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Malaise, Motivation and Motherhood: Predictors of Engagement in Behavioral Interventions from a Randomized Controlled Trial for HIV+ Women in Drug Abuse Recovery

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Abstract

Drug abuse has serious consequences for the wellbeing of persons with HIV/AIDS but suboptimal rates of client engagement limit the efficacy of interventions. The present study examines and compares client characteristics that predicted engagement (defined as attendance at two or more sessions) in a family intervention (SET) and a group intervention within a randomized trial aimed at preventing relapse and improving medication adherence for 126 predominantly African American HIV+ women in drug abuse recovery. Intervention engagement (60% overall) was not significantly different across the two interventions. Fewer physical and mental symptoms (malaise) ($P < 0.05$), living independently ($P < 0.05$), living with children ($P < 0.05$), and readiness to change ($P < 0.05$) were associated with engagement across the two interventions. Results from this study can be used to inform outreach and engagement approaches for women dually affected by drug abuse and HIV/AIDS.

Keywords

HIV/AIDS; Drug abuse; Engagement; Women

Introduction

Drug abuse has long been acknowledged as a significant co-factor in the HIV/AIDS epidemic. Not only is drug abuse associated with an increased risk of acquiring HIV, persons living with HIV/AIDS (PLWHA) have a higher than average prevalence of alcohol and drug abuse disorders, ranging from 25 to 60% [1]. Drug abuse is highly problematic for

PLWHA because it tends to overshadow other life priorities, including HIV medical adherence [2]. Further, women dually diagnosed with HIV and substance abuse are at greater risk for experiencing trauma [3] and engaging in high risk sexual behaviors such as trading sexual favors for drugs [4].

The Importance of Behavioral Interventions for PLWHA in Drug Recovery

Drug abuse and addiction are relapsing conditions that require ongoing management [5]. Given the compounded effects of drug abuse on PLWHA, it is particularly important for women who are dually diagnosed to access interventions that can help them to maintain their sobriety and to improve their health and well-being. Outside of the realm of HIV care, there is a well-established body of research showing the promising results of substance abuse treatment programs specifically tailored to the needs of women [6] and family-focused interventions for adult substance abusers [7]. There is also an emerging body of literature related to promising interventions for PLWHA with drug use and/or mental illness. An ongoing multi-site federal initiative, the HIV/AIDS Treatment Adherence, Health Outcomes and Cost Study (HCSUS), aims to test programs that integrate mental health and substance abuse components into HIV primary care [8]. The Detroit site of HCSUS demonstrated that providing transportation plus individualized nursing outreach counseling resulted in improved attendance in HIV medical care for women with HIV and current heroin use [9]. The New York HCSUS site, which employs a culturally-sensitive HIV mental health program that is integrated with primary care, demonstrated that predominantly minority men and women who utilized mental health services within the integrated HIV service program reported improved mental health, improved HIV-related health, less frequent use of alcohol and cocaine and improved social functioning [10,11].

One model of treatment that has been used in trials with HIV+ adults outside of HCSUS is Structural Ecosystems Therapy (SET) [12,13], a family-ecosystemic intervention developed for urban minority women with HIV/AIDS. SET targets the woman's social environment within the family and between the woman, family, and other social systems to improve psychosocial functioning and health. SET's focus on transforming maladaptive interactions includes helping women to establish boundaries with drug-using family members, peers and partners. SET also aims to improve connections between the woman and supportive resources in her family and community, including family members who are successfully managing their recovery, and drug abuse services. A randomized trial of SET with HIV+ African American women, the majority of whom (64%) were in drug abuse recovery, found SET to be more efficacious for reducing psychological distress and family hassles than individual psychotherapy and community control conditions [14] and secondary analyses found that SET had a protective effect against drug relapse [15] and resulted in increased medication adherence [16] as compared to individual psychotherapy.

The Challenges of Treatment Engagement

As a group, substance abusers tend to terminate treatment prematurely and often fail to return for follow-up treatment after inpatient treatment is completed [17], limiting the potential benefits of interventions. Researchers estimate that each year 90–95% of substance dependent persons do not go into treatment or seek self-help groups [18] and attendance and return rates of substance abusing individuals in outpatient treatment are estimated at from 4 to 65% [17]. A recent Cochrane review of 25 controlled trials across a variety of interventions for persons with substance abuse problems and mental illness reported equivocal results, which were largely attributed to the studies' high drop-out rates [19]. In particular, female substance abusers—especially pregnant women and mothers—may experience more challenges getting into treatment due to child-rearing responsibilities [17].

Utilization rates of psychosocial and drug treatment for PLWHA are also suboptimal. The aforementioned HCSUS conducted a multi-site baseline study of 803 PLWHA with mental illness and substance abuse and found that only 59% received mental health services and 47% received substance abuse services [20]. A retrospective analysis of case management charts of HIV+ women in New York City found similar results. Of those women identified as using substances (54% of the sample), only 48% utilized substance abuse treatment services over the 2 year period of the study [8]. The SET efficacy trial with African American women, of whom 64% had a lifetime history of drug abuse or dependence [14] attained treatment engagement rates (defined as attendance at 2 or more sessions) of 75% for SET and 68% for an individual person-centered intervention [21]. Only 46 and 43% of those randomized received the minimum dosage of five sessions in SET and PCA, respectively. In contrast, clinical trials of psychosocial interventions for PLWHA that excluded persons with drug abuse have reported intervention retention rates of 78–86% [22,23].

Predictors of Treatment Engagement for HIV+/SA Women/Adults

The authors of the HCSUS service utilization study conclude that more research is needed to explore access to treatment for PLWHA with co-occurring disorders such as substance abuse as well as ways to better engage and retain them in care [1]. One avenue for developing and focusing interventions to promote treatment engagement and retention is by uncovering client characteristics that predict treatment engagement in different types of interventions. Such research can help to shape customized treatment engagement and retention strategies for those who are most at risk for failing to follow through with treatment.

