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Helping People with HIV/AIDS Return to Work: A Randomized Clinical Trial

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Abstract

Objective—New treatments introduced in the mid 1990s led many people with HIV/AIDS who previously had been disabled by their disease to contemplate workforce reentry; many remain unemployed, and little is known concerning interventions that might help them return to work. We report the results of a randomized clinical trial (RCT) of an intervention designed to help people with HIV/AIDS reenter the workforce.

Design—We tested a mixed (group – individual) modality intervention that incorporated elements of Motivational Interviewing (Miller & Rollnick, 2002), skills building from Dialectical Behavior Therapy (Linehan, 1993), and job-related skills (Price & Vinokur, 1995). A total of 174 individuals participated in either the intervention or in standard of care and were followed for 24 months.

Results—Compared to individuals referred for standard of care, participants in the intervention engaged in more workforce-reentry activities over time and, once employed, were more likely to remain employed. Dose-response analyses revealed that among intervention participants, participants who attended more than one individual session engaged in more workforce-reentry activities than did individual who attended one or fewer individual sessions, whereas frequency of group session participation did not effect a difference between participants who attended more than six group sessions and participants who attended six or fewer group sessions.

Conclusion—Theoretically-based workforce-reentry assistance programs can assist disabled people with HIV/AIDS in their return-to-work efforts.

Keywords

Human Immunodeficiency Virus; Habilitation; Controlled Clinical Trials; Randomized

Author Note: Copies of the Manual used in the intervention may be obtained through contacting the first author.

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Introduction

New treatments for HIV/AIDS have reduced viral burden, improved immune function, reduced opportunistic infections, and improved quality of life for many people with HIV disease (Mezzaroma et al, 1999; 2000; Plana et al, 2002; Revicki, Moyle, Stelbrink, & Barker, 1999). In turn, many people with HIV disease disabled by their disease have considered returning to work (see, e.g., Brooks, Ortiz, Veniegas, and Martin, 1999; Dray-Spira, Lert, and the VESPA Study Group, 2007). Little research concerning interventions to help unemployed disabled people with HIV/AIDS return to work exists; in this paper we sought to evaluate such an intervention.

Studies of HIV/AIDS and employment have focused on factors that facilitate or hinder efforts to return to work such as need for assistance with finances, money management, housing access, healthcare access, drug and alcohol treatment, legal problems, and social relationships (Arns, Martin, & Chernoff, 2004); on concerns about benefits loss, work-related health, job skills, discrimination, personal healthcare, and workforce accommodation (Martin, Brooks, Ortiz & Veniegas, 2003; see also Ferrier & Lavis, 2003; Hergenrather, Rhodes, & Clark, 2006); or on advantages of returning to work cited by people with HIV/AIDS such as increased financial stability and social skills (Hergenrather et al., 2006; see also Brooks et al., 1999; Conyers, 2004).

Two studies (Kielhofner et al., 2004; Martin, Arns, Batterham, Afifi, & Steckart, 2006) suggested an intervention effect, but neither is a controlled study. Kielhofner, Braveman, Fogg, & Levin (2008) also demonstrated an intervention effect, with intervention participants more engaged in employment-related activity than participants in standard of care using a quasi-experimental design (all participants were board and care residents with similar demographic backgrounds; two facilities were assigned to the intervention, two facilities to standard of care).

Information concerning workforce-reentry interventions among people with other illness-related disabilities is also lacking; this research has focused on predictive factors such as *age* (Anderson, Barboriak, Hoffman, & Muller, 1980; La Rocca, Kalb, Scheinberg, & Kendall, 1985; Meister, McAleer, Meister, Riley, & Copeland, 1986; Straaten, Harvey, & Maislak, 1992), *gender* (La Rocca et al, 1985), *education* (Holley & Nespor, 1994; La Rocca et al., 1985; Paris et al., 1993); objective indices of health such as *rated clinical severity* (Anderson et al., 1980; La Rocca et al., 1985; al, Straaton et al., 1996) and *length of medical disability* (Holly & Nespor, 1994; La Rocca et al., 1985; Meister et al., 1986; Paris et al., 1993); and *current substance abuse* (Becker et al., 1998; Bray, Zarkin, Dennis, & French, 2000; Burton, Polatin, & Gatchel, 1997). Review of the literatures on disability and workforce reentry revealed *no* controlled study of programs designed to assist medically disabled people in their workforce-reentry efforts. Moreover, it is estimated that fewer than three percent of all Social Security disability beneficiaries return to work following establishment of benefits, highlighting the importance of the study of interventions to assist disabled individuals return to work (Muller, 1992).

In the current study, we set out to design and test an intervention to assist people with HIV/AIDS in their efforts to reenter the workforce. We based our intervention on observations from previous work on assisting people with HIV/AIDS in their workforce-reentry efforts (cf. Martin, Chernoff, & Buitron, 2005) and on review of clinical and theoretical literature. Martin et al. (2005) noted that, despite professed desire to return to work, many of their participants were ambivalent about workforce reentry. Perceived disadvantages of returning to work including benefits loss, workplace discrimination, lack of career direction, outdated job skills, uncertainty about explaining work history gaps, balancing workplace obligations

with healthcare management, and fear of workplace stress effects on health frequently outweighed perceived advantages. Over half their participants had traits associated with personality disorders and deficits in basic emotion management and interpersonal skills. Some reported histories of difficulty getting along with supervisors and co-workers and/or getting fired or quitting impulsively. Finally, they observed a lack of basic job search skills among their participants.

