

A Randomized Clinical Trial of a Coping Improvement Group Intervention

for HIV-Infected Older Adults

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Abstract

This research tested if a 12-session coping improvement group intervention (n=104) reduced depressive symptoms in HIV-infected older adults compared to an interpersonal support group intervention (n=105) and an individual therapy upon request (ITUR) control condition (n=86). Participants were 295 HIV-infected men and women 50-plus years of age living in New York City, Cincinnati, OH, and Columbus, OH. Using A-CASI assessment methodology, participants provided data on their depressive symptoms using the Geriatric Depression Screening Scale (GDS) at pre-intervention, post-intervention, and 4- and 8-month follow-up. Whether conducted with all participants (N=295) or only a subset of participants diagnosed with mild, moderate, or severe depressive symptoms (N=171), mixed models analyses of repeated measures found that both coping improvement and interpersonal support group intervention participants **reported fewer depressive symptoms than ITUR controls at post-intervention, 4-month follow-up, and 8-month follow-up.** *The effect sizes of the differences between the two active interventions and the control group were greater when outcome analyses were limited to those participants with mild, moderate, or severe depressive symptoms.* **At no assessment period did coping improvement and interpersonal support group intervention participants differ in depressive symptoms.**

Key words: HIV; AIDS; older adults; coping; intervention; RCT

Through December 2007, more than 131,000 persons in the United States were 50 years of age or older when they were diagnosed with AIDS, accounting for 12.5% of the nation's total AIDS diagnoses (Centers for Disease Control and Prevention, 2009). It is predicted; however, that by 2015, 50% of all cases of HIV/AIDS in the United States will be in persons over the age of 50 (WEB MD, 2007). Two factors contribute to the increasing number of HIV/AIDS cases in older adults. First, increasingly efficacious antiretroviral therapies and improved clinical care have extended survival periods in HIV-infected persons (Justice and Weissman, 1998; Kalichman et al., 1999; Paul et al., 2007). Second, the number of new HIV infections in older adults is increasing. Between 2001 and 2005, there were 186,203 new diagnoses of HIV in persons living in one of 33 states with confidential HIV surveillance. In 2001, 13.3% of these newly-diagnosed individuals were 50-plus years of age. In 2005, this percentage had risen to 15.6%, a relative increase of 15% from the 2001 estimate (Centers for Disease Control and Prevention, 2006).

In spite of forecasts that portend greater numbers of HIV-infected older adults, mental health interventions tailored specifically for this group are essentially nonexistent (Levy et al., 2003). This is worrisome because many HIV-infected older adults live with elevated levels of depressive symptoms (Heckman et al., 2002), suicidal ideation (Kalichman et al., 2000), AIDS-related stigma (Emlet, 2007), and comorbid health conditions (e.g., diabetes, osteoarthritis; Goulet et al., 2007; Ourslet et al., 2006). Furthermore, compared to their younger counterparts, HIV-infected older adults are less likely to use psychiatric services (Meadows et al., 1998).

Interventions that focus specifically on coping and that enable HIV-infected persons to express emotions, identify current coping difficulties, implement more adaptive coping strategies, and develop richer social support networks have improved life quality in HIV-infected persons and may be particularly beneficial for HIV-infected older adults. Chesney and colleagues (2003) found that coping effectiveness training produced reductions in stress, burnout, and anxiety in HIV-positive gay men (mean age=39 years) compared to a wait-list control group. Sikkema and colleagues (2006) reported that a coping improvement group intervention reduced grief in highly-distressed, HIV-infected bereaved persons (mean age=40 years) compared to an individual therapy upon request condition. Sikkema and colleagues also found that a coping group intervention that addressed both HIV-related issues and childhood sexual abuse reduced traumatic stress (2007) and sexual HIV transmission risk behavior (2008) in HIV-infected persons compared to an interpersonal support group intervention. Heckman and colleagues (2006) found that HIV-infected persons 50-plus years of age who participated in a telephone-administered, coping improvement group intervention reported fewer psychological symptoms, less life-stressor burden, increased coping self-efficacy, and less frequent use of avoidance coping immediately after the intervention compared to delayed treatment controls.