Researchers have investigated predictors of engagement for drug abuse and HIV-related treatment. Burnam et al. [24] found that use of mental health outpatient services was less likely among African Americans, those with lower levels of education and income, and those with fewer HIV symptoms. Drug treatment studies have identified having independent housing [25] and readiness to change [26,27] as characteristics that predict substance abuse treatment engagement. The client's family context has also been implicated in engagement for drug abuse treatment. A review of 19 outcome studies of interventions aimed at engaging substance abusers into treatment found that the involvement of family members in the intervention facilitates treatment engagement [18]. The results are equivocal on the impact of motherhood on treatment engagement. In a metasynthesis of primarily descriptive studies on substance abuse among HIV+ mothers, Barroso and Sandelowski [28] found that having children was positively associated with seeking substance abuse treatment, while Wilke et al. [29] found that motherhood was inversely associated with treatment motivation among racial/ethnic minority women.

Predictors of mental health and substance abuse treatment non-utilization among PLWHA include belonging to a minority group and having only an alcohol dependence diagnosis (vs. both a drug and alcohol dependence diagnosis) [20]. Predictors of treatment engagement across both treatment modalities in the aforementioned randomized trial of SET for African American women [21] include psychological distress, daily hassles, social support, and partner disagreements. Because of the relative scarcity of research on predictors of engagement in drug abuse or psychosocial interventions among PLWHA, we searched for studies describing predictors of HIV health care attendance. Craw et al. [30] found that being unstably housed, using injection drugs, and being asymptomatic were associated with lower engagement in medical care among PLWHA. Mellins et al. [31] found that the presence of a psychiatric disorder, stressful life events, parenting stress and more household members were barriers to engaging in medical care among HIV+ mothers. A review of studies exploring the relationship between housing stability and HIV found more stable housing to be related to better utilization of health services [32].

The Goals of the Present Study

The studies reviewed above point to various client characteristics, both at the individual and family-level, that are related to treatment engagement for drug abusers and PLWHA. However, few of these studies were with dually-diagnosed (drug abuse and HIV/AIDS) samples and none conducted a direct comparison of predictors across more than one treatment modality. Both of these dimensions, dual-diagnosis and modality of treatment, can potentially change the dynamics of treatment engagement. Further, it is useful to understand where in the treatment engagement process these client characteristics have their effect; do they make a difference in whether or not clients even attend a first session, or in whether or not they return a second time? We feel that this level of specificity is needed to design outreach strategies that are tailored to match client needs, and to improve utilization efficiency and client outcomes by triaging clients into the types of interventions in which they are most likely to participate.

The present report examines predictors of treatment engagement for two interventions, SET and a psychoeducational health group, in a recently completed randomized trial for HIV+ women in drug recovery [16]. The study examines putative predictors of treatment engagement that have been suggested by the literature cited above including psychological functioning (depression and anxiety), physical health (HIV symptoms and years since HIV diagnosis), readiness to change, family functioning (family stress, family support, enmeshment and conflict resolution) and living situation. In this study we attempt to: (a) build a model of individual and family-level client characteristics that predict treatment engagement for women with HIV who are in drug recovery, (b) examine if different factors predict engagement in two different modalities of psychosocial interventions (family-based therapy as compared to a psychoeducational group intervention) by testing whether treatment condition moderates the relationships between predictors and engagement and whether family functioning predicts engagement only for women in the family-based therapy condition, and (c) examine these predictors at different stages of the engagement process: attendance at a first session and returning for a second session. With regard to predictors of the different types of interventions, we hypothesized that family functioning would predict engagement in the family intervention (SET) but not in the health group.

Methods

Participants

Participants in this study were 126 women randomized in a clinical trial to test SET. In the trial, 59 women were randomized to SET and 67 were randomized to the Health Group (HG) (Fig. 1). To be eligible for the trial, women had to have been HIV-1 seropositive and (1) at least 18 years of age, (2) meet the DSM-IV criteria for substance abuse or dependence within the last year (with cocaine as either the primary or secondary drug of abuse), (3) prescribed antiretroviral medication, (4) have a viral load over 100,000 or CD4 T-cell count under 350, or have a diagnosis of any AIDS-defining disease, (5) willing to disclose their HIV status to at least one health care professional, and (6) have at least one family member enroll in a companion study of family mechanisms. Lifetime DSM-IV substance use diagnoses among the women in this sample included dependence on cocaine (94%), alcohol (73%), cannabis (42%), opioids (22%) and sedatives (17%). Most (79%) were diagnosed as dependent on more than one substance, and 12% were diagnosed with abuse of more than one substance. All were HIV+, with an average of 9.91 (SD = 5.68) years with the diagnosis, mean CD4 T-cell count of 496 (SD = 298) and log HIV viral load of 2.98 (SD = 1.33). The majority of the women (79%) were African American, 12% were Hispanic, 6% were White, and 2% were of other or indeterminate ethnicities. Nearly half of the women (49%) reported having less than a high school education. The median annual family income

was \$7,236 (25th percentile \$900, 75th percentile \$11,730), 86% were unemployed, and 75% were on public assistance. Of the above, there were statistically significant differences between conditions only in the proportion of women with cannabis dependence in SET (32%) and the health group (51%), $\chi^2 (1, N = 126) = 4.43, P < 0.05$.

The current trial differs from the previous [21] trial of SET in a few important dimensions that are relevant to treatment engagement. Whereas the previous trial included a substantial fraction of women who had a history of substance abuse issues, they had been in recovery longer than the women in the current trial. Further, the implementation of SET in the previous trial initially focused on engaging the women and then turned to engaging the family, whereas SET as employed in the current trial emphasized the simultaneous engagement of the women and family members as a means for increasing family participation.

Interventions

Structural Ecosystems Therapy (SET) [12,13] is a family-ecosystemic intervention that targets the HIV+ woman's social environment both within the family and between the woman, family, and other social systems (e.g., health care, substance abuse treatment, religious institutions, neighbors) to improve the woman's psychosocial functioning and health. SET is an extension of Brief Strategic Family Therapy (BSFT) [33] to address the needs of PLWHA. As a structural/strategic family intervention, SET aims to transform interactions within the family in the "here and now" of the therapy session to maximize adaptive family processes and minimize problematic interactions. The three basic techniques in SET, derived from BSFT, are joining, diagnosing, and restructuring [34,35]. *Joining* refers to the process of establishing a therapeutic system that includes the therapist, woman, her family, and representatives from other relevant systems (e.g., friends, health care providers) who will be involved in the therapeutic process. *Diagnosing* refers to the identification of interactional patterns (structures) that contribute to the problems experienced by the woman, and thus need to be changed, as well as those that are sources of support and thus should be reinforced. *Restructuring* involves orchestrating opportunities for individuals within the therapeutic system to interact in ways that reinforce strengths and change maladaptive interactional patterns. Whereas SET is a process-based intervention and generally does not focus on particular content, in this application of SET, therapists were instructed to specifically address both relapse prevention and HIV medication adherence with the women and their families. The intended dosage in the parent study was 12, 1-h sessions over a period of 4 months. Sessions were conducted at the woman's home or other locations preferred by the women and accessible to family members. Sessions were videotaped for supervision and fidelity rating.

