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Exploring possible network properties facilitating recovery for residents of sober living homes

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Abstract

Background: Recovery homes provide supportive settings for thousands of individuals with substance use disorders each year. However, not all residents of recovery homes improve in these settings, and the reasons for both improvement and lack of improvement are still unclear. It is possible that those low in recovery might benefit when they are in settings with high recovery residents.

Methods: We examined social network ties among 19 recovery home settings that had pairings of low and high recovery residents.

Results: We found that low recovery factor individuals generally increased their recovery factor scores over time. In the cases where recovery factor scores did not increase, the low recovery factor individuals had few social network ties with the high recovery residents.

Conclusions: Both selection and influence can likely be factors that affect recovery behavior in these social settings, as residents may select friends who already exhibit similar behaviors as their own or be influenced by friends to adjust their behavior, so it is more like that of the group. A dynamic systems-based perspective can help investigators better understand how recovery-related behaviors and social relationships co-evolve, and how individual characteristics and house-level social structures can link to changes in individuals' recovery.

Keywords

Oxford houses; recovery homes; relapse predictors; recovery latent factor, social networks

1. Introduction

There are over 17,500 recovery homes in the US providing critical housing to over 270,000 individuals with substance use disorders each year [1]. One type of recovery home is called Oxford House (OH) [2], and they are democratically run by the residents who contribute

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Conflict of interest

The authors declare that they have no competing interest with regards to authorship and/or publication of this paper.

their share of the house expenses, and members that do not abstain from illicit substance use and alcohol are evicted. OHs create an environment where individuals can move at their own pace through recovery and can find solace in housemates who also aim to achieve and maintain sobriety. However, not everyone in these settings benefits, and it is still unclear what factors might enhance recovery for some but not others.

A significant portion of each resident's day-to-day social environment is dependent on social processes operating between and among the residents within their respective houses. Because each house is a "complete network" of relationships, these social processes can be considered a social network that co-evolves over time, along with changing resident characteristics, including recovery-related attitudes and behaviors. Thus, personal recovery can be investigated conceptually and methodologically by thinking of recovery homes as evolving multi-relational (multiplex) relationships that affect and are affected by residents' recovery progress.

In research studying the social networks of recovery homes, Jason, Guerrero, Lynch, Stevens, Salomon-Amend, and Light [3] found that friendship and willingness to lend are more common and reciprocated than advice seeking. These resources might enhance or impede the outcomes of house residents. For example, Jason, Guerrero, Salomon-Amend, Lynch, Stevens, Light, Stoolmiller, and Doogan [4] found that the density of willingness to loan money was positively associated with a number of positive outcomes (i.e., wages, social support, and self-esteem). However, the higher density of advice-seeking relationships was related to more stress, suggesting that residents go to others for guidance during stressful times. Jason, Guerrero, Salomon-Amend, Lynch, Stevens, Light, and Stoolmiller [5] next found that a higher density of sharing resources was predictive of lower relapse, whereas the density of higher advice seeking was predictive of greater relapse.

In these studies, advice seeking was related to stress and less positive outcomes, even though one might expect advice seeking to be beneficial. This could be because such a relationship ignores the characteristics of the advice-giver and receiver. For instance, it is unknown if and how the recovery levels of the advice-giver impacts the outcomes for the advice receiver. Additionally, residents may go to others for guidance during stressful times. However, these lines of inquiry require fully endogenous modeling to address and obtain a better understanding of these types of relationships and how recovery home social dynamics and personal change interact to create desirable outcomes, such as sustained recovery, and problematical ones such as early dropout. Taking this into consideration, Jason, Lynch, Bobak, Light, and Doogan [6] conducted a Stochastic Actor Oriented Model and found that while seeking advice from other house residents generally is associated with negative outcomes, seeking advice from more-recovered residents is beneficial. Stochastic Actor Oriented Models [7] involve a dyad-based conception of relationship formation, as well as the subsequent effects of those relationships that take into account who the relationship partner is. This additional detail was necessary to identify the true effect of such relationships. While this research found that seeking advice from those who are more recovered leads to increases in the advice seekers recovery, it is less clear how the structure of social relationships and the level of recovery of each resident combine to create more or less desirable outcomes, especially for less-recovered residents.

Network processes such as *selection* and *influence* may together function to impact recovery behaviors. Residents may “select” friends who already exhibit similar behaviors as their own (e.g., same recovery level) or be “influenced” by friends to adjust their behavior, so it is more like that of the group. Influence from the perspective of Stochastic Actor Oriented Models is an effect that is transmitted through social ties (like friendship or advice seeking). The ties themselves, on the other hand, may change for many different reasons such as a result of changes in behavior. Changes in that variable could affect who an individual selects to connect with, which can, in turn, change how the person is influenced, in a continuous feedback loop.

