as consistency and basic respect among and between systems have implications for individual development and behavior (Bronfenbrenner, 1979). It appears that inconsistencies that occur within mesosystem interactions could pose a significant concern for the woman at the center of the system due to the conflicting messages she may receive.

The exosystem is the level of the environment in which an individual does not directly participate, but in which decisions are made that substantially affect the individual. The structures in this level impact development by interacting with some structure in the microsystem. Examples include a spouse’s place of employment, local school boards and local government. The woman may be impacted by how decisions at this level affect her own best interests and by the social support systems made available at this level.

Bronfenbrenner describes the macrosystem as the level of the environment that includes ways of organizing the institutional life of society. Examples include ideology, social policy, shared assumptions about social contracts, and human nature. Critical matters impacting the individual at this level include attitudes towards women and minorities and a collectivist versus individualistic mentality. The effects of larger principles defined by the macrosystem have a cascading influence throughout the interactions of all other layers. For example, if a culture places a stigma on HIV/AIDS,
that culture may be less likely to offer support to those infected or affected. This in turn affects the support that the family members will provide an infected woman.

Bronfenbrenner (1979) noted that to fully understand support from social contacts, the formal and informal kinship units must be analyzed within the broader social systems they are embedded in.

As evidence of the evolutionary nature of this framework, a fifth element was added to address development over time. Bronfenbrenner used the term chronosystem to describe the interactive nature of persons, environments, and developmental processes over time. Elements within this system can either be external, such as the timing of the death of a family member, or internal, such as disease progression. As a woman develops within the chronosystem, she may react differently to environmental changes and may be more able to determine how those changes will influence her.

Bronfenbrenner’s (1999) revised model gives substantial attention to the impact of proximal processes on human development over time. He defines proximal processes as “enduring forms of interaction that occur within the context of an individual’s immediate environment that have the power to shape development” (p. 5). Examples of proximal processes include mother-child interaction, partner or peer interaction, group or individual therapy, reading or studying.

Bronfenbrenner (1999) indicates that the power proximal processes have to shape development varies with characteristics of persons and the environments. These proximal processes function as effective drivers of development only when an individual participates fairly regularly in an activity that becomes increasingly complex and requires
initiation and response in both directions. For example, continued participation in an HIV support group may enhance both self-esteem and interaction skills. According to Bronfenbrenner, interactions with both people and things function as proximal processes.

The current study used this theory to guide the analysis of the links between various levels of the ecological system. Ecological systems theory gives explanation for the ways that groups within the social network may provide resources to women living with HIV. The relationships between those network members that tend to cluster together with others may explain much of the uncertainty in how network characteristics impact mental health. Inconsistencies between clusters may lead to reduced support perceived by the woman, thus affecting her mental health.

The goal of the study was to test the impact of social network factors on mental health outcomes. Two questions guided the current study.

Research question #1: How are social network characteristics of HIV-positive women related to mental health? Previous research suggests that network density and composition are influential to the perception of support and overall mental health, but this has not been clearly established for women living with HIV.

Research question #2: What impact do commonalities between network members have on the mental health of HIV-positive women? Theoretically, the more network members are similar to each other, the more the network will provide a stable support for the individual. The current study used this question to guide the analysis.
CHAPTER 3

METHODOLOGY

Participants for the research were part of a larger, longitudinal investigation funded by a grant from the National Institute of Mental Health awarded to the researcher’s advisor (R01MH62293), with the purpose of investigating disclosure of HIV status for women. Over a three year period, 125 women were asked to give information on disclosure, social support, and mental health during phases 1, 3, 5, and 7. All women had an HIV-positive diagnosis and were over age 18.

Sampling Design

*Eligibility.* Eligibility for the current study required women to have completed the final phase of the larger, longitudinal study. Of the original 125 women, 84 completed the final phase. Completion of the final phase was required for eligibility because social network relationships were compiled during this data collection.

*Recruitment.* Participants were drawn from the larger study. All women were recruited through medical facilities or AIDS service organizations (ASOs) in Columbus, Cincinnati, and Cleveland, Ohio. The medical facilities in Columbus included the AIDS Clinical Trials Unit at The Ohio State University Medical Center, and the Family and
Child Educational Services clinic at Columbus Children’s Hospital. ASOs which served as recruitment sites included the Columbus AIDS Task Force, the AIDS Task Force of Greater Cleveland, the AGAPE program of Antioch Baptist Church (Cleveland), the Early Prevention and Intervention Program (Cincinnati), and AIDS Volunteers of Cincinnati.

Women were given an information sheet by a case manager describing research aims, requirements, and procedures. All participants were informed of the voluntary nature of the research, and refusal to participate would not hinder treatment at the facility.

