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An examination of main and interactive effects of substance abuse recovery housing on multiple indicators of adjustment

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Abstract

Aims—To assess the effectiveness of community-based supports in promoting abstinence from substance use and related problems.

Design and participants—Individuals (n = 150) discharged from residential substance abuse treatment facilities were assigned randomly to either an Oxford House recovery home or usual after-care condition and then interviewed every 6 months for a 24-month period.

Intervention—Oxford Houses are democratic, self-run recovery homes.

Measurements—Hierarchical linear modeling was used to examine the effect of predictive variables on wave trajectories of substance use, employment, self-regulation and recent criminal charges. Regressions first examined whether predictor variables modeled wave trajectories by condition (Oxford House versus usual after-care), psychiatric comorbidity, age and interactions.

Findings—At the 24-month follow-up, there was less substance abuse for residents living in Oxford Houses for 6 or more months (15.6%), compared both to participants with less than 6 months (45.7%) or to participants assigned to the usual after-care condition (64.8%). Results also indicated that older residents and younger members living in a house for 6 or more months experienced better outcomes in terms of substance use, employment and self-regulation.

Conclusions—Oxford Houses, a type of self-governed recovery setting, appear to stabilize many individuals who have substance abuse histories.

Keywords

12-Step; mutual help; recovery homes; self-help organization; substance abuse

INTRODUCTION

Some theorists have suggested that psychosocial factors not obtained typically in substance abuse treatment (e.g. social support) may be the best prognosticators of future recovery status [1]. For example, self-help has been applied specifically to recovery from alcohol abuse, most notably the group approach towards abstinence within 12-Step programs [e.g. Alcoholics Anonymous (AA) or Narcotics Anonymous (NA)] [2]. Studies examining the relationship between outcome and participation in 12-Step programs have generally indicated promising outcomes [3]. Longabaugh *et al.* [4] reported that continued substance abuse abstinence at 18 months post-treatment was greatest among individuals with high social investment within

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networks supportive of their abstinence. However, most 12-Step studies relating to addictions rely on retrospective research designs and unreliable psychometric inventories [5].

An alternative after-care program for substance abuse recovery that still includes mutual social support from a 12-Step group is the communal-living recovery homes of Oxford House. At present, there are over 1200 Oxford Houses across the country, as well as over 30 houses in Canada and eight in Australia. The basic rules of conduct for Oxford House are simple: remain free of alcohol and drugs and participate in house governance, with each member paying rent and completing all assigned chores. Deviation from any of these rules is cause for eviction. No professional staff members operate the Oxford House program, and all residential costs are shared by members of the Oxford Houses. Oxford House also offers a community where there are no time restrictions on length of stay. Each Oxford House has a president, treasurer, comptroller, coordinator, secretary and building maintenance person elected to 6-month terms. This gives all house members opportunities to exert leadership and ensure that rules are being followed. New members receive a booklet of rules when they enter an Oxford House, and other residents spend considerable time helping the new member learn the system. Recently, Jason *et al.* [6] reported a randomized study that compared Oxford House residents with participants in usual after-care settings. At a 2-year follow up, Jason *et al*. found that, compared to a no-aftercare treatment comparison group, Oxford House residents had lower substance use (31% versus 65%, respectively), higher monthly income ($989 versus $440) and lower incarceration rates (3% versus 9%).

It is possible that a number of different factors related to the individuals and their environmental experiences moderate the impact of the therapeutic, mutual-help model which an Oxford House represents. For instance, Oxford House members may need to reside in these environments for a minimal amount of time to obtain the maximal effects (e.g. less substance use, more employment, improved self-regulation, less crime). Based on the transtheoretical model of change, DiClemente *et al.* [7] claimed that efficacy expectations related to addictive behavior change stabilize after 6 months of abstinence [8]. In a national sample of Oxford House participants, Jason *et al.* [9] found that staying in Oxford House for at least 6 months was related to increased self-efficacy and maintained abstinence. These findings suggest that maintaining residency within an Oxford House for at least 6 months might be one critical factor in promoting more positive outcomes.