The psychoeducational health group intervention was adapted from a Wellness Manual developed by Hartfield [36]. The HIV health group was incorporated in the study to control for common factors in therapy such as level of attention, therapist qualities and enthusiasm, or client expectancies and to represent the standard of psychoeducational interventions for HIV+ women. It was designed to replicate a popular program available in the HIV clinics at the local county hospital. Topics include information about HIV adherence, HIV transmission risk reduction, anatomy, and substance use. The health group met bi-weekly over a 4 month time period for an average of 1.5 h per session. Sessions were conducted in the evening at the study offices located at a large urban medical campus. Sessions were videotaped for fidelity rating.

Measures

The outcome variable, *engagement into therapy* was defined as the woman attending at least two sessions. This definition of engagement is consistent with our past intervention engagement research [20–37] and is modeled on the work of Santisteban et al. [38] and Coatsworth et al. [39]. For analysis, dummy coding was used with non-engaged ($n = 51$) coded as 0 and engaged ($n = 75$) coded as 1.

The predictor variables for this report are from measures administered as part of a larger assessment battery given to the women and their family members for the two parent studies, the randomized trial and the family mechanisms study. Family members eligible for the family mechanisms study were those who met any of the following criteria as reported by the woman: household members, the women's children age 6 and above with whom she has at least monthly contact, the woman's spouse or partner, persons helping the woman raise her children, and other persons who are important sources of emotional or instrumental support [40]. The parent studies administered these batteries at multiple timepoints over the course of 1 year. The measures used in the present report are from the baseline assessment. Values for each predictor variable by condition are summarized in Table 1.

Individual-Level Predictor Variables

Demographics—Participants provided their date of birth; *age* was calculated by subtracting their birth date from the data collection date. Participants also provided their date of first positive result on ELISA, Western Blot, or other HIV test; *years with HIV diagnosis* was calculated by subtracting the earliest positive test date from the data collection date.

HIV Symptoms—Women met with a nurse who performed a comprehensive evaluation of 31 complaints, e.g., fever, lymphadenopathy, paresthesia, arthralgia, oral lesions, and nausea, in the past 60 days. Women could add up to three additional complaints that were not listed on the form used by local HIV clinics. The mean number of symptoms was 4.65 ($SD = 4.99$).

Anxiety and Depression—A modified version of the Structured Interview Guide for the Hamilton Anxiety and Depression Subscales (SIGH-AD) [41], a semi-structured interview that combines items from the 14-item Hamilton Anxiety Rating Scale [42] and the 17-item Hamilton Rating Scale for Depression [43] was used to measure symptoms of anxiety and depression in the past 7 days. Items that overlapped with HIV symptoms were removed, leaving in 13 items for depression (Cronbach's $\alpha = 0.83$) and seven items for anxiety (Cronbach's $\alpha = 0.83$). Mean depression score was 4.50 ($SD = 4.86$); mean anxiety score was 3.92 ($SD = 4.31$).

Readiness to Change—The University of Rhode Island Change Assessment Scale [44], with 32 items on a 5-point Likert scale which are divided into four seven-item subscales, precontemplation, contemplation, action, and maintenance, was used to assess readiness to change. Mean values are calculated for each subscale, then combined [$\text{Mean (contemplation)} + \text{Mean (action)} + \text{Mean (maintenance)} - \text{Mean (precontemplation)}$] into an overall Readiness to Change score. Participants are assigned to mutually exclusive stages based on the readiness score as follows: scores less than or equal to 8 in the precontemplation stage (12%), scores from 8 to 11 in the contemplation stage (45%), and scores above 11 in the action stage (43%). For analysis two dummy-coded variables representing contemplation and action were created. The precontemplation stage was the referent group.

Drug Use—A qualitative urine drug toxicology screen (UDS) for cocaine, opioids, amphetamines, sedatives/barbiturates, phencyclidine, and tetrahydrocannabinol utilizing a homogenous enzyme immunoassay technique specific for each substance was used to measure drug use at baseline. The assay tests THC at a 20 ng cut-off and cocaine and its metabolites are tested at a 50 ng cut-off. The probability of a false positive is below 0.00002. Almost a third (29%) of women had positive UDS.

Family-Level Predictor Variables

Living Situation—Living situation was described using three dummy variables created from information from the study's demographics form and a Family Identification Form [40]. For analysis, three dummy coded variables were living in a shelter/facility (19%) versus living independently, living with only adults (38%) versus not living with only adults, and living with children with or without adults (33%) versus not living with children.

Family Stress—The family stress score was the mean intensity as rated on a scale from 1 (none) to 4 (a great deal) of six family-related hassles items from the Hassles Scale [45]. Cronbach's alpha for the family stress score in this sample was 0.68. Mean family stress was 0.95 (SD = 1.31).

Family Support—Family support was measured with the average number of family members (up to 9) that the woman listed across six aspects of social support on the Social Support Questionnaire (SSQ) Short Form [46]. Mean family support was 5.60 (SD = 1.29).