We looked to three theoretical models to guide our intervention to address these areas of concern. The Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1982) posits four stages of behavioral change (precontemplation, contemplation, action, and maintenance); it was our overarching theoretical approach in designing the intervention. We used Motivational Interviewing (Miller & Rollnick, 2002) techniques at the outset of the intervention to address ambivalence about returning to work in the precontemplation and contemplation stages. We then used two Dialectical Behavior Therapy (DBT) skills-training modules (Linehan, 1993) to address deficits in emotion management and interpersonal functioning, and the JOBS Model (Caplan, Vinokur, Price, & van Ryn, 1989; Price & Vinokur, 1995; Vinokur, Van Ryn, Gramlich, & Price, 1991) to teach job-search skills under the assumption that after several sessions addressing precontemplation and contemplation, skills acquisition would be a target for the action stage (cf. Prochaska & DiClemente, 1982). The JOBS Model also emphasizes group process and modeling (through use of a peer leader) as a change agent in the workforce reentry process.

The purpose of this study was to evaluate the efficacy of the intervention by *comparing intervention and comparison group participants' work-related activities* over the course of the study. In addition, we sought to undertake a *dose-response analysis on intervention participant work-related activities* to determine whether exposure to increasing amounts of the intervention resulted in greater workforce-reentry activities. Finally, we undertook an analysis to *determine whether the intervention assisted participants in their efforts to sustain employment* over the course of the study.

Selection of outcome measures was challenging. Traditional distinctions between being employed and unemployed, or even distinctions among being unemployed, employed part time and employed full time fail to capture the process or fail to measure progress toward workforce reentry that falls short of fully compensated employment. We therefore conceptualized progress toward employment as a sequence of steps that included job training, volunteering (volunteering is frequently cited as a precursor to paid employment, cf. Twamley et al., 2005), looking for a job, and engaging in paid employment, and analyzed these data as outcome measures individually and in aggregate to investigate between-group differences.

Method

Design

Participants were randomly assigned to an intervention group or to a control group that received standard care (referral to Department of Rehabilitation). Follow-up was conducted over two years, with outcome data collected at baseline, and at 6-, 12-, 18, and 24-month intervals.

Participants

Participants were HIV-positive men and women between the ages of 18 and 65 who had stopped working due to disability, were receiving disability payments, and were considering workforce reentry. We recruited through presentations at AIDS-service organizations, community mental health centers, HIV medical providers, gay and lesbian centers,

community forums and programs for HIV-positive adults, and through advertisements in publications targeted at people with HIV/AIDS.

We screened individuals responding by telephone to determine if they were HIV positive, followed medically for HIV, and receiving State Disability Insurance, Supplemental Security Income, Social Security Disability Insurance, or Veterans Administration disability payments. Those receiving private disability benefits were eligible only if their income was less than \$24,000/year based on our prior experience that even brief periods of employment could result in permanent loss of private disability payments—we judged risk of harm related to participation for higher-income individuals to be unacceptably high. Research assistants who received at least one hour of training followed a written script to conduct the screening.

We invited participants meeting inclusion criteria for additional in-person screening for current untreated mental health or substance use problems, and significant cognitive impairment and obtained informed consent from those who presented for in-person screening prior to initiating any screening. We used structured interview questions from modules from the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I: Spitzer, Williams, Gibbon, & First, 1992) to screen for major depressive disorder, bipolar disorder, panic disorder, generalized anxiety disorder, schizophrenia, alcohol abuse and dependence, and substance abuse and dependence, excluding individuals who met criteria for one or more disorders during the past 30 days and not receiving any form of treatment (e.g., psychotropic medications, psychotherapy, substance-abuse treatment). We assessed cognitive functioning using a neuropsychological screening battery designed to assess the domains of attention/concentration, language, motor functioning, verbal memory, executive functioning, visual-spatial functioning, nonverbal memory, and mental processing speed, achievement and IQ (cf. Chernoff, Martin, Schrock, & Huy, 2010), excluding participants scoring in the impaired range (i.e., at or below first percentile) on memory or executive function tests or if their full scale IQ score on the Wechsler Adult Intelligence Test-III was in the mental retardation range (i.e., < 70) and they reported no history of past employment.

Figure 1 depicts participant enrollment and follow-up in the study and our adherence to the CONSORT 2010 (Schulz, Altman, Moher et al., 2010; see also American Psychological Association, 2009) guidelines for reporting randomized clinical trial results. Three hundred sixty participants met telephone-screening inclusion criteria and were invited for in-person screening; 238 completed the in-person screening; of these, 39 (16.4%) were excluded from the study based on one or more exclusion criteria: Ten reported current untreated substance use, nine reported a current untreated mental health problem, and eight exhibited severe cognitive impairments in memory and/or executive function (no one was excluded on the basis of IQ score). Nine were ineligible due to a combination of exclusion criteria. Three were ineligible for the study because of mental health or substance use problems exhibited during screening; 25 participants (10.5%) were eligible for the study but declined any further participation, leaving 174 study participants. We gave all ineligible participants community referrals for appropriate assistance.

All participants underwent a baseline interview to collect outcome measures prior to randomization. Prior to the baseline interview, participants were required to furnish written substantiation of their HIV diagnosis, disability award, and current residence. Participants received \$25.00 for completing the baseline interview and for each of the four follow-up interviews administered at 6, 12, 18 and 24.