Many individuals recovering from substance dependence also have psychiatric disorders [10]. Majer *et al*. [11] investigated life-time prevalence rates of psychiatric comorbidity in a Midwestern USA sample of Oxford House residents and found considerable psychiatric comorbidity. Having the additional burden of a psychiatric disorder might influence negatively the trajectory of outcomes for residents living in these substance-free, mutually supportive environments. At the present time, it is not known whether a total abstinence-promoting, democratically operated, self-governed model of residential care (such as Oxford House) is an appropriate referral source for some people with co-occurring psychiatric and substance use disorders.

Age has been identified as another key variable in determining the course of recovery from dependence [12].Younger residents may not yet be ready emotionally to commit to abstinence, and may also be skeptical that complete abstinence is necessary. Brennan *et al.* [13] found that at a 12-month follow-up, older patients generally had better substance use outcomes than did younger patients. Using survival analyses, Bishop *et al*. [14] found that the best predictor of leaving an Oxford House was age, with older individuals remaining in Oxford House for longer periods of time. Older residents might also be more willing to stay within a treatment facility because they are more aware of the consequences of relapse than their younger counterparts. Consequently, older residents might have a stronger commitment to remain in the abstinent

environment of Oxford House than younger residents. Thus, age of participants might represent another important moderator variable to determine outcomes for maintaining abstinence following discharge from a treatment facility.

The present study examined whether length-of-stay in an Oxford House, psychiatric comorbidity and age was related to four outcome variables: substance use, criminal charges, employment and self-regulation. Tangney *et al.* [15] define self-regulation as the ability to regulate impulses, or alter one's performance, thoughts and emotions. We selected these measures as they correlate with less alcohol abuse and improved adjustment, and have been used as critical outcomes following treatment for substance use. Using an experimental design, participants were assigned randomly to either an Oxford House or a usual after-care condition. It was hypothesized that those with longer lengths-of-stay in an Oxford House, those who were older rather than younger and those without mood/anxiety psychiatric comorbidity would have lower rates of substance use and criminal charges, higher rates of employment and greater ability to self-regulate.

METHOD

Participants

Participants were recruited from residential substance abuse treatment facilities located in northern Illinois. Clients were asked if they were interested in taking part in a research project assessing post-treatment recovery for 2 years following discharge. Participants were offered $40 for completing the pre-test questionnaire at baseline and equivalent incentives over four subsequent interview waves. Participants were recruited over a one-and-a-half-year period to allow a gradual transition of individuals into both conditions. Data were collected from 2002 to 2005. In order to participate in the study, in-patient clients needed to agree to be assigned randomly to an Oxford House or usual after-care condition. Of those people approached to be in the study, only four individuals indicated that they were not interested in being involved in the project. A total of 150 adults approached at treatment centers agreed to participate, signed consent forms and were assigned randomly to either one of the two conditions. Thus, there were 75 adults (46 women, 29 men) in the Oxford House condition and 75 adults (47 women, 28 men) in the usual after-care condition.

All participants completed a baseline questionnaire 2–3 days before discharge from in-patient substance abuse treatment programs. Clients assigned to the Oxford House condition, however, were scheduled to visit one of 20 Illinois Oxford Houses with one of our research staff. During that initial visit, the participant completed a one-page application form for entry into the Oxford House and was interviewed by the House residents. Residents then voted within 24 hours of the interview on whether or not to accept the applicant into the House. If the applicant was voted into the Oxford House, that participant moved into the house at their planned release date from the treatment facility. All Oxford House participants except one person were voted successfully into a house at this initial attempt. The participant not voted into the first Oxford House visited was brought to a second Oxford House and was then accepted as a resident.

Participants assigned randomly to the usual care condition were referred following discharge from the in-patient treatment facility by their case managers to different forms of out-patient treatment, self-help groups or other resources in the community. Participants assigned randomly to the usual care condition, after leaving the treatment setting, went to the following sites: a relative's home (32%), a staffed recovery home (18%), a partner's or spouse's home (16%), their own home or apartment (16%), a homeless shelter (10%), a substance abuse treatment program (4%) or a friend's home (3%).