This study tested if a 12-session, face-to-face, coping improvement group intervention could reduce depressive symptoms in persons 50-plus years of age living with HIV/AIDS. The coping intervention was compared to an individual therapy upon request (ITUR) control group and a 12-session interpersonal support group in which participants viewed videotapes about living with HIV/AIDS, discussed how the videotapes required revision to be relevant for HIV-infected older adults, and provided

and received social support related to living with HIV/AIDS as an older adult. It was hypothesized that coping intervention participants would report greater reductions in depressive symptoms at follow-up than interpersonal support group intervention participants and ITUR controls.

Method

Eligibility Screening Procedures

AIDS service organizations (ASOs) in New York City, Cincinnati, OH, and Columbus, OH recruited participants by distributing recruitment brochures to their HIV-infected clients through regular mail, face-to-face interactions, and by placing brochures in “high-traffic” areas of the facility (e.g., reception areas). Participants were also recruited through community outreach efforts in which a recruitment specialist made presentations describing the study at various gerontological and health-care organizations. Finally, recruitment advertisements were placed in AIDS-related magazines and newsletters distributed in each city. The project’s protocol was approved by each study site’s IRB, written informed consent was obtained from all participants, and no adverse events were reported.

Between November 2004 and February 2007, 405 individuals contacted the study institutions via toll-free telephone numbers to inquire into enrollment. A face-to-face, eligibility screening interview was administered to potential participants at the individual’s ASO or a local community health center. The study’s eligibility interview included two assessments:

The Modified Mini-Mental State Examination (3MS, Teng and Chui, 1987). The 3MS measured abstract reasoning, executive functioning, and cognitive functioning. The 3MS was used because it is more reliable and sensitive to the detection of dementia

than the briefer Mini-Mental State Examination (Folstein et al., 1975). Scores on the 3MS range from 0 to 100, with lower scores suggesting greater cognitive compromise.

Beck Depression Inventory-II (BDI-II, Beck et al., 1996). The 21-item BDI-II measured cognitive, affective, and somatic symptoms of clinical depression. Each item used a 4-point scale (0–3) and total possible scores ranged from 0 to 63 ($\alpha=.88$, current study).

Of the 405 individuals who expressed interest in the study, 295 satisfied eligibility requirements and were randomized to one of three study conditions. Figure 1 displays the participant flow through the study. All participants satisfied the following inclusion criteria: (1) 50 years of age or older; (2) a diagnosis of HIV infection or AIDS; (3) a BDI-II score of 10 or higher; and (4) a score of 75 or greater on the 3MS. A minimum value of 10 on the BDI-II was used to ensure that participants had a minimally elevated number of depressive symptoms that had the potential to be reduced by the interventions. A cutoff score of 75 on the 3MS was used to exclude participants suspected of having severe cognitive compromise and who might have difficulty completing A-CASI assessments and/or participating in intervention activities. The project did *not* exclude individuals with alcohol or substance use disorders, active bipolar disorder, psychotic symptoms, or individuals receiving psychotherapy because it sought to assemble a more diverse and inclusive sample representative of HIV-infected older adults likely to participate in AIDS-mental health interventions offered in community settings.

Intervention Conditions

A priori power analyses, informed by data obtained in previous research with this group (Heckman et al., 2006), indicated that 80 participants per condition were needed

to achieve power of .80 or greater to detect meaningful changes in depressive symptoms in hierarchical linear modeling analyses. In both the Ohio and New York sites, participants were recruited in waves of 30 (e.g., 30 men who had sex with men {MSM}, 30 heterosexual men, and 30 women) and assigned randomly to one of three conditions using a random numbers table. ***The study's project coordinator and biostatistician randomly assigned participants to condition.*** For the study's final two waves recruited in Ohio (i.e., one wave of heterosexual men and one wave of women), only 20 participants per wave were enrolled. These participants were assigned randomly to either the coping improvement or interpersonal support group interventions (resulting in fewer ITUR controls). ***Ten participants within each of these latter waves were randomly assigned to either the coping improvement or interpersonal support group intervention to ensure that each group began the 12-session intervention with a sufficient number of participants and that a meaningful group size could be maintained in the event of participant attrition.***

Individual Therapy upon Request (ITUR) Control Group. ITUR controls (n=86) received no active intervention but had access to standard psychosocial services available in the community (e.g., AIDS-related support groups, 12-step programs, individual therapy) and received three brief telephone contacts during the intervention period to ensure that no clinical concerns had developed. No limitations were imposed on participants' use of community-based services. ITUR controls experiencing acute periods of distress were encouraged to contact the study team to request brief and time-limited individual therapy (not to exceed 12 sessions). Twenty-five ITUR controls (i.e., 29%) requested and received brief individual therapy during the study (average 5.8

sessions, mode=3). ***All ITUR participants who requested individual therapy received therapy.*** ITUR participants who received individual therapy were included in all intervention-outcome analyses.