Research site. Participants were interviewed at a research suite on The Ohio State University campus in Columbus, Ohio, or at one of the medical facilities or ASOs in Columbus, Cleveland, or Cincinnati, Ohio at the convenience of the participant.

Human subjects. All conditions for human subjects research for the parent study and the current study were approved by the Institutional Review Board of The Ohio State University. Informed consent and HIPPA regulation forms were signed by all women who participated in this study. In addition, all participants were provided with a list of mental health and social services available in their area.

Procedures

Participants completed questionnaires regarding mental health, physical health, social support, disease progression, and sexual risk-taking behaviors. Participants completed an initial interview and questionnaire at the beginning of the study (Phase 1). Yearly, women took part in a structured interview and completed a questionnaire (Phases 3, 5, and 7). Six months into each yearly wave of data collection, participants returned to
fill out a questionnaire (Phases 2, 4, and 6). Participants were interviewed about their social network by trained doctoral students. Odd number phases took, on average, three and a half hours to complete and even number phases took, on average, an hour and a half.

Sample Demographics

Of the 84 women who were eligible for the current study, only 80 were included in analyses due to incomplete or missing social network information. The sample included 80 women who completed phase seven of the larger longitudinal study. Demographics are noted below in Table 3.1. These women ranged in age from 18 to 63, with a mean age of 39.6 years (SD = 9.39 years). These women were primarily African American (73.8%), with the remainder identified as Caucasian (21.2%), Hispanic/Latino (2.5%), or “Other” (2.5%). The average monthly income for these women was $823.29 (SD = $553) and 80% indicated that they were unemployed. Slightly less than half (47.6%) of the women indicated they were married/partnered or dating, 31.2% of the women were single, 13.8% were divorced, and 7.5% were widowed. On average, these women had two children. The majority (53.5%) of network members lived within the same city as the participants. The primary risk factor for HIV contraction was identified as unprotected vaginal intercourse (67.7%). Less than half (40.4%) of these women had received an AIDS diagnosis at some point since contracting HIV.
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<td>Proximity to network members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live together</td>
<td>96</td>
<td>6.7</td>
</tr>
<tr>
<td>Within neighborhood</td>
<td>243</td>
<td>17.1</td>
</tr>
<tr>
<td>Within same city</td>
<td>762</td>
<td>53.5</td>
</tr>
<tr>
<td>Outside the city</td>
<td>173</td>
<td>12.1</td>
</tr>
<tr>
<td>Outside the state</td>
<td>45</td>
<td>3.2</td>
</tr>
<tr>
<td>Several states away</td>
<td>85</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Table 3.1: Sample demographics (N = 80)
Instrumentation

For the current study, the dependent variable was mental health. Indicators of mental health included depression, stress, loneliness, and resiliency. The independent variables were network composition, density, cohesion, and stability.

Social network characteristics were measured using an adapted version of Barrera’s (1992) Arizona Social Support Interview Schedule (ASSIS) (Appendix A). The ASSIS consists of a series of questions tapping a number of dimensions of a social support network. Participants were asked with whom they would discuss personal issues, receive advice, borrow money, invite to socialize, receive positive feedback, request physical assistance, interact sexually, and experience negative interactions (i.e., argue or fight). The participant was then asked to rate, on a 5-point scale (1 = Very dissatisfied; 5 = Very satisfied) the level of satisfaction with the relationship with the network member. Demographic data (i.e., age, sex, and race/ethnicity) of each network member was obtained from the perspective of the participant. For the current study race was defined by the participant as African American, White, Hispanic/Latino, or “Other,” with an opportunity to clarify. The participant was also asked to state the relationship with the network member, for example, family, friend, sex partner, etc. For the current analysis mothers, fathers, sisters and brothers were included as immediate family members. The participant was also asked to rate, on a 6-point scale (1 = Live together; 6 = Several states away), her proximity to each network member. This measure was repeated every year of the study for a total of four data points.
At the last phase of the study, every network member listed was compiled onto a
grid and the participant was asked to rate on a 5-point scale (0 = Doesn’t know; 4 =
Knows very well) how well each member knew every other member of the social
network. This created a grid of which network characteristics could be analyzed
(Appendix B). Network density was calculated as the strength of connections based on all
possible connections.

Mental health was evaluated using several indices. Depressive symptoms was
measured using the Center for Epidemiologic Studies -Depressed Mood Scale (Appendix
C; CES-D; Radloff, 1977). The CES-D is a self-report measure consisting of 20 items
using a 4-point Likert-type scale. The author-reported internal reliability of this scale was
very good for both general (alpha = .85) and psychiatric populations (alpha = .90). The
reliability for the current sample was excellent (alpha = .93).

Stress was measured using the Stress-Arousal checklist (Appendix D; SACL;
Mackay, Cox, Burrows, & Lazzerini, 1978). The SACL is a list of 30 adjectives
commonly used to describe psychological stress (e.g., uneasy, stimulated, tense).
Participants indicated on a 5-point Likert-type scale the extent to which each
characteristic is currently experienced. Reliability for the current sample was fair (alpha = .70).