Family Interaction Patterns—Family interaction patterns were rated using the Structural Family Systems Rating (SFSR) [47,48] which was administered at the baseline assessment, prior to randomization to treatment condition. Based on the Wiltwick Family tasks [49] family members' interactions are rated on three standardized activities (planning a menu, stating likes and dislikes about each other, and discussing a recent family argument). Two raters completed the SFSR measures for the 123 families; overall inter-rater reliability was 0.91. The mean number of family members in the family tasks were 2.56 (SD = 1.05). The SFSR rates multiple areas of family functioning: structure, disengagement, enmeshment, identified patienthood, affective expression, developmental stage, and conflict resolution. The current report includes ratings of two of the five family interaction patterns, *enmeshment* and *conflict resolution*. *Enmeshment* is measured by counting the number of instances of boundary-crossing behaviors, e.g., continuing another family member's speech, physically controlling another family member, interrupting another person, and denotes a high degree of closeness between family members. In this sample Cronbach's alpha for enmeshment was 0.77. Due to positive skew, the square root of enmeshment ($M = 2.74$, $SD = 1.12$) was used. *Conflict Resolution* assessed the mean level of resolution of individual differences of opinion and each of the three tasks on a 5-point scale. The five levels of conflict resolution in order from lowest to highest are denial (behaving as though a conflict does not exist), avoidance (conflict is noted, but "swept under the rug"), diffusion (moving to a new conflict without resolving the previous conflict), emergence (from talking about the conflict) without resolution, and emergence with resolution (family agrees on a way to conclude disagreement). Mean conflict resolution score was 3.18 (SD = 0.62). Internal consistency is not calculated for Conflict Resolution because the levels represent mutually exclusive categories.

Data Analysis Plan

We planned a series of five steps for the analysis. First, we tested whether engagement differed between treatment conditions and whether each predictor separately predicted engagement across both treatment conditions. In this step we used binary logistic regression

for continuous predictors and chi-square tests for the categorical predictors. Second, we correlated all significant continuous predictors. If significant correlations were found between these variables, they would be reduced to underlying latent variable/s in a measurement model in the final logistic analysis. Third, we tested whether the significant predictors from step 1 and resultant latent constructs from step 2 remained significant predictors after accounting for effects of other predictor variables and controlling for treatment condition. For this step we used SEM with a binary outcome in Mplus 5.21 [50] because it allows for structural equations modeling with binary logistic regression for a dichotomous outcome (engagement) and can accommodate missing data using full information maximum likelihood estimates. Fourth, we examined whether there were different predictors between treatment conditions. In this step we tested for moderation by treatment condition by comparing a model with coefficients held constant in SET and the health group to a model with coefficients free to vary across treatment condition using multigroup SEM modeling. We also tested whether family functioning variables predicted engagement when restricting the sample to women in the family intervention. Fifth, we tested for differences in predictors of attending one session and not coming to any sessions versus engaging in treatment using SEM with multinomial outcome. Both standardized (b) and unstandardized (β) coefficients are reported in the text for clarity. OR and 95% CI are calculated based on the unstandardized coefficients in binary and multinomial logistic analyses.

Results

Step 1: Univariate Analysis

Over half ($n = 75$, 60%) of women in both conditions were successfully engaged into treatment. The percentage of engagement was not significantly different between SET (56%) and the health group (63%), $\chi^2(1, N = 126) = 0.59, P = 0.44$. Results showed that higher levels of depression, $b = -0.91, SE(b) = 0.04, OR = 0.91, 95\% CI [0.85, 0.99], P < 0.05$, anxiety, $b = -0.12, SE(b) = 0.05, OR = 0.89, 95\% CI [0.82, 0.97], P < 0.05$, and HIV symptoms, $b = -0.10, SE(b) = 0.04, OR = 0.91, 95\% CI [0.84, 0.98], P < 0.05$, were all associated with lower odds of engagement. Readiness to change, $\chi^2(2, N = 126) = 8.90, P < 0.05$, and living situation, $\chi^2(3, N = 125) = 18.18, P < 0.001$ were significantly related to engagement. With regard to readiness to change, 74% of women in the contemplation stage engaged in treatment, compared to 53% of women in the precontemplation stage and 46% in the action stage. With regard to living situation, 25% of women who lived in a shelter, 70% of women who lived with adults without minors, and 75% of women who lived with minors, regardless of the presence of adults, engaged in the interventions.

Step 2: Data Reduction

Depression was significantly correlated with anxiety, $r(126) = 0.83, P < 0.001$, and HIV symptoms, $r(126) = 0.48, P < 0.001$. Anxiety was significantly correlated with HIV symptoms, $r(126) = 0.49, P < 0.001$. These three variables were reduced to a single latent variable, which we called *Malaise*. This latent variable was included along with other significant predictors in the final SEM to predict engagement in the subsequent steps. As occurs with an SEM with a single latent variable with only three items, fit statistics showed “perfect” fit due to the lack of degrees of freedom and thus are not appropriate to assess this measurement model [51]. However, all three items, anxiety, $b = 0.92, SE(b) = 0.10, \beta = 0.92, P < 0.001$, depression, $b = 1.00$ (fixed to identify the model), $\beta = 0.90, P < 0.001$, and HIV symptoms, $b = 0.61, SE(b) = 0.10, \beta = 0.53, P < 0.001$, loaded significantly on the latent *Malaise* factor. Composite reliability, an index of internal consistency similar to Cronbach's alpha designed for use within an SEM measurement model, is calculated using

factor loadings instead of intercorrelations [52]. For Malaise, composite reliability was 0.81, further suggesting these items shared common variance.

Step 3: Predicting Engagement

Malaise significantly predicted engagement, $b = -0.13$, $SE(b) = 0.06$, $\beta = -0.25$, $OR = 0.88$, 95% CI $[-0.24, -0.02]$, $P < 0.05$, such that increases in malaise were associated with decreased odds of engaging in treatment. As a follow-up test, entering depression, anxiety, and HIV symptoms concurrently in the model resulted in no significant relationships, although the effect size of each predictor was similar. Further, entering the unique residual variance of depression, anxiety, and HIV symptoms, after controlling for the relationship of the latent Malaise factor, showed no significant prediction above that of the Malaise factor. These follow-up analyses suggested that the variance in engagement associated with depression, anxiety, and HIV symptoms is common to all three variables, and not independent.