Coping Improvement Group Intervention. Individuals in this condition (n=104) participated in a 12-session, coping improvement group intervention based on Lazarus and Folkman's Transactional Model of Stress and Coping (Folkman et al., 1991). Separate intervention groups were conducted for MSM, heterosexual men, and women. In our formative research, HIV-infected older adults expressed a reluctance to participate in an AIDS mental health group intervention if groups were heterogeneous in sexual orientation (Heckman et al., 2006). Each 90 minute intervention group consisted of six to eight participants and was co-facilitated by two clinicians. Most intervention facilitators had a Masters degree in Psychology or Social Work and had provided mental health support services to persons living with HIV/AIDS for more than 10 years. The intervention's 12 sessions addressed the following topics: participant-facilitator introductions and participants' sharing of personal histories (Sessions 1 and 2); appraisal and changeability of stressors related to one's HIV infection (e.g., treatment side effects) and stressors related to normal aging (e.g., comorbid health conditions; Sessions 3 and 4); developing and implementing adaptive problem- and emotion-focused coping skills (Sessions 5 through 9); optimizing coping efforts through the use of interpersonal supports (Sessions 10 and 11); and termination issues and the voluntary sharing of personal contact information (e.g., e-mail addresses, telephone numbers; Sessions 12).

Interpersonal Support Group Intervention. Individuals in this condition (n=105) participated in a 12-session, interpersonal support group intervention. Similar

to the coping intervention, each 90 minute group was conducted separately for MSM, heterosexual men, and women and was co-facilitated by two Masters-level clinicians. For each session, the first 45 minutes focused on a topic assigned by the co-facilitators (e.g., HIV-related nutrition, treatment adherence, sexual risk reduction). During this time, participants viewed a brief, commercially-available videotape on the assigned topic and discussed how the videotape required adaptation to be relevant for HIV-infected older adults. For the final 45 minutes, participants discussed how the session's topic pertained to their personal lives. Similar to the coping intervention, all participants were encouraged to share personal contact information at the end of the final session to facilitate communication among participants upon intervention termination.

Participants in both active intervention conditions received a \$5 cash honorarium for each of the twelve intervention session they attended (paid to them at the end of the session). All ITUR control participants received \$20 for each of the three brief telephone contacts in which they participated during the clinical trial (for a total possible amount of \$60). By offering this additional \$60 to ITUR controls, all participants had the opportunity to earn \$60 above-and-beyond the \$150 they could earn for completing all four assessment instruments. This practice also ensured that there was no “Condition x Incentive Payment Amount” confound. For both interventions, facilitators followed detailed manuals to increase fidelity to intervention protocol. Facilitators completed intervention content checklists at the conclusion of each session to encourage a more thorough coverage of all assigned topics.

Assessment Instrument

In a community-based setting (either their ASO or a local community health center), participants completed the study's four assessments (i.e., pre-intervention, post-intervention, and 4- and 8-month follow-up) using audio-computer assisted self interviews (A-CASI). The computer provided a visual display and audio reading of each question and its response options. Participants used audio headsets to minimize interruptions in the environment and circumvent literacy limitations. A-CASI assessment techniques increase participants' understanding of questions, honesty when answering sensitive questions, and the fidelity of skip patterns (Schroder et al., 2003).

Each assessment took approximately 90 minutes to complete. The incentive payment schedule for each assessment was pre-intervention=\$30, post-intervention=\$30, 4-month FU=\$40, and 8-month FU=\$50. Because the primary objective of this RCT was to test if the coping improvement group intervention reduced depressive symptoms in HIV-infected older adults, only measures directly relevant to this intervention-outcome analysis are described.