Loneliness was measured using the State versus Trait Loneliness scale (Appendix
E; STLS; Gerson & Perlman, 1979). This self-report measure includes two scales with 12
items each, which assess long-term (past few years) and short-term (past few days)
loneliness. Both scales utilize a 5-point, Likert-type scale. Reported internal consistency
for this measure was good (alpha = .88). Current sample reliabilities for each scale were good as well (alpha = .87, past few years; alpha = .87, past few days).

Resiliency was measured with the Resiliency Questionnaire for People living with HIV/AIDS (Appendix F; Mosack, 2001). This is a 30-item, Likert-type measure that assesses the resilience of people living with HIV. Sample questions include “I believe that something good has come from this disease” and “I am more than HIV-positive.” Reported internal consistency for this scale was good (alpha = .88), and the internal consistency for the current sample was excellent (alpha = .96).

Data Analysis

For this study, hierarchical linear regressions were used to examine the two research questions posed:

*Research question #1: How are social network characteristics of HIV-positive women related to mental health?* Variables denoting the composition of the social network were used in an attempt to explain mental health indicators. These included percent of network members that were African American, percent of network members that were female, percent of network members that were immediate family, and percent of network members that lived within the same neighborhood as the participant.

*Research question #2: What impact do commonalities between network members have on the mental health of HIV-positive women?* Analysis of the social network was conducted using UCINET 6, a comprehensive statistical package for the analysis of social network data (Borgatti, Everett, & Freeman, 2002). Networks were analyzed for the number of connections, density or overall strength of connections between members,
and strength of connections between family to other network members. The results of the network analysis were used in multiple regression analyses to explore research question two.
CHAPTER 4

DATA ANALYSIS AND RESULTS

Descriptive Statistics

Eligible participants listed a total of 1424 network members. The size of the networks ranged from 7 to 53 members, with a mean network size of 17.84 members. Network members were predominately female (61.2%), and African American (62.9%), with the remaining being White (32.2%), Hispanic/Latino (2.3%), or other races (2.6%). The mean age of network members was 42.9 years of age, and immediate family (mothers, fathers, sisters and brothers) made up 21% of the total network reported. An additional 5.6% were participants’ children. The majority (82.4%) of network members were aware of the participant’s HIV status.

Means and standard deviations were computed for network characteristics and mental health indices. These are summarized in Table 4.1. The sample experienced moderate levels of depressive symptoms (mean = 20.1), compared to the general population (mean = 7.95 to 9.25) (Radloff, 1977).
Based on current literature (Herrman et al., 2002), cut-off scores of 16 to 28 points on the CES-D represent mild to moderate depression and greater than 29 points represents severe depression. Reported levels of stress were low, and levels of loneliness were moderate. The sample reported high levels of resilience to dealing with their serostatus.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent African American</td>
<td>.68</td>
<td>.31</td>
</tr>
<tr>
<td>Percent female</td>
<td>.61</td>
<td>.13</td>
</tr>
<tr>
<td>Percent immediate family</td>
<td>.25</td>
<td>.14</td>
</tr>
<tr>
<td>Percent living within same neighborhood</td>
<td>.27</td>
<td>.20</td>
</tr>
<tr>
<td>Density</td>
<td>.71</td>
<td>.14</td>
</tr>
<tr>
<td>Cohesion</td>
<td>.85</td>
<td>.07</td>
</tr>
<tr>
<td>Family-to-network cohesion</td>
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<td>.19</td>
</tr>
<tr>
<td>Stability</td>
<td>.36</td>
<td>.17</td>
</tr>
<tr>
<td>Percent dissatisfaction</td>
<td>.24</td>
<td>.17</td>
</tr>
<tr>
<td>Depression</td>
<td>20.10</td>
<td>13.28</td>
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<tr>
<td>Stress</td>
<td>5.22</td>
<td>4.60</td>
</tr>
<tr>
<td>Loneliness (days)</td>
<td>30.49</td>
<td>11.08</td>
</tr>
<tr>
<td>Loneliness (years)</td>
<td>32.66</td>
<td>10.63</td>
</tr>
<tr>
<td>Resilience</td>
<td>18.52</td>
<td>.19</td>
</tr>
</tbody>
</table>

Table 4.1: Means and standard deviations of network characteristic and mental health variables
Network Analysis

Before any research questions to be addressed network analysis was conducted to determine characteristics of each participant’s network. This was achieved using the network analysis program UCINET 6 (Borgatti, Everett, & Freeman, 2002). UCINET 6 allows matrices to be examined in an expedient manner. Each participant’s network was imported into the program as a fully symmetrical matrix. According to Wasserman and Faust (1994), a matrix is a graph representing the relationships between network members, and any given cell X(i,j) equals the value of the link from i to j, in this case the strength of the relationship between two network members. A symmetrical matrix is one where the diagonal equals zero, so no network member can have a relationship with him or herself.