With regard to readiness to change, women in the contemplation stage had a significantly increased odds of engaging in treatment, $b = 1.36$, $SE(b) = 0.67$, $\beta = 0.31$, $OR = 3.91$, 95% CI $[0.05, 2.67]$, $P < 0.05$, compared to women in precontemplation. However, women in the action stage did not have significantly different odds, $b = 0.30$, $SE(b) = 0.66$, $\beta = 0.07$, $OR = 1.35$, 95% CI $[-0.99, 1.59]$, $P = 0.65$, than women in the precontemplation stage. With regard to living situation, women living with minors had a significantly increased odds of engaging in treatment, $b = 1.25$, $SE(b) = 0.58$, $\beta = 0.27$, $P < 0.05$, $OR = 3.47$, 95% CI $[0.11, 2.38]$, $P < 0.05$, than women not living with minors. Similarly, women who were living in a shelter had lower odds of engaging, $b = -1.28$, $SE(b) = 0.59$, $\beta = -0.23$, $OR = 0.28$, 95% CI $[-2.44, -0.13]$, $P < 0.05$, than women living outside of a shelter. However, women living with only adults showed no significant difference, $b = 0.94$, $SE(b) = 0.54$, $\beta = 0.21$, $OR = 2.56$, 95% CI $[-0.12, 2.00]$, $P = 0.08$, from women not living with only adults. Figure 2 shows the standardized path coefficients for the final SEM model predicting engagement.

Step 4: Differences by Treatment Condition

Allowing the coefficients of each predictor to vary across treatment condition in a multigroup analysis yielded no significant moderation by treatment condition, $\chi^2(4, N = 2) = 1.00$, $P = 0.91$. Although not statistically significant, the difference in effect sizes of readiness to change between treatment conditions was large. Specifically, for women in SET the difference in odds of engaging between those in the contemplation stage and those in the precontemplation stage ($OR = 17.45$) was much higher than in the same comparison in the health group ($OR = 2.61$). Contrary to our hypothesis, family functioning did not predict engagement in SET. Restricting the sample to only women in SET, none of the family functioning variables predicted engagement: family hassles, $OR = 0.95$, $SE(b) = 0.03$, $P = 0.13$, family support, $OR = 1.08$, $SE(b) = 0.25$, $P = 0.76$, conflict resolution, $OR = 1.84$, $SE(b) = 0.45$, $P = 0.18$, or enmeshment, $OR = 0.92$, $SE(b) = 0.31$, $P = 0.80$.

Step 5: Differences by Stage in the Engagement Process

In this step, we used Mplus SEM with a three-level outcome: attending no sessions, attending one session, and engaging in treatment. Twelve women (6 in SET and 6 in health group) attended only one treatment session; 39 women (20 in SET and 19 in health group) attended no sessions. We found significant differences in the effects of malaise and household composition. Malaise was positively related to attending no sessions, $b = 0.16$, $SE(b) = 0.06$, $\beta = 0.51$, $OR = 1.18$, 95% CI $[0.05, 0.28]$, $P < 0.01$, such that women with greater malaise had greater odds of attending no sessions. In contrast, malaise was not related to the odds of attending a second session versus attending only one session, $b = -0.02$, $SE(b) = 0.11$, $\beta = -0.01$, $OR = 0.98$, 95% CI $[-0.24, 0.19]$, $P = 0.85$. There was a

similar result for women living in a shelter. Women in a shelter had greater odds of attending no sessions, $b = 1.55$, $SE(b) = 0.63$, $\beta = 0.47$, $OR = 4.72$, 95% CI [0.31, 2.79], $P < 0.05$. But, living in a shelter was not significantly related to the odds of attending a second session, $b = 0.98$, $SE(b) = 0.82$, $\beta = 0.05$, $OR = 2.65$, 95% CI [-0.64, 2.59], $P = 0.24$.

The reverse pattern was found with regard to women living with children, which was inversely related to attending only one session versus engaging in treatment. Specifically, women living with minors had significantly smaller odds of attending only one session, $b = -2.51$, $SE(b) = 1.17$, $\beta = -0.15$, $OR = 0.08$, 95% CI [-4.79, -0.22], $P < 0.05$. But living with children was not significantly related to the odds of attending no sessions, $b = -0.81$, $SE(b) = 0.64$, $\beta = -0.29$, $OR = 0.45$, 95% CI [-2.07, 0.45], $P = 0.21$.

Discussion

This study found that only 60% of women randomized to one of two psychosocial interventions in a randomized trial for HIV+ women in drug recovery attended at least two sessions of their respective interventions. This suboptimal engagement rate undoubtedly limits the efficacy of the interventions so work is needed to understand how to increase client participation. A critical review of treatment outcome research in the area of family therapy for drug abuse in both adults and adolescents [53] concluded that problems of engaging and retaining patients in treatment are among the most significant challenges that confront clinicians and researchers in intervention science. Beyond reducing the impact of interventions, poor engagement rates threaten the validity of randomized trials [54].

Feeling good physically and psychologically was associated with engagement in the two treatment conditions of the randomized trial and predicted whether women ever attended a first session. Approaches are needed to strategically reach out and jumpstart interventions with women who are not feeling well, a group that is particularly in need of services. For the health group, the need to get mobilized and travel to the group might have been a barrier. However a home-based approach, as used in SET, was not sufficient for engaging clients who were not feeling well. It is possible that preconceived notions that family sessions would be contentious and stressful caused women who were not feeling up to the challenge to refuse a first session even if delivered at their door. Providing more information about the supportive and non-confrontational nature of SET sessions in advance of the first appointment, e.g., via a telephone call, might have improved attendance at first sessions among women who were experiencing physical or psychological symptoms.

Living with children was also associated with engagement across both interventions, and was an especially powerful factor in predicting whether they returned for a second session after attending a first session. The finding that mothers might be particularly accessible for psychosocial interventions should be capitalized upon by treatment developers, who might tailor interventions specifically for this subgroup. Further study is needed to understand the mechanisms that drive this effect. For example, women may be looking to improve their own health as a way to be better mothers, or perhaps living with children is confounded with higher functioning overall as compared with mothers who are not residing with their children. In contrast, women who were not living independently were much less likely to attend any sessions regardless of treatment condition. This finding points to at least two additional areas where research is needed to understand the lack of engagement. First, what are the reasons that these women did not engage? Second, how to refine treatments to meet the needs of women in this group?