After participants entered the study, they were interviewed every 6 months over a 2-year period, yielding a total of five assessments (i.e. baseline and 6-, 12-, 18- and 24-month follow-ups). The completion rate across the 2-year study was comparable for the Oxford House (89%) and usual after-care (86%) conditions.

The abstinence self-report data were corroborated by having a person in each participant's support network listed on the 24-month follow-up assessment confirm the participant's level of abstinence at the 2-year assessment [16]. This collateral information was obtained from the person who was rated by the respondent as most important in his or her life [17]. If the collateral report indicated alcohol or drug use, and the individual reported no use, we counted this person as using.

Participants in the Oxford House condition—Over the 2-year follow-up, Oxford House participants spent an average of 256.2 days (range 8–730) in this setting. Of the 75 Oxford House participants, 5% stayed in Oxford House for the entire 24 months of the study, 35% moved into their own home or apartment after leaving the Oxford House, 20% went to relatives' homes, 15% moved into a partner's or spouse's home; 9%went to a friend's home; 5% went to a treatment program; 4% went to jail; 4% went to another staffed recovery home; and 3% went to a homeless shelter. Over the course of the study, two individuals assigned to the usual care condition had applied for and gained admission to an Oxford House (both decided to apply for entry into an Oxford House after spending time at other sites following discharge from the treatment facility). Using intent-to-treat rules, both individuals continued to be assigned to the usual care condition.

Measures

Addiction Severity Index—All participants completed portions of McLellan's 5th edition of the Addiction Severity Index-Lite (ASI) [18]. The ASI assessed problems in commonly affected areas related to substance abuse (e.g. the extent to which participants experienced employment and illegal activity in their life-times and within the last 30 days). The following demographic variables were included from the ASI: age, employment status and criminal status. Because the mean and median chronological age of our 150 adults was 37 years, we used the following age categories in all analyses: those participants 36 and younger and those participants 37 and older (analyses conducted with continuous age variables yielded similar results to this dichotomous variable). Our primary employment question assessed whether participants had been engaged in full-time or part-time work over the past 30 days. The criminal justice item assessed whether the participants were currently awaiting or having charges pending for a criminal activity over the past 30 days. For the items assessing alcohol and/or drug use, we asked participants to use the entire 6-month period between waves to give us an assessment of whether or not they had used alcohol and/or drugs.

Diagnostic Interview Schedule-IV (DIS-IV)—The Diagnostic Interview Schedule IV (DIS-IV) is a structured psychiatric instrument designed for use in community surveys that can be administered effectively by lay interviewers [19]. The DIS-IV was administered at baseline assessment to determine psychiatric comorbidity among participants. This instrument assessed life-time, past year and current prevalence of DSM-IV diagnoses and age of onset. For each positive symptom, a highly structured question sequence determined if the symptom met severity criteria, and whether the symptom was due to other reasons (i.e. alcohol, drugs or medications, physical illness, psychiatric illness). Individuals with a life-time Axis I non-psychotic mood/anxiety disorder were classified as having a psychiatric comorbidity, and those without a life-time Axis I mood/anxiety were classified as not having a psychiatric comorbidity.

Self-regulation—Self-regulation refers to the ability to regulate impulses or alter one's performance, thoughts and emotions. The present study used a measure of this construct that was developed by Tangney *et al*. [15], which contains 36 items rated on a five-point scale (1 = not at all like me; 5 = very much like me). Although this scale has five factors, little systematic variation was observed in correlates of the five factors, so Tangney *et al*. [15] have recommended using only the total summary score. This total score has good internal reliability and test-retest reliability. With the current sample, the summary score had an alpha of 0.87 (M score = 2.96; SD = 0.53) at the baseline assessment. Lower scores are indicative of better self-regulation.

Secondary measures—At the last follow-up assessment, we obtained additional status reports (number of participants who had died, were at in-patient substance abuse treatment settings and were incarcerated, as well as whether they had gained or lost custody of their children).