Density was computed for each network using the equation $d = (n*(n-1))/2$, where $n$ = total number of ties possible in the network. In order to compute density for the sample, network matrices were dichotomized to eliminate weighted connections. This was computed as a ratio, with possible values ranging from 0, meaning no members knew each other at all, to 1, meaning all members knew each other. Computed network densities ranged from .13 to 1.0, with a mean of .67. Cohesion was measured using the strength of the relationship between any two members for the entire network. This was also computed as a ratio, with possible values ranging from 0, meaning no members knew each other at all, to 1, meaning all members knew each other very well. The mean network cohesion was .85, suggesting that participants’ network members were predominantly well connected to one another.
Because connections between immediate family and other network members were of interest, the amount of cohesion between immediate family and other network members was also estimated with this procedure. Using UCINET 6, immediate family was grouped as a category and all other network members were grouped as a second category. Family-to-network cohesion was computed as a ratio, with possible values ranging from 0 to 1. The mean family-to-network cohesion was .35, suggesting that the majority of participants’ immediate family were not well connected with other network members.

Network stability was computed as the percent of a participant’s overall network that had been reported by the participant as available to provide support at more than one data point. If no members had been reported more than once, network stability would equal 0; if all members were reported at more than one data point, network stability would equal 1. The range of stability for this sample was .09 to .90, and the mean was .36. This suggests that network participants tended to report a small number of the total network members more than once during the study.

Correlational analysis

A correlational analysis was conducted in order to estimate relationships between variables. Significant correlations were found for several variables. Results are presented in Table 4.2.
<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.029</td>
<td>-.012</td>
<td>.129</td>
<td>.041</td>
<td>.004</td>
</tr>
<tr>
<td>Race</td>
<td>.074</td>
<td>.070</td>
<td>-.003</td>
<td>.110</td>
<td>-.020</td>
</tr>
<tr>
<td>Network size</td>
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<td>-.140</td>
<td>-.194</td>
<td>-.104</td>
<td>.047</td>
</tr>
<tr>
<td>Percent African American</td>
<td>-.015</td>
<td>-.093</td>
<td>-.007</td>
<td>-.104</td>
<td>-.016</td>
</tr>
<tr>
<td>Percent female</td>
<td>-.308**</td>
<td>-.227*</td>
<td>-.198</td>
<td>-.094</td>
<td>.065</td>
</tr>
<tr>
<td>Percent immediate family</td>
<td>.004</td>
<td>.118</td>
<td>.088</td>
<td>-.004</td>
<td>-.201</td>
</tr>
<tr>
<td>Percent living within same neighborhood</td>
<td>.006</td>
<td>-.151</td>
<td>-.084</td>
<td>-.090</td>
<td>.132</td>
</tr>
<tr>
<td>Density</td>
<td>-.012</td>
<td>-.002</td>
<td>.048</td>
<td>-.042</td>
<td>.049</td>
</tr>
<tr>
<td>Cohesion</td>
<td>.007</td>
<td>.023</td>
<td>.065</td>
<td>-.015</td>
<td>.040</td>
</tr>
<tr>
<td>Family-to-network cohesion</td>
<td>.005</td>
<td>.127</td>
<td>.072</td>
<td>.005</td>
<td>-.196</td>
</tr>
<tr>
<td>Stability</td>
<td>-.185</td>
<td>-.142</td>
<td>-.191</td>
<td>-.275*</td>
<td>.032</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>.271*</td>
<td>.200</td>
<td>.377**</td>
<td>.373**</td>
<td>-.181</td>
</tr>
<tr>
<td>1. Depressive symptoms</td>
<td>-.736**</td>
<td>.701**</td>
<td>.611**</td>
<td>-.136</td>
<td></td>
</tr>
<tr>
<td>2. Stress</td>
<td>-.641**</td>
<td>.468**</td>
<td>-.155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Loneliness over past few days</td>
<td>-.765**</td>
<td>-.214</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Loneliness over past few years</td>
<td>-.139</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\*p \leq .05  
\**p \leq .01

**Table 4.2: Correlations between network characteristics and mental health indicators**

**Regression Analyses**

To answer the research questions posed, hierarchical regression analyses were conducted using network characteristics. Separate analyses were performed for each dependent variable. Control variables were participant’s age, race, and network size, and these were entered in the first block. Next, network composition characteristics were
entered. These included percent of network members that were African American, percent of network members that were female, percent of network members that were immediate family, and percent of network members that lived within the same neighborhood as the participant. These characteristics were chosen to reflect those aspects of the network that would be most similar to the participant. The final block contained network commonality variables. These variables were density, cohesion, family to network cohesion, and stability. Dissatisfaction with network relationships was also entered in the third block. This was computed as the percent of total relationships that the participant reported as very dissatisfied, dissatisfied, or neither satisfied nor dissatisfied. This was added to assess impact of negative relationships within the total network. Probabilities less than .05 were considered significant for these analyses.