Although differences in predictors between treatment conditions were not statistically significant, tests of interactions are known to have low power, particularly in relatively small

samples. Given the large difference in effect sizes between treatment conditions, we believe that at least one predictor, readiness to change, deserves further study. In particular, readiness to change appeared to be a key factor for engagement in SET such that women who were in the contemplation stage of readiness to change had over 17 times the odds of engaging than women in the precontemplation stage. Interestingly, there was no significant difference in odds for women in the action stage. One might expect that women in action would engage at greater rates than women in either contemplation or precontemplation, due to their greater readiness to change. We speculate that women in the action stage chose to engage in substance use treatment instead of either the family intervention or health group. A full investigation of this possibility is beyond the scope of the current study, but we were able to examine substance use treatment services from an instrument initially used in the Colorado Women's Prison Project by Sacks [55]. Women in the action stage did utilize a significantly greater number of substance use treatment services at baseline ($M = 157.80$, $SD = 192.39$) than women in the contemplation stage ($M = 85.63$, $SD = 90.53$), $F(1,78) = 4.61$, $P < 0.05$.

The lower engagement rates in SET in the current trial (56%) as compared to the 75% engagement rate in SET in the previous trial [21] might be explained in part by the fact that women in the current trial were at a much earlier stage of recovery, with more variability in readiness for change. However, another factor that might explain the different rates of engagement in the two SET trials was the stronger clinical emphasis during the current trial on increasing family attendance at sessions. This strategy helped to improve family participation in SET (among women who attended at least two SET sessions, the percentage of family sessions increased from 40% in the previous trial to 70% in the current trial [$t(81) = -3.42$; $P < 0.001$]), but might have been costly in terms of engaging the woman. This is a difficult but important balance to achieve because of the demonstrated advantages of including family in interventions for drug abuse [29] and PLWHA [20–56]. The fear of exposing secrets and the expectation that therapists will pry into unresolved family issues have been cited as barriers to seeking family-based treatment, particularly for minority clients [57]. Such negative expectations are likely to be compounded in family treatment focused on stigmatized conditions such as HIV/AIDS and drug abuse. Readiness for change/motivation may be a necessary ingredient for women to overcome these fears and involve family members in their care.

Interventions focused on motivation-related interventions [20,29–58] have already been used successfully among low-income urban mothers—specifically mothers of children in mental health therapy [59] and depressed mothers of children with psychiatric illnesses [60]. Further, motivation-related interventions that have been successfully used with PLWHA [61] and substance abusing PLWHA [62] might be tailored to specifically address increasing the client's readiness to involve family members in treatment.

Limitations

This study should be interpreted in light of a few important limitations. Generalizability is limited by the use convenience sampling and non-random selection bias related to the eligibility requirement that women have at least one family member willing to participate in the study. Also, as the results of the investigation imply, there may be intervention-specific factors that affect the propensity for individuals to engage and this needs to be considered when trying to generalize the results. Finally, the relatively small sample size of the current investigation limits statistical significance of relatively large effect sizes, so some factors that were not found to be significant may well be in larger samples. For example, women living in a shelter had half the odds of engaging compared to women living alone, and

women living with adults had twice the odds of engaging compared to women living alone. These are considered moderate effect sizes, but were not statistically significant.

Future Work

This study provides some clues as to potentially fruitful avenues for strategic and tailored interventions aimed at improving treatment engagement for HIV+ women in drug recovery. Qualitative and community-based studies would be useful for further elucidating client preferences and concerns, and process studies can examine the stages of engagement and retention to identify factors that assist or weaken retention. Process and repeated measures studies are needed to further tease out the processes of treatment engagement such as the malleability of readiness to change.

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References

1. Klinkenberg WD, Sacks S, HIV/AIDS Treatment, Adherence, and Health Outcomes and Cost Study Group. Mental disorders and drug abuse in persons living with HIV/AIDS. *AIDS Care* 2004;16:S22–42. [PubMed: 15736820]
2. Lucas GM, Cheever LW, Chaisson RE, Moore RD. Detrimental effects of continued illicit drug use on the treatment of HIV-1 infection. *J Acquir Immune Defic Syndr* 2001;27:251–9. [PubMed: 11464144]
3. Sherbourne C, Forge NG, Kung FY, Orlando M, Tucker J. Personal and psychosocial characteristics associated with psychiatric conditions among women with human immunodeficiency virus. *Womens Health Issues* 2003;13:104–10. [PubMed: 12867089]
4. Calsyn RJ, Klinkenberg WD, Morse GA, Miller J, Cruthis R, HIV/AIDS Treatment, Adherence, Health Outcomes and Cost Study Group. Recruitment, engagement, and retention of people living with HIV and co-occurring mental health and substance use disorders. *AIDS Care* 2004;16:S56–70. [PubMed: 15736822]
5. Compton WM, Glantz M, Delany P. Addiction as a chronic illness—putting the concept into action. *Eval Program Plan* 2003;26:353–4.
6. Ashley OS, Marsden ME, Brady TM. Effectiveness of substance abuse treatment programming for women: a review. *Am J Drug Alcohol Abuse* 2003;29:9–53.
7. Copello AG, Templetonb L, Vellemanb R. Family interventions for drug and alcohol misuse: is there a best practice? *Curr Opin Psychiatry* 2006;19:271–6. [PubMed: 16612212]
8. HIV/AIDS Treatment Adherence, Health Outcomes, Cost Study Group. The HIV/AIDS treatment adherence, health outcomes, and cost study: conceptual foundations and overview. *AIDS Care* 2004;16:6–21.
9. Andersen M, Hockman E, Smereck G, et al. Retaining women in HIV medical care. *J Assoc Nurses AIDS Care* 2007;18:33–41. [PubMed: 17570298]
10. Pillai NV, Kupprat SA, Halkitis PN. Impact of service delivery model on health care access among HIV-positive women in New York City. *AIDS Patient Care* 2009;23:51–8.
11. Winiarski MG, Beckett E, Salcedo J. Outcomes of an inner-city HIV mental health programme integrated with primary care and emphasizing cultural responsiveness. *AIDS Care* 2005;17:747–56. [PubMed: 16036261]
12. Mitrani, VB.; Szapocznik, J.; Robinson, C. Structural ecosystems therapy with seropositive African American mothers. In: Pequegnat, W.; Szapocznik, J., editors. *Inside families: the role of families in preventing and adapting to HIV/AIDS*. Rockville: National Institute of Mental Health; 2000. p. 243–80.