Statistical analyses

Baseline differences between participants in the two conditions were evaluated first by either χ^2 or independent-sample *t*-tests. For all subsequent major analyses, hierarchical linear modeling (HLM) was utilized. This analytical approach examined intraindividual, repeated-measures data over time nested within the individual (i.e. person-level or interindividual characteristics such as demographic and condition-related variables) [20]. Dependent variables included measures tapping substance abuse, employment, self-regulation and criminal charges. The linear wave trajectory defined by each 6-month time period was included as a level l variable. Experimental condition (Oxford House versus usual aftercare) and person-level variables (gender, psychiatric comorbidity, age, psychiatric comorbidity × condition and age × condition interaction served as level 2 variables). Gender was entered as a predictor variable.

In the second set of regressions, length of stay in an Oxford House was examined more closely for Oxford House residents. The critical predictor variable was whether an individual resided in an Oxford House for less than 6 months or 6 or more months. Other than this second-level variable in place of condition, all other first-and second-level variables were equivalent with the previous models. It should be noted that these latter analyses included individuals only from the Oxford House condition, as we were interested in understanding more clearly outcomes for Oxford Houses residents who stayed in the houses for what we considered to be an optimal period of time.

Baseline socio-demographic analyses

Independent-sample *t*-tests and χ^2 tests indicated no significant differences between conditions on sociodemographic variables. Across both conditions, most participants were women (62%). The ethnic status breakdown was as follows: 77.3% African American, 11.3% Caucasian, 8% Hispanic/Latino and 3.3% other. In terms of marital status, 60.5% were never married, 26.5% were divorced/widowed/separated and 12.9% were married. Regarding psychological status, 59.3% had a life-time DSM-IV Axis I mood or anxiety disorder, 27.6% reported a life-time history of having been prescribed psychological medications in the past, 26.9% had one or more in-patient hospitalizations, 28.3% had one or more out-patient hospitalizations and 8.3% had attempted suicide. In terms of legal issues, 43.9% of the participants at some time in their lives had been in jail or prison, with an average number of 2.9 (SD = 7.3) incarcerations. The average age across conditions was 37.1 (SD = 8.1) years, with an average of 12.0 years of education (SD = 2.1). The sample had a life-time average of 3.2 (SD = 2.1) episodes of in-patient and 0.8 (SD = 2.6) episodes of out-patient substance abuse treatment.

RESULTS

Outcome variables over time

Table 1 presents the findings for the second-level predictor variables modeling the wave trajectories for each of the four primary dependent variables. At baseline, 93.3% used alcohol or drugs in the past 6 months. Five individuals in each condition had not used substances because they were either in a treatment facility or jail during the entire 6-month period before baseline, and all participants were included in all analyses.

Four analyses requiring logistic variations of HLM were conducted with the four primary dependent variables: reported substance use, employment status, self-regulation and awaiting criminal charges. Each analysis, with time as a first-level predictor, included an equivalent set of second-level predictors, including predictors as control variables, and variables representing main effects (i.e. individual predictors) and interactions. In each case, the predictor variables included the following: gender as a predictor variable, experimental condition (Oxford House versus usual after-care), age (under 36 years, at or above 37 years), psychiatric comorbidity and interactions representing condition × age and condition × psychiatric comorbidity.

For each of the four models, significantly more positive outcomes were found in the Oxford House condition compared to the usual after-care condition (see Table 1), as noted by the gammas for the condition effect of wave trajectory between time and outcome. That is, the condition effect was significant for any reported substance use [gamma = −0.34, odds ratio (OR) = 0.71, confidence interval (CI) = (0.58, 0.87), $P < 0.01$], employment status [gamma = 0.34, OR = 1.40, CI = (1.11, 1.76), $P < 0.005$], self-regulation tendencies [gamma = −0.08, SE = 0.03, $t = -2.69$, $P < 0.01$] and awaiting criminal charges [gamma = −1.07, OR = 0.34, CI = (0.02, 0.51), $P < 0.001$].

For the variable awaiting criminal charges, significant interaction effects included condition × age [gamma = 1.61, OR = 4.99, CI = (2.06, 12.09), $P < 0.01$] and condition × psychiatric comorbidity [gamma = 0.79, OR = 2.20, CI = (1.06, 4.61), $P < 0.05$]. As indicated in Table 1, in the usual after-care condition participants who were younger and participants with no psychiatric comorbidity were more likely to be awaiting charges compared to participants in the Oxford House condition. This result appeared most prominent by the final assessment wave (wave 4).