Research question #1: How are social network characteristics of HIV-positive women related to mental health?

Depressive symptoms. A significant proportion of variance in depressive symptoms was explained by the model, $R^2 = .12, F(1,11) = 1.94, p = .048$. Network size and percent of females in network each had a significant inverse relationship with depressive symptoms ($B = -.29, SE = .25, p = .04; B = -.29, SE = 11.62, p = .01$, respectively). That is, as size of network and percent of females within the network decreased participant’s level of reported depressive symptoms increased. Conversely, participants’ dissatisfaction with network relationships was significantly related to reported level of depressive symptoms ($B = .26, SE = 8.86, p = .03$) such that as dissatisfaction increased level of symptoms increased as well.
Stress. Independent variables did not significantly predict reported stress levels for the sample, \( F(1,11) = 1.26, p = .27 \).

Loneliness over the past few days. The overall regression model was significant in predicting reported level of loneliness over the past few days, \( R^2 = .25, F(1,11) = 3.42, p = .001 \). In this case predictor variables were age, network size, and dissatisfaction with network relationships. As age of participants increased, level of loneliness increased \( (B = .31, SE = .13, p = .01) \). Specifically, older participants tended to report higher levels of loneliness over the past few days. Analyses indicated that as with depressive symptoms, network size had an inverse relationship with reported loneliness \( (B = -.45, SE = .19, p = .001) \). Again, those with smaller networks tended to report higher levels of loneliness over the past few days. Finally, dissatisfaction with network relationships was a significant predictor, \( (B = .37, SE = 6.79, p = .001) \). As level of dissatisfaction increased, reported level of loneliness increased as well.

Loneliness over the past few years. A significant proportion of the variance in reported level of loneliness over the past few years was predicted by the regression model, \( R^2 = .56, F(1,11) = 2.77, p = .01 \). Again, network size was inversely related to reported loneliness \( (B = -.39, SE = .19, p = .01) \), such that having smaller networks predicted an increase in reported loneliness over the past few years. Finally, dissatisfaction with network relationships significantly predicted loneliness \( (B = .38, SE = .20, p = .001) \).
= 6.75, \( p = .001 \)). As level of dissatisfaction increased reported level of loneliness over the past few years increased as well.

Resilience. Independent variables did not significantly predict reported resilience levels for the sample, \( F(1,11) = .69, p = .74 \).

Research question #2: What impact do commonalities between network members have on the mental health of HIV-positive women?

Density, cohesion, and family-to-network cohesion were not significant predictors of any mental health indicators for this sample. Stability of network members was determined to be inversely related to loneliness over the past few days and over the past few years (\( B = -.29, SE = 6.97, p = .01 \); \( B = -.30, SE = 6.93, p = .01 \), respectively). Those participants with lower percentages of network members reported at more than one data point tended to report higher levels of loneliness over the past few days as well as over the past few years.
This research, under an ecological systems framework, considered the relationship between social network characteristics and mental health indicators for women living with HIV/AIDS. The purpose of this study was to investigate the network characteristics that best predict symptoms for a sample reporting poor mental health. This section offers a discussion of the results, implications for researchers and clinicians, and limitations of the current study.