13. Mitrani, V.; Robinson, C.; Szapocznik, J. Structural ecosystems therapy (SET) for women with HIV/AIDS. In: Stanton, M.; Bray, J., editors. *Handbook of family psychology*. West Sussex: Wiley-Blackwell; 2009. p. 355-69.
14. Szapocznik J, Feaster DJ, Mitrani VB, et al. Structural ecosystems therapy for HIV-seropositive African American women: effects on psychological distress, family hassles, and family support. *J Consult Clin Psychol* 2004;72:288–303. [PubMed: 15065962]
15. Feaster DJ, Burns MJ, Brincks AB, et al. Relative efficacy of structural ecosystems therapy in reducing risk of drug abuse relapse for HIV+ African American women. *Fam Process*. In press.
16. Feaster DJ, Mitrani VB, Burns MJ, et al. A randomized controlled trial of structural ecosystems therapy for HIV medication adherence and substance abuse relapse prevention. *Drug Alcohol Depend*. In press.
17. Lefforge NL, Donohue B, Strada MJ. Improving session attendance in mental health and substance abuse settings: a review of controlled studies. *Behav Ther* 2007;38:1–22. [PubMed: 17292691]
18. Stanton MD. Getting reluctant substance abusers to engaged in treatment/self-help: a review of outcomes and clinical options. *J Marital Fam Ther* 2004;4:165–82. [PubMed: 15114946]
19. Cleary M, Hunt GE, Matheson SL, Siegfried N, Walter G. Psychosocial interventions for people with both severe mental illness and substance misuse. *Cochrane Database Syst Rev* 2008;1 Art. No.: CD001088. 10.1002/14651858.CD001088.pub2
20. Weaver MR, Conover CJ, Proescholdbell RJ, Arno PS, Ang A, Ettner SL. Utilization of mental health and substance abuse care for people living with HIV/AIDS, chronic mental illness, and substance abuse disorders. *J Acquir Immune Defic Syndr* 2008;47:449–58. [PubMed: 18197121]
21. Prado G, Szapocznik J, Mitrani VB, Mauer MH, Smith L, Feaster DJ. Factors influencing engagement into interventions for adaptation to HIV in African American women. *AIDS Behav* 2002;6:141–51. [PubMed: 16715177]
22. Chesney MA, Chambers DB, Taylor JM, Johnson LM, Folkman S. Coping effectiveness training for men living with HIV: results from a randomized clinical trial testing a group-based intervention. *Psychosom Med* 2003;65:1038–46. [PubMed: 14645783]
23. Antoni MH, Carrico AW, Durán RE, et al. Randomized clinical trial of cognitive behavioral stress management on human immunodeficiency virus viral load in gay men treated with highly active antiretroviral therapy. *Psychosom Med* 2006;68:143–51. [PubMed: 16449425]
24. Burnam MA, Bing EG, Morton SC, et al. Use of mental health and substance abuse treatment services among adults with HIV in the United States. *Arch Gen Psychiatry* 2001;58:729–36. [PubMed: 11483138]
25. Padgett DK, Henwood B, Abrams C, Davis A. Engagement and retention in services among formerly homeless adults with co-occurring mental illness and substance abuse: voices from the margins. *Psychiatr Rehabil J* 2008;31:226–33. [PubMed: 18194950]
26. Brown VB, Melchior LA, Panter AT, Slaughter R, Huba GJ. Women's steps of change and entry into drug abuse treatment: a multidimensional stages of change model. *J Subst Abuse Treat* 2000;18:231–40. [PubMed: 10742636]
27. DiClemente CC, Schlundt D, Gemmell L. Readiness and stages of change in addiction treatment. *Am J Addict* 2004;13:103–19. [PubMed: 15204662]
28. Barroso J, Sandelowski M. Substance abuse in HIV-positive women. *J Assoc Nurses AIDS Care* 2004;15:48–59. [PubMed: 15358925]
29. Wilke DJ, Kamata A, Cash SJ. Modeling treatment motivation in substance-abusing women with children. *Child Abuse Negl* 2005;29:1313–23. [PubMed: 16263166]
30. Craw JA, Gardner LI, Marks G, et al. Brief strengths-based case management promotes entry into HIV medical care: results of the antiretroviral treatment access study-II. *J Acquir Immune Defic Syndr* 2008;47:597–606. [PubMed: 18285714]
31. Mellins CA, Kang E, Leu CS, Havens JF, Chesney MA. Longitudinal study of mental health and psychosocial predictors of medical treatment adherence in mothers living with HIV disease. *AIDS Patient Care STDS* 2003;17:407–16. [PubMed: 13678542]
32. Leaver CA, Bargh G, Dunn JR. The effects of housing status on health-related outcomes in people living with HIV: a systematic review of the literature. *AIDS Behav* 2007;11:S85–100.