Length-of-stay outcome findings

Because a stay of 6 months or more in Oxford House might be needed for residents to obtain the most benefits from this recovery home experience, as was found in a national sample of Oxford House residents [9], we examined those Oxford House residents who had lived in an Oxford House for 6 or more months (45.2% of the present sample) versus those residents who had been in an Oxford House for less than 6 months (54.8% of the sample). We again used HLM to model whether the dichotomous variable related to length-of-stay (i.e. less than 6 months or 6 or more months in Oxford House) predicted the wave trajectory for the four major outcome variables, including the same second-level control variables and moderators as the prior analyses (except, of course, condition).

There was a significant length-of-stay effect for substance use [gamma for the length-of-stay variable = −0.45, OR = 0.63, CI = (0.41, 0.99), $P < 0.05$] as well a length-of-stay × age interaction [gamma = 0.90, OR = 2.46, CI = (1.02, 5.92), $P < 0.05$]. Table 2 shows that residents of Oxford House who remained in the house for at least 6 months had significantly better outcomes over time. In fact, by the 24-month assessment the differences were rather large (15.6% versus 45.7%, respectively).When examining younger versus older residents, younger residents who stayed in Oxford Houses for at least 6 months had extremely low substance use

(6.7%), whereas those younger residents who stayed for less than 6 months had much higher use (62.5%; see Table 2).

For the other three outcome variables, there was a significant length-of-stay × age interaction. For employment [gamma = −1.47, OR = 0.23, CI = (0.06, 0.89), $P < 0.05$], younger individuals who resided in the Oxford Houses for over 6 months had substantially better employment status than those who stayed in the house for less than 6 months (at the 24-month assessment employment rates were 93.8% versus 56.3%, respectively). The length-of-stay × age interaction was also significant for reported self-regulation tendencies [gamma = 0.18, SE = 0.08, $t = 2.28$, $P < 0.05$], such that younger Oxford House members who left their houses in less than 6 months had the least improvement in self-regulation. Finally, there was a significant length-of-stay × age interaction effect for awaiting criminal charges [gamma = 1.26, OR = 3.52, CI = (1.18, 10.50), $P < 0.05$], but all groups had zero levels of this outcome variable by the last assessment (see Table 2).

Additional findings

At the 24-month follow-up, information on the living situation or current status was also recorded for all participants. Percentages for Oxford House participants are reported first and usual after-care participants next: living in their own home or apartment (40% versus 13%), living with a sexual partner or spouse (21% versus 31%), living with relatives (19% versus 24%), living with friends (5% versus 16%), incarcerated (3% versus 9%), living in an Oxford House (5% versus 0%), living in a homeless shelter (3% versus 3%), living in a staffed recovery home (1% versus 1%), undergoing in-patient treatment (1% versus 1%) and deceased (1% versus 1%). In addition, in the Oxford House condition, 14 mothers were able to obtain custody of their children while one mother lost custody; in contrast, in the usual care condition, six mothers gained custody of their children and two mothers lost custody of their children.

DISCUSSION

Residents who lived in an Oxford House had more successful outcomes than those in the usual after-care condition on reported substance use, employment status, self-regulation and awaiting criminal charges. Direct moderational effects of psychiatric comorbidity and age were significant for only the ‘awaiting charges’ outcome variable at the 24-month follow-up wave. There were no participants in the Oxford House condition awaiting charges at the last assessment wave. Within the usual after-care condition, however, young participants were more likely to be engaged in criminal activity, and participants who had no mood or anxiety disorders were also at higher risk. These findings suggest that younger substance abusers are at risk for engaging in criminal behaviors, whereas having a life-time history of an Axis 1 mood/anxiety disorder does not necessarily promote such risk.