Randomization Procedure

We used a stratified randomization procedure to assign equal numbers of participants to intervention and control conditions within each stratum, stratifying on education (education < high school or education = high school), CD4 count (< 200/ml or ≥ 200/ml), and ethnic minority status (minority or non-minority). Subjects assigned to the comparison condition were offered the intervention following completion of their participation in the study.

Measures

We administered structured interviews using laptop computers and the Questionnaire Development System (QDS: NOVA Research Company, 2003) software. Trained research assistants entered participant responses directly using the Computer-Assisted Personal Interview (CAPI) module at baseline and at each of the four follow-up interviews.

Demographic information—Participants provided information on gender, sexual orientation, race/ethnicity, education, and residence (own home, friend's home, residential facility, currently homeless, ever homeless).

Current health information—We asked participants to provide their most recent CD4 counts, current viral loads, and total number of HIV-related illnesses experienced over the course of their infection. We also administered the SF-36 (Ware, Snow, Kosinski, & Gandek, 1993), a widely used 36-item scale measuring eight health domains (physical functioning, social functioning, mental health, role limitations due to physical problems, role limitations due to emotional problems, vitality, bodily pain, and general health). Two summary measures, the Physical Component Scale (PCS)—to measure self-reported physical health—and the Mental Component Scale (MCS)—to measure self-reported mental health—were derived from these eight domain scores to assess the degree to which readiness to work is related to mental and physical health. Estimates of internal consistency for the eight SF-36 scales have been reported (Ware et al., 1993), ranging from .73 to .96, with a median of .95. Test-retest coefficients have also been reported ranging from .60 to .81, with a median of .76. Both content-based and criterion-based approaches have been used to validate and interpret the SF-36. The SF-36 has been used extensively in HIV populations (see, e.g., Bing et al., 2000; Hays et al., 2000).

Employment activities—We asked participants if they had any type of paid job in the last six months, including part-time, temporary, or “under the table” employment, and the average typical number of hours per week they had worked over the past six months. Because volunteerism is frequently regarded as a stepping stone to employment, we asked participants whether they did any unpaid volunteer work and how many hours per week they volunteered in the past six months. We also asked participants whether they attended any job training classes and the average number of hours per week they attended in the past six months. Finally, we asked participants if they had actively looked for a job in the past six months for a period of 30 days or longer, defining “actively looking for a job” as engaging in three or more specific job-seeking activities each week in the job search period.

Intervention

The intervention included both group and individual formats and was delivered from a manual developed for the project to ensure fidelity. We believed a group approach would best address barriers to workforce reentry shared by nearly all participants and wanted participants to provide and receive social support in their job search efforts, consistent with the approach taken in the JOBS intervention (cf. Price & Vinokur, 1995; Vinokur et al., 1991). Individual sessions addressed participants' unique interests, talents, and employment

goals. Throughout the group and individual sessions, the psychologist (RAC), vocational counselor (MB) and peer leader used Motivational Interviewing principles (Miller & Rollnick, 2002), particularly expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance, and supporting self-efficacy. The psychologist and vocational counselor were central in planning and drafting the intervention manual and therefore familiar with all group and individual session content and routines.

Group Sessions—Thirteen sessions were conducted over seven weeks, keeping group size small (ranging from 3 to 10 participants, averaging 5). We conducted 13 series of groups over two years; each session lasted two hours and followed a scripted, structured format. Sessions included brief didactic presentations, brainstorming exercises, structured discussions, role plays, and homework assignments. The psychologist, vocational counselor, and HIV positive peer led the groups (cf. Price & Vinokur, 1995); all group and individual sessions were recorded and monitored for fidelity.

Sessions 1 through 6 centered on readiness and motivation to return to work, identifying and overcoming barriers to workforce reentry, concerns over being a person with HIV/AIDS in the workforce (discrimination, health problems, work history gaps, requesting accommodation), loss of freedom/independence associated with employment, and the importance of social support in workforce reentry efforts. They were grounded in the Transtheoretical Model and used techniques from Motivational Interviewing (e.g., decisional balance), identifying and overcoming obstacles to workforce reentry (e.g., health concerns, work history gaps, need for reasonable accommodation), and role plays to prepare for interviews in which these issues might arise.

During Sessions 7 through 13, participants shared their progress toward employment, discussing job options they were considering, specific steps they were taking toward their goals, and obstacles they encountered. Continuing with Motivational Interviewing techniques, ambivalent or unmotivated participants discussed their fears and concerns with the group; group leaders used motivational interviewing principles in these discussions, especially empathy and avoidance of confrontation. Participants also learned and practiced skills for finding and keeping a job including mindfulness, interpersonal effectiveness (i.e., balancing “objectives effectiveness” and “relationship effectiveness,” Linehan, 1993). Sessions 10 through 13 also focused on specific job search skills, adapted from Price and Vinokur (1995) including “thinking like an employer,” anticipating awkward questions and defusing employer fears about hiring someone who has been out of the workplace, finding job leads through social networking and informational interviewing, writing effective résumés, making initial contacts with prospective employers, answering open-ended questions effectively in interviews, and effectively closing an interview.