Discussion and Implications for Research

As previous studies have offered conflicting assumptions, this research began with two questions: How are social network characteristics of women living with HIV/AIDS related to their mental health, and what impact do commonalities between network members have on the mental health of these women? It appears that certain characteristics are significantly more predictive of mental health indicators than others. Network size was an indicator in all three of the significant models, significantly predicting levels of depressive symptoms as well as loneliness over the past few days and over the past few years.
Participants with smaller networks tended to report experiencing poor mental health. This is in line with previous research suggesting that HIV-positive women with larger networks experienced better mental health outcomes and better quality of life (Gielen, McDonnell, Wu, O’Campo, & Faden, 2001). Number of network members was significantly associated with mental health, but participants’ dissatisfaction with their relationships with these members was also an important predictor. This is an interesting finding as previous research including this sample of women proposed that perception of social support received was significantly related to mental health (McDowell & Serovich, 2007; Serovich, Kimberly, Mosack, & Lewis, 2001). If network members are not providing sufficient levels of support to the woman she may become dissatisfied with that relationship, especially if the person is viewed as available to provide support. Considering the type of contact with the network member may have an impact as well, as relationships with family, friends and others are complex and may illicit both positive and negative interactions. In a study of 271 individuals living with HIV, Ingram and colleagues (1999) investigated the relationship between interactions with network members and depression. While positive social support was predictive of variance in reported depressive symptoms, unsupportive social interactions was a significant factor. In addition, no interaction effect was found between social support and unsupportive social interactions. Future research could investigate these two concepts separately to determine whether dissatisfaction with relationships stems from receiving less positive social support than expected or having negative interactions with network members.
Stability of network over the course of the study was significantly associated with both loneliness indicators. Women who reported that more of their network members remained in their networks over the study also reported lower levels of loneliness over the past few days and past few years. It may be that though new relationships developed during the three years of the study, these women are aware and can appreciate those that remain a part of their lives. Women living with HIV/AIDS may be prone to isolation due to the perceived stigma of their illness (Greene, 1995; Mayers & Svartberg, 2001), and having access to consistent sources of support may alleviate the desire to retreat from society. In addition, as these relationships continue they become reciprocal in that these women find themselves validated through repeated interactions (Mayers & Svartberg, 2001). It must be noted, however, that some relationships may have existed although it was only reported once during the study. Intuitively, dissatisfaction with these relationships may impact how accessible women perceive these network members thus limiting involvement. Continued exploration of the nature of these relationships, specifically dissolution decisions, may enhance the knowledge base on social network relationships for women living with HIV/AIDS.

Network member characteristics were largely unrelated to mental health indicators, with the exception of percent of females in the network. Having a larger proportion of women in the network was related to lower levels of depression. Previous research indicates that women provide the majority of caregiving support to individuals living with HIV/AIDS (Brown & Sankar, 2005; Schiller 1993), but current study results suggest presence of other women may impact depressive symptoms as well. Females
reported in participants’ networks included family, friends, neighbors, clergy, medical professionals, and a host of others who provided physical and instrumental support, advice, and social interaction. Surprisingly, participants seemed to benefit from interaction with other women regardless of race, family membership, or proximity to one another though network members tended to be similar to participants in these areas.

Theories of marginalization suggest that groups who are largely denied by the dominant culture tend to develop networks with each other. This idea challenges the notion of support networks popularly used in analyses of HIV/AIDS. Typically, social networks are described as being developed mainly based on geographic location or group membership (House, Umberson, & Landis, 1988); however Cohen (1999) inserts another facet to the definition. While group membership may be at work, Cohen asserts that it is denial of access to larger group resources that creates the network. It seems, then that the network would predate membership within the marginalized group. In other words, women living with HIV/AIDS would be more likely to form networks with each other not due to their commonalities, but because of the systematic denial of access to resources they face. The current study did not measure the number of network members living with HIV/AIDS, however research suggests that female network members may experience just as much stigma as the HIV-positive individual by virtue of association (Kennedy, 1995; Pearlin, Mullan, Aneshensel, Wardlaw, & Harrington, 1994). It may be useful to consider the reciprocal relationships of women living with HIV/AIDS with other women in their networks to better explain mental health for both groups.
Another surprising finding was the relationship of age to loneliness. Older women reported higher levels of loneliness over the past few days, but this was not found for loneliness over the past few years. Older women tend to express more general loneliness than their younger or male counterparts (Pinquart & Sorenson, 2001), so it would be expected that this would be mirrored in the current study. However, it may be that older women are more sensitive to short term changes in relationships that might trigger a state of loneliness.

Limitations

The sample for the current study was derived from a larger, longitudinal study, so data was retrospective in nature. The study was conducted in a Midwestern state in largely urban areas making generalizability to those in other geographic areas difficult. Though care was taken to facilitate participant’s recollection of network relationships, all possible network members may not have been captured. This is a common limitation in social network research as respondents are likely to forget those who share weaker ties with other network members (Brewer, 2000). For the current study, however, network members were captured by virtue of their perceived availability to provide specific types of support so these members should still be useful when determining relationship to mental health.

Clinical Implications

Results of the current study suggest several areas for future clinical work with women living with HIV/AIDS. The impact of network size on mental health indicators cannot be ignored, but clinicians may find more success by choosing to address the
quality of the relationships with the network. The proportion of network members that remained stable throughout the study was small for most participants (mean = .36), indicating an essential area for intervention. Women may be encouraged to examine existing relationships and assess how satisfying they are. To maximize satisfaction there should be an effort to build and maintain relationships that provide adequate mutual support (Stokes, 1983). Women experiencing significant amounts of mental illness may become a drain on current relationships, so clinicians may also choose to focus on how each woman may find other resources that can reinforce her personal support network.