Length-of-stay in an Oxford House was related to several positive outcomes. At the 24-month follow-up, Oxford House residents of 6 months or more had extremely low levels of substance use (only 15.6%). In contrast, residents of Oxford House for less than 6 months had significantly higher rates of use (45.7%), although their rates were still lower than those in the usual after-care condition (64.8%). Findings from the present study suggest that residency within an Oxford House for at least 6 months may be a critical factor in maintaining abstinence. One possible explanation of this result might be that abstinence-focused self-efficacy expectations stabilize after 6 months of abstinence [8], and adults in the substance-abuse recovery process might need to be in supportive environments for this critical period to experience positive long-term effects of abstinence.

Within the Oxford House condition, younger participants who continued residence for 6 or more months had a better chance of maintaining abstinence than younger participants who

stayed for less than 6 months (use of any substances was 6.7% versus 62.5%, respectively). In fact, rates of using any substances for these younger residents with less than 6 months in an Oxford House were similar to participants in the usual after-care condition. In addition, younger Oxford House residents who stayed for less than 6 months had similar employment and self-regulation outcomes to the usual after-care participants at the 24-month follow-up (56.3% versus 48.6% employment; 2.8 versus 2.7 self-regulation scores, respectively). In contrast, older participants had better substance use outcomes in Oxford House regardless of whether they continued residence for 6 or more months (23.5%) or less than 6 months (43.1%). In addition, Oxford House residents who were either older or who continued residence at least 6 months generally had higher employment rates and self-regulation scores. Overall, these findings suggest that older residents obtain considerable benefits from living in an Oxford House, whereas for younger residents it is important to stay for at least 6 months in order to gain these benefits. These older participants may be at a more advanced stage in their recovery and more aware of the stakes for relapse than their younger counterparts, and consequently might have made a stronger commitment to remaining in the sober environment of Oxford House than younger residents.

We predicted that psychiatric comorbidity (i.e. mood/anxiety disorders) would increase risk and lead to worse outcomes over time, but this hypothesis was generally not supported in our analyses. People with comorbid mood/anxiety disorders in Oxford Houses did not have significantly different 24-month substance abuse outcomes compared to people without this type of psychiatric comorbidity (37.1% versus 25.0%). In contrast, within the usual after-care condition, people with (61.4%) versus without psychiatric comorbid mood/anxiety disorders (70.4%) had significantly worse 24-month substance abuse outcomes than those in Oxford Houses. In other words, regardless of one's mood/anxiety psychiatric comorbidity status, living in an Oxford House yielded better substance abuse outcomes over time than for those not provided with this condition. These findings suggest that a total abstinence model of residential care, such as Oxford House, might be an appropriate referral source for some people with mood/anxiety disorders [21].

There were several limitations to the present study. First, while 2 years is a relatively long period of time for outcome studies, it is still unclear whether effects of an Oxford House experience endure over a life-time. In addition, there were no biological confirmations of abstinence. It is still unclear which factors accounted for why some younger participants left Oxford Houses early, and future research needs to understand more clearly how this program might meet the needs of these at-risk members more effectively. It could be argued that a more appropriate comparison group might be another controlled environment, such as a standard halfway house, therapeutic community or alternative recovery home with different policies. Finally, some might argue that the benefits of the Oxford House might be due to the fact that it is a controlled environment, and one would assume that in such a setting there would be less substance use. However, by the last follow-up assessment almost all the Oxford House members had transitioned to another non-Oxford House setting, and therefore the effects at the 24-month assessment cannot be attributed only to living in a controlled environment. There is a clear need for more evaluations of abstinent supportive settings such as Oxford Houses following treatment for substance use disorders [22].