Individual Sessions—Individual sessions were designed to facilitate development and implementation of a job search plan and were conducted by the vocational counselor at the beginning, in the middle, and at the end of the group sequence. Each was semi-structured and lasted approximately an hour. In the initial session, the vocational counselor reviewed the participant's stated reasons for and against returning to work, assessing readiness and motivation to return to work, asking ambivalent participants what conditions might make returning to work seem more appealing and exploring other steps toward employment and collaborating with motivated participants on plans for returning to work, developing interim and end goals and tasks for achieving them. In the following two individual sessions the agenda depended on participant readiness to return to work: Ambivalent participants discussed how they might overcome uncertainties about employment; motivated participants discussed on identifying and achieving the next goal. The vocational counselor also used a career-interests exercise based on Holland's six vocational personality types (Holland, 1996)

to help participants identify career directions using the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996) and, when appropriate referred participants to community resources such as job training programs or the Department of Rehabilitation.

Additional Intervention Components—At the conclusion of the group and individual sessions, the vocational counselor remained in contact with the participants over the study's two-year follow-up period to provide additional, optional individual sessions in person or by phone to assist in setting goals, overcoming additional barriers, and/or working through motivational problems. On average, he contacted participants every 30 to 60 days during the follow-up. Project staff prepared and disseminated a quarterly newsletter containing brief articles relevant to employment to stay in contact and keep participants focused on employment.

Control Condition

The control condition was a single session delivered at the conclusion of randomization. Participants were given community referrals to assist them in returning to work, pursuing volunteer opportunities, or obtaining job training. Referrals included career centers, the Department of Rehabilitation, benefits counselors, and employment-related websites. This condition represented community standard of care provided by vocational counselors and case managers for persons with HIV/AIDS on disability and contemplating workforce reentry.

Data Analysis

Comparison of Intervention Group to Comparison Group—We began by comparing work-related outcomes across intervention conditions at each time point. Chi-square tests were applied to four binary measures (yes/no) for paid employment, volunteer work, job training, and participation in job search activities. T-tests were applied to a summary measure of the four binary work-related outcomes (i.e., summed score; range = 0 to 4). We used the sum of the four binary variables after determining that they were statistically unrelated to each other (e.g., job search activities were unrelated to having a job) because this measure appeared to be the best reflection of collective workforce-reentry efforts on the part of the participants.

Mixed-effect regression models (Singer & Willett, 2003; Weiss 2005) similar to those used by Porter, Gill, Carson, Anthony, and Ready (2000) were used to evaluate the intervention's effect on the work-related outcomes over the two-year assessment period to allow modeling of the overall outcome trajectory for individuals for whom data are missing at some time points. Logistic regressions were applied to each of the four binary work-related outcomes and linear regression was applied to the summed score.

Visual inspection of plotted mean summed scores over time indicated that a model assuming a linear or curvilinear trajectory for the outcomes would not be appropriate, so we fit a model to estimate separate mean responses within each group at each time point. For example, the equation to model summed score Y_{ij} , for person i , at time point $j = 0, 1, 2, 3, 4$, corresponding to the baseline and four follow-up measures is

$$Y_{ij} = \sum \alpha_j \text{TIME}_{ij} + \sum \beta_j \text{TIME}_{ij} \text{INTV}_i + \lambda_i + \varepsilon_{ij}$$

where \sum is a summation from $j = 0$ to $j = 4$, the α_j and β_j are fixed effects for the time indicators (TIME_{ij} ; 1 = measurement at time j , 0 = otherwise) and time indicator by

intervention (INTV_i; 1 = intervention group, 0 = standard group) covariates, γ_i is a person random effect to account for variability across individuals, and ϵ_{ij} is the residual error term to account for variability across repeated observations within individuals. The γ_i and ϵ_{ij} are assumed to be independent and normally distributed. We exclude adjustment covariates from the equation for brevity's sake.

Dose-response analysis—We also examined the dose response for whether participants attended more than the median number of group (GRP_i) and individual (IND_i) sessions attended. Equation 1 is modified for the dose-response analyses by the addition of $\beta_j \text{TIME}_{ij} \text{GRP}_i$ and $\beta_j \text{TIME}_{ij} \text{IND}_i$ where β_j and β_j are fixed effects. We assumed separate means at each time point for the standard group, intervention-group participants who attended fewer than the median number of sessions, and intervention-group participants who attended at least the median number of sessions. Chi-square statistics (χ^2) are presented along with degrees of freedom (df) and sample sizes (N) for tests of the overall intervention effect across the four follow-up time periods at 6, 12, 18, and 24 months. We also present odds ratios (OR) as exponentiations of overall intervention effects for significant logistic regression results. We used the PROC GLIMMIX procedure in SAS 9.1 (SAS Publishing, 2004) for logistic regressions and the PROC MIXED procedure for linear regressions.

Evaluation of workforce-reentry stability—We expected participants to transition in and out of positive job-related behaviors so we also fit a two-state (having a paid job – not having a paid job) Markov-model in R 2.4.1 (R Development Core Team, 2006) using the *msm* package (Jackson, Sharples, Thompson, Duffy & Couto, 2003) to examine fluctuation between adjacent time points over the two years. Markov models are often used to describe economic trends characterized by frequent fluctuations (Adam 1996; Albert and Chib 1993; Haider & Klerman, 2005). We also estimated the transition rates of the volunteering, attending job training, and looking for a job in the past six months.

Results

Sample Characteristics

Table 1 depicts participant demographic characteristics; Intervention participants reported living in their own homes more than did participants in the comparison condition; no other differences emerged. Table 2 depicts participant work history. Intervention participants were more likely to report paid employment in the six months prior to diagnosis than comparison subjects, no other differences between the groups emerged on these measures. Table 3 depicts participant health indices measured for this study; no differences were observed between the two groups on any of the health measures. Comparison of demographic and health characteristics of those lost to follow up to those remaining the study revealed no differences between those who remained in the study and those who were lost to follow up on any measure.