As demographic variables were not significant in the current study, clinicians should remain mindful of the context of each woman living with HIV. Maintaining support after a diagnosis may pose a significant problem for some women living with HIV/ AIDS. These women are likely to be single (Land, 1994); the majority lacks a high school degree, is underemployed or unemployed, and is most severely affected by welfare reforms (Owens, 2003). They are women frequently without health insurance options and often do not have access to health services in their communities. These women may have responsibilities of caring for other family members living with HIV or AIDS, while dealing with the physical and emotional effects of their own disease. Although women experience discrimination based on gender and socioeconomic status, African American women, and other women of color, must deal with the combined factors of gender, race, and socioeconomic status. Thus, these factors may have an effect on their access to services and to culturally sensitive services. However, clinicians can counter these effects by highlighting those beneficial relationships that have been
maintained and work with women to expand their definitions of support. Support for these women may come from others with similar limitations, nevertheless the collective nature of support within the community may allow for mutual benefit of all who participate. Interventions emphasizing women’s reciprocal role in maintaining positive, rewarding relationships may be necessary in promoting mental health for those living with or affected by HIV/AIDS.

Conclusion

The current study offered new insight into the characteristics of social networks that impact mental health indicators for women living with HIV/AIDS. Previous research investigating social support did not provide much information on what aspects of these relationships could be influencing mental health. As this group of women experiences mental illness at a higher rate than the general population research that is focused on developing interventions has become imperative.

Social network analysis was a useful tool in determining characteristics that are related to mental health indicators. While structural properties of networks such as density or cohesion were not significant predictors in the current study, factors that represent the relationship between the participant and network member emerged as significant. Caution should be used when attempting to make causal assumptions about these findings, however. Those experiencing increased mental illness symptoms may self-isolate and begin to assess their relationships as less satisfying, thus ending them prematurely. Continued study of the aspects of these relationships may provide a more
thorough picture of how women living with HIV/AIDS develop and maintain rewarding relationships.
LIST OF REFERENCES


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APPENDIX A

ARIZONA SOCIAL SUPPORT INTERVIEW SCHEDULE (ASSIS)
Barrera Response Sheet

Name of network member

Accessed in last 30 days?

A. Private Feelings: If you wanted to talk to someone about things that are very personal and private, who would you talk to?

B. Material Aid: Who are the people you know who would lend or give you $25 or more if you needed it, or lend or give you something that was valuable?

C. Advice: Who would you talk to if a situation came up when you needed some advice?

D. Positive Feedback: Who are the people who you could expect to let you know that they like your ideas or the things that you do?

E. Physical Assistance: Who are the people who you could call on to give up some of their time and energy to help take care of something that you needed to do? (e.g. Driving you somewhere, going to the store)

F. Social Participation: Who are the people that you get together with to have fun or relax?

G. Negative Interactions: Who are the people that you can expect to have some unpleasant disagreements with or people that you can expect to make you angry or upset.

H. Sexual Interactions: Who are the people you have had sexual intercourse with in the last six months?
<table>
<thead>
<tr>
<th></th>
<th>Janet</th>
<th>Cheryl</th>
<th>Danny</th>
<th>Lynn</th>
<th>Donna</th>
<th>Eugene</th>
<th>Norma</th>
<th>Randy</th>
<th>Mother</th>
<th>Father</th>
<th>Karl</th>
<th>Lynn M.</th>
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</tr>
<tr>
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APPENDIX C

CENTER FOR EPIDEMIOLOGICAL STUDIES- DEPRESSED MOOD SCALE
Instructions: Please mark the response that best describes how often you felt or behaved this way DURING THE PAST WEEK.

1 = Rarely or none of the time (less than 1 day)
2 = Some or a little of the time (1-2 days)
3 = Occasionally or a moderate amount of time (3-4 days)
4 = Most or all of the time (5-7 days)

1. I was bothered by things that usually don’t bother me.
2. I did not feel like eating: my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt that I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people disliked me.
20. I could not “get going.”
APPENDIX D

STRESS-AROUSAL SCALE
**Instructions:** The words shown below describe different feelings and moods. Please mark the response that best describes your feelings AT THIS MOMENT.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
<td>1. Tense</td>
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<td>2. Relaxed</td>
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<td>3. Restful</td>
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<td>4. Active</td>
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<td>5. Apprehensive</td>
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<td>6. Worried</td>
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<td>7. Energetic</td>
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<td>8. Drowsy</td>
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<td>9. Bothered</td>
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<td>10. Uneasy</td>
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<td>11. Dejected</td>
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<td>12. Nervous</td>
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<td>13. Distressed</td>
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<td>14. Vigorous</td>
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<td>15. Peaceful</td>
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<td>16. Tired</td>
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<td>17. Idle</td>
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<td>18. Up-tight</td>
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<td>19. Alert</td>
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<td>20. Lively</td>
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<td>21. Cheerful</td>
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<td>22. Contented</td>
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<td>23. Jittery</td>
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<td>24. Sluggish</td>
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<td>25. Pleasant</td>
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<td>26. Sleepy</td>
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<td>27. Comfortable</td>
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<td>28. Calm</td>
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<td>29. Stimulated</td>
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<td>30. Activated</td>
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</table>
APPENDIX E