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References

1. Luke DA, Roberts L, Rappaport J. Individual, group context, and individual-group fit predictors of self-help group attendance. J Appl Behav Sci 1993;29:214–236.
2. McCrady, BS.; Miller, WR. Research on Alcoholics Anonymous: Opportunities and Alternatives. New Brunswick, NJ: Rutgers University Press; 1993.
3. Humphreys, K. Circle of Recovery: Self-Help Organizations for Addictions. Cambridge, UK: Cambridge University Press; 2004.
4. Longabaugh R, Wirtz PW, Beattie MC, Noel N, Stout R. Matching treatment focus to patient social investment and support: 18-month follow-up results. J Consult Clin Psychol 1995;63:296–307. [PubMed: 7751491]
5. Tonigan JS, Toscova R, Miller WR. Meta-analysis of the literature on Alcoholics Anonymous: sample and study characteristics moderate findings. J Stud Alcohol 1996;57:65–72. [PubMed: 8747503]
6. Jason LA, Olson BD, Ferrari JR, Lo Sasso AT. Communal housing settings enhance substance abuse recovery. Am J Public Health 2006;91:1727–1729. [PubMed: 17008561]
7. DiClemente, CC.; Fairhurst, SK.; Piotrowski, NA. Self-efficacy and addictive behaviors. In: Maddux, JE., editor. Self-efficacy, adaptation, and adjustment: theory, research, and application. New York: Plenum; 1995. p. 109-141.
8. Prochaska, JO.; DiClemente, CC. Stages of change in the modification of problem behaviors. In: Hersen, M.; Eisler, RM.; Miller, PM., editors. Progress in behavior modification. Sycamore, IL, USA: Sycamore Publishing Company; 1992. p. 184-214.
9. Jason LA, Davis MI, Ferrari JR, Anderson E. The need for substance abuse after-care: a longitudinal analysis of Oxford House. Addict Behav 2007;32:803–808. [PubMed: 16843612]
10. Abou-Saleh MT, Janca A. The epidemiology of substance misuse and comorbid psychiatric disorders. Acta Neuropsychiatr 2004;16:3–8.
11. Majer J, Jason LA, Ferrari JR, North C. Comorbidity among Oxford House residents: a preliminary outcome study. Addict Behav 2002;27:837–845. [PubMed: 12201387]
12. Vaillant, GE. The Natural History of Alcoholism. Cambridge, MA: Harvard University Press; 1995.
13. Brennan PL, Aran N, Moos RH. Older and younger patients with substance abuse disorders: outpatient mental health service use and functioning over a 12-month interval. Psychol Addict Behav 2003;17:42–48. [PubMed: 12665080]
14. Bishop PD, Jason LA, Ferrari JR, Huang CF. A survival analysis of communal-living, self-help, addiction recovery participants. Am J Commun Psychol 1998;26:803–821.
15. Tangney JP, Baumeister RF, Boone AL. High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. J Pers 2004;72:271–322. [PubMed: 15016066]
16. Morgenstern J, Labouvie E, McCrady BS, Kahler CW, Frey RM. Affiliation with Alcoholics Anonymous after treatment: a study of its therapeutic effects and mechanisms of action. J Clin Consult Psychol 1997;65:768–777.
17. Longabaugh R, Wirtz PW, Zweben A, Stout R. Network support for drinking, alcoholics anonymous and long-term matching effects. Addiction 1998;93:1313–1333. [PubMed: 9926538]
18. McLellan AT, Kusher H, Metzger D, Peters R, Smith I, Grissom G, et al. The fifth edition of the Addiction Severity Index. J Subst Abuse Treat 1992;9:199–213. [PubMed: 1334156]
19. Robins L, Helzer JE. The half-life of a structured interview: the NIMH Diagnostic Interview Schedule (DIS). Int J Meth Psychiatr Res 1994;4:95–102.
20. Raudenbush, S.; Bryk, A.; Cheong, YF.; Congdon, R. HLM 5: Hierarchical Linear and Nonlinear Modeling. Lincolnwood, IL: Scientific Software International, Inc.; 2000.
21. Laudet AB, Magura S, Vogel HS, Knight E. Support, mutual aid and recovery from dual diagnosis. Commun Ment Health J 2000;36:457–476.
22. Humphreys K, Weingardt KR. Assessing readmission to substance abuse treatment as an indicator of outcome and program performance. Psychiatr Serv 2000;51:1568–1569. [PubMed: 11097655]

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Table 1

Main and interaction effects for primary outcome variables over time.