Efficacy Comparisons

Cross-sectional analyses, comparing work-related outcomes across intervention conditions, were significant for the summed score at 18 months and whether or not participants engaged in job training at 6 months.

The mean trajectories of the observed summed scores are shown in Figure 2. The mean summed scores of the intervention group were higher over the follow-up periods compared to the standard intervention group ($\chi^2(df = 4, N = 645) = 10.45, p = .03$). After including baseline measures of residence status history, having a paid job during the past 6 months, and number of hours worked in the model, the difference in outcome remained, $\chi^2(df = 4, N$

= 621) = 11.30, $p = .02$. Intervention group participants were also more likely to engage in job training over time than comparison participants, unadjusted OR = 1.48, $\chi^2(df = 4, N = 645) = 13.38, p = .01$, and adjusted OR = 1.45 for the three baseline covariates found to be different across two groups, $\chi^2(df = 4, N = 621) = 12.55, p = .01$. We did not find differences in volunteering and looking for a job over time between the two groups.

Dose-Response Analysis

In the intervention condition, individual session attendance ranged from 0 to 4 sessions (median = 1) and group session attendance ranged from 0 to 13 sessions (median = 7); 70% ($n = 58/83$) and 83% ($n = 69/83$) of the participants attended at least one individual and group session respectively. Dose response analyses, both unadjusted and adjusted for baseline covariates, showed mean summed scores of participants who attended more than one individual session had higher mean summed scores than participants who attended one or fewer individual sessions and than participants who attended six or fewer group sessions, $\chi^2(4, N = 645) = 10.10, p = .04$ and $\chi^2(4, N = 621) = 13.17, p = .01$ respectively, and than participants in the standard intervention group $\chi^2(8, N = 645) = 21.93, p < .01$ and $\chi^2(8, N = 621) = 25.75, p < .01$ respectively; we did not find significant differences for group session attendance.

Sustained Employment Efforts

Table 4 presents the transition rates from a two-state Markov model with an intervention group covariate. The patterns of switching between having and not having a paid job between the two intervention groups are different, with the estimated transition rate from having a paid job (State=Yes) to not having a paid job (State=No) for the intervention group almost 0.5 times lower than that for the control group (0.46, 95% CI: (0.25, 0.82); $p < 0.05$). The estimated probabilities of switching from not having a paid job to having a paid job are 0.36 and 0.46 at 2 years for the control and intervention groups respectively (*ns*).

Discussion

Participants enrolled in the intervention engaged in more job-training activities than participants in the comparison group; participants who attended more than one individual session engaged in more workforce-reentry activities than participants who attended one or fewer individual sessions, whereas frequency of group session participation did not effect a difference in total workforce-reentry activities between participants who attended more than six group sessions and those who attended fewer than six group sessions. Finally, the intervention appears to have helped participants remain employed compared to comparison participants.

To the extent that job training is regarded as preparatory for workforce reentry, the intervention helped assist people with HIV/AIDS in their return-to-work efforts in the time period studied. Although Price and his colleagues (cf. Caplan et al, 1989; Vinokur et al, 1991) reported that JOBS participants were more likely to reenter the workforce than nonparticipants, this was not the case among our participants. Several factors may account for this difference in findings. In contrast to the presumably healthy and able-bodied individuals enrolled in the JOBS intervention, our participants had extensive disability histories, averaging almost three opportunistic infections during their illnesses, SF-36 PCS scores considerably lower than the national average (despite medical intervention), a duration of known HIV disease of nine years, and reported disability duration of over four years; two thirds had not worked even casually (sporadically) in the six months prior to enrollment. Both poorer health (Anderson et al., 1980; La Rocca et al., 1985) and duration of disability (Holley & Nesper, 1994; Meister et al., 1986) have been implicated in failure to

return to work following disability. With specific regard to HIV/AIDS, Jung, Schaller and Bellini (2010) reported that time in rehabilitation negatively predicted employment at case closure among vocational rehabilitation consumers with HIV/AIDS.

Unemployment compensation following job displacement is time limited, whereas long-term disability-compensation recipients face income loss if they return to work; long-term disability may be a disincentive to returning to work. Lem et al. (2005) reported that receipt of governmental assistance for disability negatively predicted employment after a year of disability among a cohort of people with HIV/AIDS. Potential participants in the JOBS intervention were excluded if their unemployment duration exceeded 13 weeks (Vinokur et al., 1991).

Although group participation did not appear in itself to effect greater workforce-reentry efforts than standard of care, individual sessions did. The initial individual sessions occurred early in the intervention at the same time as sessions devoted to Motivational Interviewing techniques. It is possible that the intervention did not allow sufficient time for Motivational Interviewing in the group sessions; it is also possible that these approaches are more effective if conducted on an individual basis because of their emphasis on alliance building as a means of moving clients through the stages of change. Although the intervention is partially grounded in the Transtheoretical Model (Prochaska & DiClemente, 1982) and used Motivational Interviewing techniques (Miller & Rollnick, 2002) to assist participants in movement from contemplation to preparation to action, the sessions progressed at a fixed rate. Prochaska and DiClemente (1982) have suggested that different interventions are appropriate to different stages of change, and that skills-building interventions may be effective in the action state, but not at contemplation or preparation, where more motivational approaches might be more effective. Moreover, the progression through stages of change is highly individual and iterative. The individual sessions may have permitted a closer fit between participant stage of change and the specific intervention techniques employed by the vocational counselor. We patterned our approach partially on the work of Price and his colleagues (Price & Vinokur, 1995) because it has been repeatedly replicated; it is possible that such a group approach is not appropriate for helping people with HIV/AIDS reenter the workforce.