33. Szapocznik, J.; Kurtines, WM. Breakthroughs in family therapy with drug abusing and problem youth. New York: Springer; 1989.
34. Minuchin, S.; Fishman, HC. Family therapy techniques. Cambridge: Harvard University Press; 1981.
35. Szapocznik, J.; Hervis, O.; Schwartz, S. NIDA therapy manuals for drug addiction, manual 5. Rockville: US Department of Health and Human Services; 2003. Brief strategic family therapy for adolescent drug abuse.
36. Baker SA, Beadnell B, Stoner S, et al. Skills training versus health education to prevent STDs/HIV in heterosexual women: a randomized controlled trial utilizing biological outcomes. *AIDS Educ Prev* 2003;15:1–14. [PubMed: 12627740]
37. Mitrani VB, Prado G, Feaster DJ, Robinson-Batista C, Szapocznik J. Relational factors and family treatment engagement among low-income, HIV+ African American mothers. *Fam Process* 2003;42:31–45. [PubMed: 12698597]
38. Santisteban DA, Szapocznik J, Perez-Vidal A, Kurtines WM, Murray EJ, Laperriere A. Efficacy of intervention for engaging youth and families into treatment and some variables that may contribute to differential effectiveness. *Fam Syst Health* 1996;10:35–44.
39. Coatsworth JD, Santisteban DA, McBride CK, Szapocznik J. Brief strategic family therapy versus community control: engagement, retention and an exploration of the moderating role of adolescent symptom severity. *Fam Process* 2001;40:313–32. [PubMed: 11676271]
40. Mitrani VB, Weiss-Laxer NS, Ow CE, Burns MJ, Ross-Russell S, Feaster DJ. Examining family networks of HIV+ women in drug recovery: challenges and opportunities. *Fam Syst Health* 2009;27:267–83. [PubMed: 19803620]
41. Williams, J. Structured interview guide for the Hamilton depression and anxiety scales (SIGH-AD). New York: New York State Psychiatric Institute; 1988.
42. Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol* 1959;32:50–5. [PubMed: 13638508]
43. Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry* 1960;23:56–62. [PubMed: 14399272]
44. McConaughy EA, Prochaska JO, Velicer WF. Stages of change in psychotherapy: measurement and sample profiles. *Psychother Theory Res Pract* 1983;20:368–75.
45. DeLongis A, Folkman S, Lazarus RS. The impact of daily stress on health and mood: psychosocial and social resources as mediators. *J Pers Soc Psychol* 1988;54:486–95. [PubMed: 3361420]
46. Sarason IG, Sarason BR, Shearin EN, Pierce GR. A brief measure of social support: practical and theoretical implications. *J Soc Pers Relatsh* 1987;4:497–510.
47. Szapocznik J, Rio AT, Hervis OE, Mitrani VB, Kurtines WM, Faraci AM. Assessing change in family functioning as a result of treatment: the structural family systems rating scale (SFSR). *J Marital Fam Ther* 1991;17:295–310.
48. Mitrani VB, Feaster DJ, McCabe BE, Czaja SJ, Szapocznik J. Adapting the structural family systems rating to assess the patterns of interaction in families of dementia caregivers. *Gerontologist* 2005;45:445–55. [PubMed: 16051907]
49. Minuchin, S.; Rosman, BL.; Baker, L. Psychosomatic families: anorexia nervosa in context. Cambridge: Harvard University Press; 1978.
50. Muthén, LK.; Muthén, BO. Mplus user's guide. 5th. Los Angeles: Muthén and Muthén; 2007.
51. Bryan A, Schiege SJ, Broaddus MR. Mediation analysis in HIV/AIDS research: estimating multivariate path analytic models in a structural equation modeling framework. *AIDS Behav* 2007;11:365–83. [PubMed: 16917669]
52. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. *J Mark Res* 1981;18:39–50.
53. Liddle HA, Dakof GA. Efficacy of family therapy for drug abuse: promising but not definitive. *J Marital Fam Ther* 1995;21:511–43.
54. West SG, Duan N, Pequegnat W, et al. Alternatives to the randomized controlled trial. *Am J Public Health* 2008;98:1359–66. [PubMed: 18556609]

55. Center for the Integration of Research & Practice [homepage on the Internet]. New York: National Development and Research Institutes, Inc.; 2004 [Mar 29, 2010]. <http://www.ndri.org/ctrs/cirp.html>
56. Rotheram-Borus MJ, Lester P, Song J, et al. Intergenerational benefits of family-based HIV interventions. *J Consult Clin Psychol* 2006;74:622–7. [PubMed: 16822118]
57. Boyd-Franklin, N. Black families in therapy: a multisystems approach. New York: Guilford Press; 1989.
58. Ledgerwood DM, Alessi SM, Hason T, Godley MD, Petry NM. Contingency management for attendance to group substance abuse treatment administered by clinicians in community clinics. *J Appl Behav Anal* 2008;41:517–26. [PubMed: 19192856]
59. Nock MK, Kazdin AE. Randomized controlled trial of a brief intervention for increasing participation in parent management training. *J Consult Clin Psychol* 2005;73:872–9. [PubMed: 16287387]
60. Swartz HA, Zuckoff A, Grote N, et al. Engaging depressed patients in psychotherapy: integrating techniques from motivational interviewing and ethnographic interviewing to improve treatment participation. *Prof Psychol Res Pract* 2007;38:430–9.
61. Golin CE, Earp J, Tien H, Stewart P, Porter C, Howie L. A 2-arm, randomized, controlled trial of a motivational interviewing-based intervention to improve adherence to antiretroviral therapy (ART) among patients failing or initiating ART. *J Acquir Immune Defic Syndr* 2006;42:42–51. [PubMed: 16763491]
62. Parsons JT, Rosof E, Punzalan JC, DiMaria L. Integration of motivational interviewing and cognitive behavioral therapy to improve HIV medication adherence and reduce substance use among HIV-positive men and women: results of a pilot project. *AIDS Patient Care STDS* 2005;19:31–9. [PubMed: 15665633]

Fig. 1. CONSORT diagram

Fig. 2. SEM of predictors of engagement into treatment

Table 1
Characteristics of sample

Characteristics	Total (<i>N</i> = 126)	SET (<i>n</i> = 59)	Health group (<i>n</i> = 67)
Depression, mean (SD)	4.50 (4.86)	4.05 (4.83)	4.90 (4.89)
Anxiety, mean (SD)	3.92 (4.31)	3.22 (3.62)	4.54 (4.78)
HIV symptoms, mean (SD)	4.65 (4.99)	3.85 (4.46)	5.36 (5.34)
Years with HIV diagnosis, mean (SD)	9.91 (5.68)	9.36 (5.84)	10.38 (5.55)
Age, mean (SD), years	43.07 (7.43)	44.07 (6.92)	42.22 (7.79)
Family stress, mean (SD)	0.95 (1.31)	0.99 (1.46)	0.92 (1.16)
Family support, mean (SD)	5.60 (1.29)	5.54 (1.28)	5.66 (1.30)
Enmeshment, mean (SD)	2.74 (1.12)	2.69 (0.90)	2.79 (1.29)
Conflict resolution, mean (SD)	3.18 (0.62)	3.13 (0.64)	3.22 (0.60)
Positive UDS	37 (29%)	17 (29%)	20 (30%)
Readiness to change, no. (% ^a)			
Action	54 (43%)	27 (46%)	27 (40%)
Contemplation	57 (45%)	27 (46%)	30 (45%)
Precontemplation	15 (12%)	5 (9%)	10 (15%)
Living situation, no. (% ^a)			
In shelter/facility ^b	24 (19%)	15 (26%)	9 (13%)
With only adults	48 (38%)	27 (46%)	21 (31%)
With children	42 (33%)	15 (25%)	27 (40%)

SET structural ecosystems therapy, UDS urine drug screen. No significant differences between treatment conditions at $P < 0.05$

^aBecause of rounding, percentages may not total 100

^bData missing for one woman in the SET condition