	Baseline % M (SD)	6-month % M (SD)	12-month % M (SD)	18-month % M (SD)	24-month % M (SD)	Sign.
Main effects						
Any substance use[1]						
Oxford House	93.3%	33.3%	32.8%	32.3%	31.3%	*
Usual care	93.3%	41.5%	39.7%	42.9%	64.8%	
Employed[2]						
Oxford House	20.0%	72.4%	82.0%	73.5%	76.1%	*
Usual care	20.0%	55.4%	59.7%	49.2%	48.6%	
Self-regulation						
Oxford House	3.0 (0.5)	2.8 (0.5)	2.6 (0.6)	2.5 (0.7)	2.4 (0.8)	*
Usual care	2.9 (0.6)	2.8 (0.7)	2.7 (0.8)	2.8 (0.8)	2.7 (0.8)	
Awaiting charges[3]						
Oxford House	14.7%	4.3%	4.6%	1.5%	0.0%	*
Usual care	13.3%	1.5%	6.9%	11.5%	5.6%	
Interaction effects						
Awaiting charges						
Oxford House						
Younger	22.2%	3.1%	3.1%	0.0%	0.0%	*
Older	7.7%	5.4%	5.4%	2.9%	0.0%	
Usual care						
Younger	13.2%	0.0%	7.1%	17.2%	10.8%	*
Older	13.5%	3.3%	6.7%	6.3%	0.0%	
Oxford House						
Mood/anxiety	16.7%	5.3%	8.6%	2.7%	0.0%	*
None	12.1%	3.2%	0.0%	0.0%	0.0%	
Usual care						
Mood/anxiety	13.6%	2.7%	9.1%	11.1%	0.0%	*
None	13.3%	0.0%	4.2%	12.0%	13.8%	

*$P < 0.05$,

1 in the past 6 months,

2 in the past 30 days,

3 currently. Younger denotes ≤ 36 years old; older denotes ≥ 37 years old.

Table 2

Main and interaction effects by length of time in Oxford House.

	Baseline % M (SD)	6-month % M (SD)	12-month % M (SD)	18-month % M (SD)	24-month % M (SD)	Sign.
Main effect						
Any substance use[1]						
< 6 months in OH	95.0%	52.8%	50.0%	45.5%	45.7%	*
≥ 6 months in OH	91.4%	12.1%	17.1%	18.8%	15.6%	
Interaction effects						
Any substance use[1]						
< 6 months in OH						
Younger	100.0%	53.3%	53.8%	60.0%	62.5%	*
Older	94.4%	26.1%	25.5%	37.3%	43.1%	
≥ 6 months in OH						
Younger	88.9%	5.9%	16.7%	6.3%	6.7%	*
Older	94.1%	18.8%	17.6%	31.3%	23.5%	
Employed[2]						
< 6 months in OH						
Younger	22.2%	40.0%	46.2%	42.9%	56.3%	*
Older	27.3%	61.9%	84.2%	83.3%	77.8%	
≥ 6 months in OH						
Younger	16.7%	94.1%	100.0%	93.8%	93.8%	*
Older	11.8%	87.5%	88.2%	68.8%	76.5%	
Self-regulation						
< 6 months in OH						
Younger	3.1 (0.5)	3.0 (0.5)	3.1 (0.6)	2.8 (0.7)	2.8 (0.8)	*
Older	2.9 (0.4)	2.8 (0.5)	2.4 (0.6)	2.3 (0.6)	2.3 (0.8)	
≥ 6 months in OH						
Younger	3.2 (0.5)	2.8 (0.4)	2.5 (0.4)	2.5 (0.6)	2.3 (0.7)	*
Older	2.7 (0.5)	2.6 (0.5)	2.3 (0.6)	2.5 (0.7)	2.3 (0.7)	
Awaiting charges[3]						

	Baseline % M (SD)	6-month % M (SD)	12-month % M (SD)	18-month % M (SD)	24-month % M (SD)	Sign.
< 6 months in OH						
Younger	22.2%	0.0%	8.3%	0.0%	0.0%	*
Older	9.1%	9.5%	5.6%	0.0%	0.0%	
≥ 6 months in OH						
Younger	22.2%	5.9%	0.0%	0.0%	0.0%	*
Older	5.9%	0.0%	5.9%	6.3%	0.0%	

*$P < 0.05$,

[1]in the past 6 months,

[2]in the past 30 days,

[3]currently. Younger denotes ≤ 36 years old; older denotes ≥ 37 years old.

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