Once employed, intervention participants were less likely to become unemployed than were comparison participants. Although replication of this finding is important, a clear corollary implication is that interventions similar to that studied here may be useful in helping people who have successfully reentered the workforce to sustain their jobs.

To our knowledge, this is the first RCT of an intervention designed to assist people with HIV/AIDS or *any* illness-related disability in their workforce-reentry efforts; it therefore represents an important step forward in research concerning workforce reentry among people with disabilities (cf. Tate, Kalpakjian & Kwon, 2008). Dunn and Elliot (2008) have argued for the need for theory to guide research in rehabilitation psychology; we attempted to combine a theory-driven approach with our understanding of the population with which we were working to design an intervention. Our theory and techniques were derived from approaches to substance-abuse treatment (Motivational Interviewing: Miller & Rollnick, 2002) and health behavior change (Transtheoretical Model: Prochaska & DiClemente, 1982) to enhance initial motivation for change; behavioral clinical psychology (DBT: Linehan, 1993) for interpersonal skills building, and applied social psychology (JOBS: cf. Vinokur et al., 1995) to enhance job-search skills. We believe our findings have added to our understanding of the general applicability of these models and of the role of theory in designing interventions to assist people in their return-to-work efforts.

Markov models have been widely used to model the history of biological or biomedical processes such as disease progression in cancer patients. Using Markov models to evaluate the history of clinical improvement or rehabilitation efforts has not been widely discussed. Because health-related behaviors such as smoking cessation, weight loss, and HIV-risk reduction are prone to relapse and because employment status may be prone to change over time, Markov models may prove useful in future efforts to analyze such behavioral dynamics.

Finally, as workforce-reentry assistance research progresses, greater attention should be devoted to determining commonalities and distinctions among interventions used with different populations. Little discussion appears to take place across different disability literatures (e.g., cancer, rheumatoid arthritis, kidney disease, HIV). A greater understanding of similarities and differences in disability-related issues across these illnesses, as well as commonalities and distinctions among interventions designed to help individuals with these disabilities reenter the workforce would advance our understanding in this emerging area.

Limitations

Participants in this study were largely White and well educated; the screening criteria ruled out participants with current untreated substance abuse or mental health problems as well as evidence of neuropsychological deficits. Generalization of these findings to settings in which such factors may be present is currently not possible. As HIV/AIDS is increasingly related to indices of substance abuse, poverty, and long-term non-disability unemployment additional research related to promotion of successful workforce entry will be needed. Such efforts may require elements related to basic workforce-readiness skills and work-hardening efforts (Mattheson, 1988; Niemeyer, Jacobs, Reynolds-Lynch, Bettencourt, & Lang, 1994) in addition to employment-related skills: Jung et al. (2010) noted that job-placement assistance and on-the-job supports predicted employment in their sample of people with HIV/AIDS at case closure. Because employment has been shown to be a significant contributor to relapse prevention among graduates of substance-abuse treatment programs (Platt, 1995), and quality of life is better among employed people with HIV/AIDS than among those who are unemployed (cf. Rueda, Raboud, Mustard, Baycoumi & Rourke, 2011), such research is important in the context of HIV/AIDS prevention.

For many people with HIV/AIDS-related disability, two years may be insufficient to help them through the entire return-to-work process; their prior employment may no longer be a viable option or their skills may be obsolete—necessitating education and retraining prior to any workforce-reentry efforts. In such cases a 24-month follow-up period may not capture the entire return-to-work process. We chose a 24-month follow-up period because it represents a widely-used standard in outcome research; future studies should address this issue. Although Jung et al. (2010) found that length of disability was inversely related to employment at case closure in their sample of rehabilitation consumers with HIV/AIDS, they also found that greater resource expenditure was predictive of employment at case closure in their sample.

Research delineating the role of mediating variables in the workforce-reentry process is important. We based our intervention on a specific theoretical model (Transtheoretical Model; Prochaska & DiClemente, 1982); the analytic approach used in this study does not address the degree to which this model predicts such workforce-reentry efforts. Additional research is needed to determine mediators of workforce reentry and if interventions effect change in these mediators.

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Impact and Implications

- Improved treatments for HIV/AIDS have greatly improved the health of people with HIV/AIDS, creating the possibility that some previously disabled people with HIV/AIDS could return to work. It has been estimated that fewer than three percent of all Social Security disability beneficiaries return to work after establishing disability benefits (Muller, 1992), creating an imperative for the study of interventions to assist people with HIV/AIDS in their workforce-reentry efforts. Randomized clinical trials of workforce-reentry interventions have not been reported for disabled people with HIV/AIDS or any medically-related disability.
- This study reports outcome data from a randomized clinical trial of a theory-based intervention to assist people with HIV/AIDS in their efforts to return to work, providing a basis for future research on interventions designed to help people with HIV/AIDS and other illness-related disabilities in their return-to-work efforts.
- Although this study provides evidence of efficacy in assisting individuals with HIV/AIDS reenter the workforce and remain employed after initial employment, critical gaps remain in our understanding of what elements are important in assisting people with HIV/AIDS and other illness-related disabilities in their return to work efforts.