Geriatric Depression Scale (GDS, Primary Endpoint, Yesavage et al., 1982). The GDS consisted of 30 items, each of which used a "yes/no" response format. Items focused solely on cognitive and behavioral aspects of depression; no somatic items were included, thereby avoiding overlap between somatic symptoms of depression, HIV disease manifestation, and medication side effects. Potential scores ranged from 0 to 30, with higher scores indicating more depressive symptoms. Depressive symptoms served as the study's primary end point because of depression's associations with

fatigue, decreases in CD4 T lymphocytes, increases in viral load, and mortality in HIV-positive persons (Leserman, 2008).

Demographics. Participants provided their age, sex, race, education, income, employment status, and current utilization of HIV medication regimens, pharmacological treatments, and mental health support services (e.g., individual therapy, support groups).

Statistical Methods

Chi-square tests of association and one-way ANOVA identified differences in pre-intervention variables by treatment condition and determined if participation in treatment sessions varied by condition. Regression analyses identified predictors of attrition and number of intervention sessions attended. *Longitudinal* changes in depressive symptoms from pre-intervention through 8-month follow-up were compared across the three conditions using mixed models analysis of repeated-measures data. This statistical technique was used because it considered the effects of context and addressed issues associated with nested and hierarchically structured data (Raudenbush and Bryk, 2002). The mixed model procedure also allowed a flexible approach to modeling the covariance structure and accounting for non-constant variance. A last observation carried forward (LOCF) missing data imputation strategy was also used to ensure that data from all 295 participants were used in intervention-outcome analyses, regardless of the number of intervention sessions or assessments missed. Cohen's *d* assessed the effect size of mean differences between intervention conditions at post-intervention and 4- and 8-month follow-up. PC SAS version 9.1 (SAS Institute, 2002) was used for intervention-outcome analyses. All analyses used two-tailed statistical tests.

Results

Study Cohort

Based on national epidemiologic data (Centers for Disease Control and Prevention, 2006), the study's cohort appeared to be representative of persons 50-plus years of age living with HIV/AIDS in the United States. Most participants were African American (49%), male (67%), and earned less than \$10,000 per year (54%). The average participant was 55.3 years of age (range=50 to 76), had completed 13.0 years of education, and had been living with HIV for 12.5 years. Fifty-one percent of participants self-identified as gay or bisexual. Forty-four percent of participants self-reported taking one or more psychotropic medications at pre-intervention (most commonly antidepressants and anxiolytics).

The mean GDS value at pre-intervention was 12.01 (SD=7.8). Based on GDS cutoffs, 42% of participants had "normal" levels of depressive symptoms at study entry (GDS values 0 - 9), 36% had "mild" depressive symptoms (GDS values 10 - 19), and 22% had "moderate-to-severe" depressive symptoms (GDS values 20 -30). While the three intervention conditions did not differ at pre-intervention on any demographic variable shown in Table 1, slight differences were observed on the GDS at pre-intervention, $F(2,290)=2.5$, $p = .081$. Tukey HSD post-hoc comparisons found that coping intervention participants ($M=13.2$) reported marginally greater GDS values at pre-intervention than ITUR controls ($M=10.8$), $p = .073$.

Intervention Participation and Attrition

The number of intervention sessions that coping ($M=7.4$, $SD = 4.3$) and interpersonal support intervention ($M=7.5$, $SD = 4.3$) participants attended was comparable, $F(1,207)=0.6$, $p = .80$. A categorical breakdown of the number of

intervention sessions attended by coping intervention participants was: 0 sessions (8%); 1–4 sessions (20%); 5–8 sessions (13%); 9–11 sessions (42%); and 12 sessions (17%). Intervention session attendance in interpersonal support intervention participants was: 0 sessions (11%); 1–4 sessions (17%); 5–8 sessions (13%); 9–11 sessions (43%); and 12 sessions (16%). No pre-intervention variable predicted number of intervention sessions attended by participants (i.e., gender, education, years since HIV diagnosis, HIV/AIDS status, ethnicity; all $p_s > .10$).