STATE VERSUS TRAIT LONELINESS SCALE
**Instructions:** Below is a statements concerning the way you have been feeling during the PAST FEW DAYS. Indicate the degree to which you agree or disagree with each statement.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. During the **past few days**, I have fell in tune with the people around me.
2. During the **past few days**, I have lacked companionship.
3. During the **past few days**, I have felt part of a group of friends.
4. During the **past few days**, my interests and ideas have not been shared by the people around me.
5. During the **past few days**, there have been people I felt close to.
6. During the **past few days**, I have felt left out.
7. During the **past few days**, no one has really known me well.
8. During the **past few days**, there have been people I could turn to.
9. During the **past few days**, when I’ve been alone I have felt lonely.
10. During the **past few days**, about how often have you felt lonely?
    - Most of the time
    - Often
    - About half the time
    - Occasionally
    - Never or almost never

11. During the **past few days**, how lonely did you feel?
    - Very lonely
    - Pretty lonely
    - Moderately lonely
    - Slightly lonely
    - I haven’t felt lonely

12. Compared to other people, how lonely do you think you’ve been during the **past few days**?
    - Much lonelier than average
    - Somewhat lonelier than average
    - About average
    - Somewhat less lonely than average
    - Much less lonely than average
Instructions: Below is a statements concerning the way you have been feeling during the PAST FEW YEARS. Indicate the degree to which you agree or disagree with each statement.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. During the past few years, I have fell in tune with the people around me.
2. During the past few years, I have lacked companionship.
3. During the past few years, I have felt part of a group of friends.
4. During the past few years, my interests and ideas have not been shared by the people around me.
5. During the past few years, there have been people I felt close to.
6. During the past few years, I have felt left out.
7. During the past few years, no one has really known me well.
8. During the past few years, there have been people I could turn to.
9. During the past few years, when I’ve been alone I have felt lonely.

10. During the past few years, about how often have you felt lonely?

<table>
<thead>
<tr>
<th>Most of the time</th>
<th>Often</th>
<th>About half the time</th>
<th>Occasionally</th>
<th>Never or almost never</th>
</tr>
</thead>
</table>

11. During the past few years, how lonely did you feel?

<table>
<thead>
<tr>
<th>Very lonely</th>
<th>Pretty lonely</th>
<th>Moderately lonely</th>
<th>Slightly lonely</th>
<th>I haven’t felt lonely</th>
</tr>
</thead>
</table>

12. Compared to other people, how lonely do you think you’ve been during the past few years?

<table>
<thead>
<tr>
<th>Much lonelier than average</th>
<th>Somewhat lonelier than average</th>
<th>About average</th>
<th>Somewhat less lonely than average</th>
<th>Much less lonely than average</th>
</tr>
</thead>
</table>

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APPENDIX F

RESILIENCY QUESTIONNAIRE FOR PEOPLE LIVING WITH HIV/AIDS
Instructions: We are now interested in the attitudes you may have about yourself, others, and particular life situations. Please answer with responses that reflect how you generally feel.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</table>

1. I have a good idea of the things I want to accomplish in my life.
2. I generally see the positive in people.
3. I believe that things will only get better for me.
4. I am planning some type of trip or special activity in the future.
5. I believe there is something good that has come from this disease.
6. I will live until they find a cure for HIV.
7. I consider myself a highly spiritual person.
8. I go to religious services on a regular basis.
9. I turn to a higher power to deal with my HIV.
10. I believe that there is eternal life after death.
11. I believe I have high morals.
12. HIV is a small part of my life.
13. I am more than HIV-positive.
14. I believe I am smarter than other people.
15. When faced with a difficult situation, I enjoy working through the problem.
16. My intelligence has provided me with good opportunities in life.
17. When I have a question about HIV (medical, legal, spiritual, etc.) I usually know where I can find the answer.
18. I believe I am in control of my health.
19. I am stronger than HIV and plan to live a long life.
20. Even though I have HIV, I can do a lot of the same things I did before I got this disease.
21. I believe that the best way to get things accomplished is to do them yourself.
22. My behavior can have an important impact on the progression of my disease.
23. I will not let HIV get the best of me.
24. I enjoy becoming involved in support groups that promote HIV awareness or activism.
25. The only way public policy will change regarding HIV (e.g. treatment, research, etc.) is if I get involved to change it.
26. I have no more power than anyone else to change the HIV epidemic.
27. I am quite outspoken about my views on HIV.
28. I consider myself to be more of a leader than a follower.
29. I have people in my life that I can turn to when I am feeling depressed about being HIV-positive.
30. I feel supportive by my family.