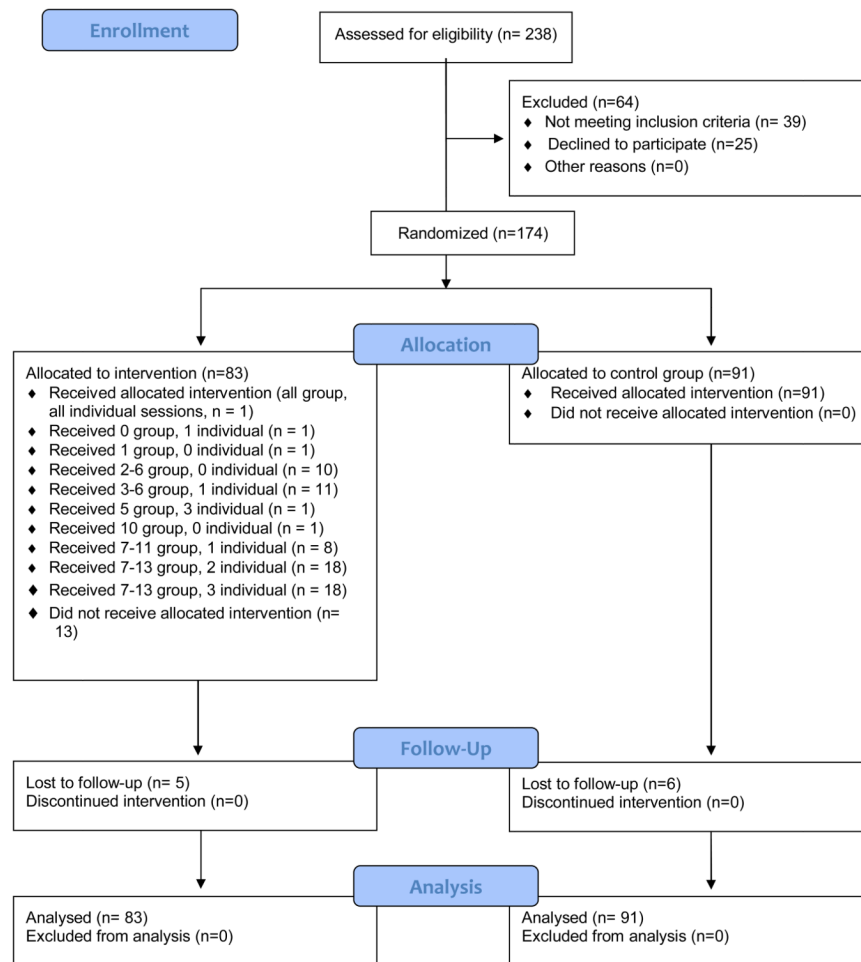


Figure 1. Consolidated Standards of Reporting Trials (CONSORT) Flowchart

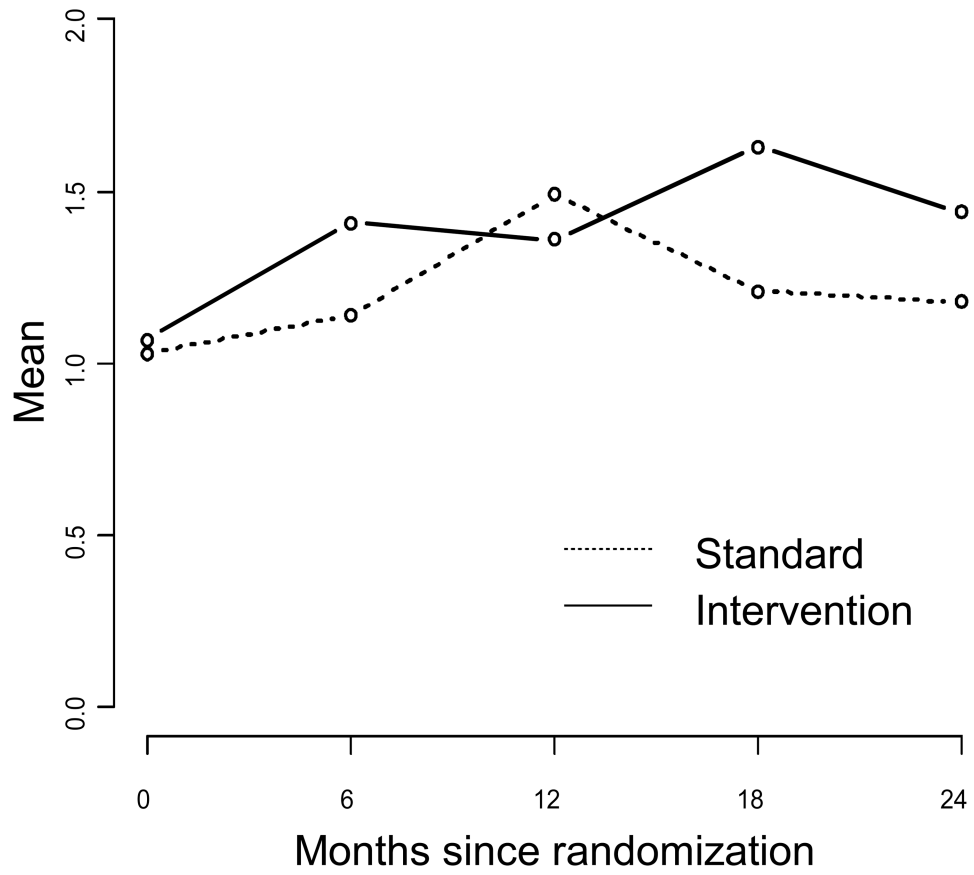


Figure 2. Summed score of Employment Activities (Paid Job, Volunteer Work, Training, or Job Seeking)