Figure 1 shows retention rates of the three conditions across the three follow-up periods. Chi-square analyses found that, at all three follow-up periods, attrition was higher in coping and interpersonal support intervention participants than in ITUR controls (all $p_s < .01$). Logistic regression analyses showed that participants who completed more years of education were more likely to remain in the study at 8-month follow-up ($OR=1.3, p < .05$). Attrition was unrelated to age, gender, race, years since HIV diagnosis, receiving a formal diagnosis of AIDS, CD4 count, HIV viral load, currently taking psychotropic medications, or being on HAART (all $p_s > .10$).

Intervention-Related Changes in Depressive Symptoms in All Participants

Intervention-outcome analyses controlled for participant's use of psychotropic medications and GDS values at pre-intervention. Controlling for participants' use of psychotropic medications increased confidence that changes in depressive symptoms were due to intervention condition and not concurrent pharmacotherapy. In the initial intervention-outcome analysis, all participants received a pre-intervention GDS value of 12.01 (the sample's overall GDS mean) to adjust for slight between-group differences at pre-intervention.

Mixed model analyses of repeated measures found a significant main effect for “Psychotropic Medication,” $F(1,243)=5.98$, $p < .05$. Participants on pharmacotherapy reported more depressive symptoms than participants not on pharmacotherapy. The analysis also found a significant main effect for “Intervention Condition,” $F(2, 188)=3.89$, $p < .03$, **indicating that, across the three follow-up assessment periods, the GDS means of the coping and interpersonal support group interventions differed from ITUR controls.** As shown in Table 2a and Table 3, comparisons conducted on adjusted GDS values indicated that coping intervention participants ($M=9.77$) reported significantly lower GDS values than ITUR controls ($M=11.83$) at post-intervention ($p < .01$) while interpersonal support intervention participants ($M=10.34$) reported marginally fewer depressive symptoms than ITUR controls ($M=11.83$) at post-intervention ($p < .07$). Coping and interpersonal support intervention participants did not differ in GDS values at post-intervention ($p = .55$). At 4-month follow-up, coping intervention participants ($M=9.82$) reported marginally lower GDS values than ITUR controls ($M=11.43$; $p < .07$) while interpersonal support intervention participants ($M=9.47$) reported significantly lower GDS values than ITUR controls ($M=11.43$) at post-intervention ($p < .04$). Coping and interpersonal support intervention participants did not differ in GDS values at 4-month follow-up ($p = .71$). At 8-month follow-up, coping intervention participants ($M=9.79$) reported marginally fewer depressive symptoms than ITUR controls ($M=11.27$; $p < .10$) and interpersonal support intervention participants also reported marginally fewer depressive symptoms ($M=9.63$) than ITUR controls ($M=11.27$; $p < 0.10$). Coping and interpersonal support intervention participants did not differ in GDS values at 4-month follow-up ($p > .20$).

Changes in Depressive Symptoms in Participants with Mild to Severe Depressive Symptoms

To address the concern that the intervention-outcome findings described above may have been threatened by a “floor effect” (i.e., participants’ depressive symptoms at pre-intervention were relatively low and had little room to decrease), the intervention-outcome analysis was re-conducted using only those participants ($n=171$) who reported GDS values ≥ 11 at pre-intervention (the GDS value typically used to distinguish depressed from non-depressed individuals; Yesavage et al., 1982).

This intervention outcome approach found no main effect for “Psychotropic Medication,” $F(1,117)=2.50$, $p > .10$ but did find a main effect for “Intervention Condition,” $F(2, 99.5)=4.93$, $p < .01$. As shown in Table 2b and Table 3, post-hoc comparisons conducted on adjusted GDS values indicated that coping intervention participants ($M=12.89$) reported significantly lower GDS values than ITUR controls ($M=17.16$) at post-intervention ($p < .01$) while interpersonal support intervention participants ($M=14.56$) reported marginally fewer depressive symptoms than ITUR controls ($M=17.16$) at post-intervention ($p < .08$). Coping and interpersonal support intervention participants did not differ in GDS values at post-intervention ($p = .18$). At 4-month follow-up, coping intervention participants ($M=13.55$) reported significantly lower GDS values than ITUR controls ($M=16.36$; $p < .05$) and interpersonal support intervention participants ($M=12.85$) also reported significantly lower GDS values than ITUR controls ($M=16.36$; $p < .02$). Coping and interpersonal support intervention participants did not differ in GDS values at 4-month follow-up ($p = .65$). At 8-month follow-up, coping intervention participants ($M=13.48$) reported marginally fewer depressive symptoms than ITUR controls ($M=15.68$; $p = .10$) while interpersonal

support intervention participants ($M=12.60$) reported significantly fewer depressive symptoms than ITUR controls ($M=15.68$; $p < .04$). Coping and interpersonal support intervention participants did not differ in GDS values at 8-month follow-up ($p=.57$).