Table 1
Participant demographic characteristics by intervention condition at baseline

	Condition			<i>p</i> value
	Intervention (n = 83)	Standard (n = 91)	Total (n = 174)	
Mean age, years (SD)	43.9 (8.1)	44.3 (7.3)	44.1 (7.6)	0.71
Gender				0.85
Males, n (%)	75 (90)	83 (91)	158 (91)	
Females, n (%)	8 (10)	8 (9)	16 (9)	
Sexual orientation, n (%)				0.87
Heterosexual	14 (17)	14 (15)	28 (16)	
Homosexual	58 (70)	63 (69)	121 (70)	
Bisexual	10 (12)	11 (12)	21 (12)	
Not sure/Other	1 (1)	3 (3)	4 (2)	
Race/Ethnicity, n (%)				0.84
White	40 (48)	38 (42)	78 (45)	
African American (non-Latino)	16 (19)	20 (22)	36 (21)	
Black (Latino)	0 (0)	4 (4)	4 (2)	
Latino	15 (18)	17 (19)	32 (18)	
Asian	3 (4)	5 (5)	8 (5)	
American Indian/Alaskan	0 (0)	1 (1)	1 (1)	
Other/Multi-Racial/Ethnic	9 (11)	6 (7)	15 (9)	
Education, n (%)				0.67
Less than high school	5 (6)	10 (11)	15 (9)	
High school graduate	13 (16)	12 (13)	25 (14)	
Some college	44 (53)	49 (54)	93 (53)	
College graduate/certificate	12 (14)	14 (15)	26 (15)	
> College	9 (11)	12 (14)	15 (9)	
Residence, n (%)				0.002
Own home	75 (90)	65 (71)	140 (80)	
Friend/relative's home	4 (5)	19 (21)	23 (13)	
Residential facility	2 (2)	6 (6)	8 (5)	
Currently homeless	2 (2)	1 (1)	3 (2)	
Ever homeless, n (%)	38 (46)	46 (51)	84 (49)	0.48

Table 2
Participant Work Histories by intervention condition at baseline

	Condition		Total (n = 174)	p
	Intervention (n = 83)	Standard (n = 91)		
Any Paid employment, 6 mos pre-HIV diagnosis, n (%)	76 (92)	74 (81)	150 (86)	0.05
Any Paid employment, 6 mos post-HIV diagnosis, n (%)	50 (60)	55 (60)	105 (60)	0.98
Any Paid employment, past 6 mos, n (%)	27 (33)	29 (32)	56 (32)	0.92
Paid employment, current (out of those employed in past 6 mos), n (%)	15 (56)	7 (24)	22 (33)	0.028
Volunteered past 6 months, n (%)	36 (44)	37 (41)	73 (42)	0.67
Volunteer work now, n (%)	26 (32)	29 (32)	55 (32)	0.98
Attended job training past 6 mos, n (%)	13 (16)	11 (12)	24 (14)	0.49
Sought job past 6 mos, n (%)	13 (16)	17 (19)	30 (17)	0.60
Mean Longest Continuous Paid Employment (Years) (SD)	6.7 (4.5)	6.1 (3.8)	6.4 (4.2)	0.33
Mean Number of Times Resigned from Paid Job (SD)	3.2 (4.8)	3.0 (3.7)	3.1 (4.2)	0.78
Mean Number of Return to Work Attempts Post HIV Diagnosis (SD)	2.6 (7.7)	3.6 (9.7)	3.1 (8.8)	0.54
Mean Hours Worked/Week past 6 months (All Participants) (SD)	6.6 (14.2)	3.8 (8.4)	5.1 (11.6)	0.10
Mean Hours Worked/Week past 6 months (Employed Participants Only) (SD)	20.4 (18.6) (n=27)	11.9 (11.2) (n=29)	16.0 (16.7) (n=56)	0.04

Table 3
Participant Health Characteristics by Condition

	Condition			<i>p</i>
	Intervention (n = 83)	Standard (n = 91)	Total (n = 174)	
CD4 count, m (SD)	412.4 (28.9)	383.1 (22.6)	397.0 (18.1)	0.42
Viral load (<50 copies/mL), n (%)	11 (44)	14 (56)	25 (14)	0.69
Number of HIV-related illnesses ever, m (SD)	2.8 (2.3)	3.0 (2.2)	2.9 (2.2)	0.60
SF-36 PCS	35.2 (5.4)	35.6 (5.5)	35.4 (5.4)	.57
SF-36 MCS	49.8 (13.5)	49.7 (13.0)	49.7 (13.2)	.97

Table 4

Estimated transition rates (95% CIs) for Paid Job Variable

Paid Job	Condition			
	Control		Intervention	
To	No	Yes	No	Yes
From				
No	-0.94	0.94 (0.63, 1.41)	-0.71	0.71 (0.49, 1.03)
Yes	1.63 (1.08, 2.46)	-1.63	0.75 (0.49, 1.13)	-0.75