The effect sizes presented in Table 3 also show that the efficacies of the two active interventions were stronger, compared to the ITUR control condition, when outcome analyses were conducted with participants with mild, moderate, or severe depressive symptoms. For example, the effect size for the comparison between coping intervention and control participants was 0.20 at post-intervention when conducted with all participants but increased to 0.34 when only participants with mild, moderate, or severe depressive symptoms were included in the analysis. Similarly, when compared to ITUR controls at post-intervention, the effect size of the interpersonal support group intervention was 0.14 when conducted with all participants but increased to 0.21 when only participants with mild, moderate, or severe depressive symptoms were included in the analysis. Similar increases in the efficacies of the coping improvement and interpersonal support group interventions were observed at 4- and 8-month follow-up when intervention-outcome analyses were limited to those participants with mild, moderate, or severe depressive symptoms .

Percent of Participants Who Responded Favorably to Interventions

Both intervention outcome approaches demonstrated that coping improvement and interpersonal support group participants reported significantly (or marginally) fewer depressive symptoms compared to

ITUR control participants. To provide an additional evaluation of the interventions' abilities to reduce depressive symptoms in this group, follow-up analyses compared the proportion of participants who reported $\geq 50\%$ reductions in GDS values from pre-intervention through post-intervention (i.e., short-term responders) and from pre-intervention to 8-month follow-up (i.e., longer-term responders). A reduction of 50% or more in depressive symptoms is often used to identify the proportion of participants who responded favorably (i.e., "responders") to psychotherapy (e.g., Ravitz et al., 2008; Ruskin et al., 2004). This analysis used a last-observation-carried-forward approach (LOCF) and included only participants who reported pre-intervention GDS values ≥ 10 .

From pre- to post-intervention, the proportion of participants who reported $\geq 50\%$ reductions in GDS values were: coping intervention (18.6%); interpersonal support intervention (14.5%); and ITUR controls (8.3%). Z-tests comparing two independent proportions showed that the proportion of coping intervention responders (18.6%) did not differ significantly from the proportion of ITUR control responders (8.3%), $z=1.59$, $p > .10$, nor did the proportion of interpersonal support intervention responders (14.5%) differ from ITUR control responders (8.3%), $z=1.1$, $p > .10$. From pre-intervention through 8-month follow-up, the proportion of coping intervention responders (20.3%) did not differ significantly from the proportion of ITUR controls (16.7%), $z=0.50$, $p > .10$ nor did the proportion of interpersonal support intervention responders (27.4%) differ from ITUR control responders (16.7%), $z=1.37$, $p > .10$.

Discussion

This randomized controlled trial found that, whether conducted with all participants or only a subsample of participants with mild, moderate, or severe depressive symptoms, a 12-session coping improvement group intervention and a 12-session interpersonal support group intervention produced greater reductions in depressive symptoms in HIV-infected older adults compared to an individual therapy upon request condition (a group in which 29% of participants received an average of five sessions of individual therapy). At 4- and 8-month follow-up, coping and interpersonal support group intervention participants reported comparable levels of depressive symptoms that were lower than those reported by individual therapy upon request control participants.

As hypothesized, the coping improvement group intervention produced greater reductions in depressive symptoms in HIV-infected older adults compared to a treatment as usual control condition. The coping improvement group intervention was particularly efficacious when intervention-outcome analyses were conducted only with those participants who reported mild, moderate, or severe depressive symptoms. Moreover, while not statistically significant, more than twice as many coping intervention participants (19%) reported reductions in depressive symptoms of 50% or more from pre-intervention through post-intervention compared to only 8% of control participants. These findings are consistent with past research showing that coping improvement group interventions can facilitate the adjustment efforts of HIV-infected gay men, recently bereaved HIV-infected persons, and HIV-infected

individuals with histories of childhood sexual abuse (Chesney et al., 2003; Sikkema et al., 2006; 2007; 2008).

Contrary to the investigation's hypothesis, the study's interpersonal support group intervention also produced reductions in depressive symptoms that were comparable to those produced by the coping improvement group intervention. This finding is not without precedent; however, given results from past AIDS mental health intervention research which showed that interpersonal support groups reduced psychiatric distress and sexual-risk behaviors in depressed persons living with HIV/AIDS (Hedge and Glover, 1990; Kelly et al., 1993). The study's interpersonal support group intervention employed several elements (i.e., "common factors") present in many efficacious psychosocial treatments that likely produced decreases in depressive symptoms in participants in this condition. These common factors included (i) having participants form therapeutic alliances with group facilitators and other group members that provided empathy and support, (ii) identifying personal strengths, (iii) achieving success experiences, (iv) releasing long unexpressed feelings participants may have been reluctant to express; and (v) providing and receiving hope for the future (Frank, 1971; Stangier et al., 2009). Participants in both active interventions also exchanged personal contact information at the completion of the intervention (e.g., telephone numbers, e-mail addresses, etc.). Based on conversations among research staff and study participants, many participants did maintain regular contact with other group members after their final intervention session. Perhaps these sustained post-intervention relationships explain, in part, reductions in depressive symptoms reported by many intervention participants.

This study had several limitations. All participants were recruited from three large cities, limiting the generalizability of study findings. Many participants were recruited through ASOs and had access to at least some HIV-related services. Future research should include larger numbers of HIV-infected older adults who are less well connected with social service organizations and who are likely to have serious mental health needs. Most participants (97%) were receiving concurrent mental health treatments outside of the study, such as pharmacotherapy; using complementary treatments, medications, or supplements; and seeing one or more mental health professionals, ***making this RCT an investigation of ancillary group therapy for HIV-infected older adults.*** While no significant group differences in the use of mental health support services were found at pre-intervention, some gains reported by participants may be attributable to these outside services and not the study's interventions.

Attendance at intervention sessions was infrequent in many participants; 41% of coping intervention participants attended 8 or fewer of the 12 sessions. It is also noteworthy that ITUR controls evinced an 8-month retention rate that was noticeably higher than those observed in the two active interventions. It may have been difficult for some HIV-infected older adults to participate in a multi-session, face-to-face, intervention program. Conversely, ITUR participants were asked only to complete surveys. The reduced demands imposed on ITUR controls may have resulted in greater retention in this group. Research is needed that can determine how HIV-infected older adults can more regularly attend face-to-face interventions. ***It is noteworthy that participants' use of psychotropic medications was related to changes in depressive symptoms in the intervention-outcome analysis that involved***

all participants but unrelated to reductions in depressive symptoms in the outcome analysis that included only participants with mild, moderate, or severe levels of depressive symptoms. Future research should assess carefully the relationship between psychotropic medication use and response to AIDS mental health interventions in older adults living with HIV/AIDS. An additional limitation is that, for the last two waves of participants enrolled into the study (n=40), participants were randomly assigned to only one of the two active intervention conditions. Study results may have differed if participants in the final two waves were assigned randomly to one of the study's three conditions. Finally, the study relied exclusively on self-report psychosocial data; no physiologic data (e.g., CD4 cell counts, HIV viral loads, or cortisol levels) were collected.

In summary, this was the first controlled trial to test if an age-appropriate, coping improvement group intervention could reduce depressive symptoms in HIV-infected older adults. The coping intervention was superior to an individual therapy upon request condition (a condition in which almost one-third of participants received roughly five sessions of individual therapy) and comparable to a 12-session interpersonal support group intervention. AIDS service and gerontological organizations may consider offering either intervention to their older clients living with HIV/AIDS, knowing that both intervention approaches have now been shown to reduce depressive symptoms in this age group (particularly those with elevated levels of depressive symptoms). *To reduce the resource intensity of each intervention, AIDS service organizations and other agencies that serve HIV-infected older adults might consider offering either group intervention using only*

one group facilitator; there is no evidence that two facilitators are necessary for either group intervention, although this is common practice in most AIDS service organizations. As the number of new HIV infections and AIDS cases in older adults continues to increase, future research should continue to identify efficacious and age-appropriate interventions for HIV-infected older adults and disseminate these interventions to community-based organizations that can offer them to their older clients living with HIV/AIDS.

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Table 1:

Demographic Characteristics at Pre-Intervention by Treatment Condition (Mean \pm SD)

Variable	Overall (N=295)	Coping Intervention (n=104)	Interpersonal Support Intervention (n=105)	ITUR Control Group (n=86)
Age	55.3 \pm 4.8	55.3 \pm 4.5	55.3 \pm 4.9	55.3 \pm 5.2
Years of Education	13.0 \pm 2.4	13.1 \pm 2.4	12.7 \pm 2.7	13.3 \pm 2.4
Years Since HIV Diagnosis	12.5 \pm 5.4	12.9 \pm 5.3	12.2 \pm 5.3	12.4 \pm 5.4
Most Recent CD4 Cell Count	501.2 \pm 282.9	477.4 \pm 308.8	515.6 \pm 280.9	515.2 \pm 252.4
Ethnicity (African American)	48% (142/293)	50% (52/104)	46% (48/105)	50% (42/84)
Gender (Being Male)	67% (197/293)	67% (70/104)	67% (70/105)	68% (57/84)
Employed Part-Time	73%, 213/293	71% (74/104)	71% (75/105)	76% (64/84)
Progressed to AIDS	39% (115/293)	65% (68/104)	58% (61/105)	58% (49/84)
Taking Any Psychotropic Medications (e.g., anxiolytics)	44% (127/287)	48% (49/103)	45% (46/102)	39% (32/82)
Taking SSRIs for Depression	25% (73/291)	27% (28/104)	25% (26/103)	23% (19/84)
# Appointments Attended with Mental Health Professionals (Past 4 Mos)	5.63	4.98	6.00	6.10
Using Complementary or Alternative Treatments	51% (148/291)	48% (50/104)	48% (49/103)	52% (44/84)
Taking HAART	81% (228/280)	85% (83/98)	79% (80/101)	80% (65/81)
GDS Score at Pre-Intervention ^s	12.0 \pm 7.8	13.2 \pm 8.5	11.7 \pm 7.2	10.8 \pm 7.4

ns vary due to missing data; ^s .05 < p < .10

Table 2a: Geriatric Depression Scale Scores by Assessment Period and Condition; All Participants; Mean (SE)				
	Pre- Intervention	Post- Intervention	4-Month Follow-Up	8-Month Follow-Up
Coping Intervention	12.01 (0.26)	9.77 (0.62)	9.82 (0.63)	9.79 (0.60)
Interpersonal Support Intervention	12.01 (0.26)	10.34 (0.70)	9.47 (0.70)	9.63 (0.75)
ITUR Control Group	12.01 (0.26)	11.83 (0.44)	11.43 (0.58)	11.27 (0.60)
Table 2b: Geriatric Depression Scale Scores by Assessment Period and Condition; Participants with Pre-Intervention GDS \geq 11; Mean (SE)				
Coping Intervention	18.25 (0.23)	12.89 (1.01)	13.55 (1.05)	13.48 (0.95)
Interpersonal Support Intervention	18.25 (0.23)	14.56 (1.18)	12.85 (1.13)	12.60 (1.17)
ITUR Control Group	18.25 (0.23)	17.16 (0.74)	16.36 (0.86)	15.68 (0.92)

Table 3:

Post-Hoc Comparisons Between Treatment Conditions Across Assessment Periods

	Post-intervention			4-Month Follow-up			8-Month Follow-up		
	t	p <	d	t	p <	d	t	p <	d
All Participants									
Coping vs. ITUR	2.71	0.01	0.20	1.88	0.07	0.14	1.72	0.10	0.13
Support vs. ITUR	1.82	0.07	0.14	2.15	0.04	0.16	1.70	0.10	0.13
Coping vs. Support		0.55			0.71			0.20	
Participants with Mild to Severe Depressive Symptoms									
Coping vs. ITUR	3.30	0.01	0.34	2.03	0.05	0.20	1.63	0.10	0.16
Support vs. ITUR	1.90	0.08	0.21	2.51	0.02	0.26	2.10	0.04	0.22
Coping vs. Support		0.18			0.65			0.57	

Figure Caption

Figure 1. Flowchart of participants in the randomized clinical trial.