We first established a “selection” effect with Doogan et al. [8], who found those with high quality of life become friends with those with low quality of life and vice versa. It appeared as if the OH model encourages friendship ties that are known to constitute effective recovery supports. It is also possible that if residents associate with others who have higher recovery factors, their recovery factor will tend to improve over time. In other words, affiliating with others who are more recovered might help the resident. Furthermore, those who have higher recovery capital may be compelled to connect with those who are low on recovery capital as a way of providing support to those who are less secure in their recovery. The present study explored how different structures of relationships, along with distributions of a measure of “recovery,” might help or hinder residents in most need of recovery. Additionally, the study seeks to examine how selection and influence processes impact the interplay between network structures and recovery behaviors.

2. Methods

2.1. Settings

The study was conducted in a set of OHs, which is a network of over 3,000 recovery homes in the US [2]. Data were collected from OHs located in North Carolina, Texas, and Oregon. Member-elected house presidents were asked to introduce the study to residents by reading a project-provided script about the study; houses were accepted into the study if the house president and all or all but one member agreed to participate. The first thirteen consenting houses from each state were accepted, and three more houses were added for a total of 42 (One house dropped out completely but another was added after Wave 1 to bring the total to 43 houses. However, only 42 houses had the 2 or more waves of information available on their residents required to be part of a longitudinal analysis).

Participants were part of a longitudinal study that collected information every four months over 2 years, for a total of 7 waves (only 6 waves were used in the present study to conform to findings from [9]). Participants were recruited and interviewed by field research staff in face-to-face meetings. Participants were compensated \$20 for completing each assessment. Permission was obtained through the DePaul University Institutional Review Board.

2.2. Measures

Resident demographic information included age, sex, race/ethnicity, education, and employment. Race/ethnicity was broken down into 4 categories, White (78.8%), Black

(8.6%), Latinx (10.1%) and all other (2.5%). In preliminary analyses, using White as the reference group, the contrasts for Black, Latinx and all others were negligible. Accordingly, ethnic contrasts were simplified to either not-Black (reference group including White, Latinx and all other) versus Black. Oxford Houses are gendered and accordingly, gender was included as a house-level predictor. We also evaluated residents' employment status as employed, unemployed, or other forms of income (disability, student, retirement). We classified residents as either having a high school education, GED or less, versus those with some college, technical school or college degree.

The recovery factor (RF) was an index score based on a confirmatory factor analysis of all recovery capital indicators [9]. The analysis includes each RF score over time. This measure was calculated from the following instruments: wages, quality of life [10], self-efficacy [11], self-esteem [12], stress [13], social support [14,15], sense of community [16], and hope [17]. The RF score ranges from 0 to 7, with higher numbers meaning more recovery.

The Social Network Instrument (SNI; [18]) was utilized to capture the social dynamics within each OH. This instrument has been used in several investigations on the social networks of recovery home residents [18–20]. The SNI used with our sample had a Cronbach's alpha of .85 and all items contributed positively. A multilevel confirmatory factor analysis of the SNI found an excellent fit and per-item contribution, and neither age nor sex significantly correlated with this instrument [18]. The SNI measures several relationship characteristics, including friendship, loaning, and advice seeking. Data were also collected on help, frequency, and strength, but these measures are not included in the current study.

The residents rated each member of the house on the relationships, and for this study, we focused on friendship, money loaning, and advice seeking. Each social network relationship type was measured on a 5-point Likert scale. Friendship, intended to assess the positive valence of the relationship, was measured by responses to "How friendly are you with this person?" Responses ranged from "close friend" to "adversary." Participants' friendship nominations were represented by an adjacency matrix with rows signifying an ego (senders of friendship nominations) and a column with alters (receivers of friendship nominations). If a nomination was present between ego and an alter, then it would represent a degree. All values were dichotomized (0 = no degree; 1 = degree) and entered into the corresponding element of the matrix. A friendship relationship was considered present if the respondent identified another resident as a close friend or friend, but not present otherwise (i.e., acquaintance, stranger, adversary). Money loaning (which represents a willingness to lend resources) was considered present if the respondent reported being willing to loan another resident \$500 or \$100, but was not considered present if the respondent reported being willing to loan another resident smaller amount of money (i.e., \$0, \$10, \$50). Advice-seeking was considered present if the respondent reported seeking advice from another resident very often or quite often, but not present otherwise (i.e., regularly, rarely, never).

This study examined patterns of bidirectional (or simply "directed") relationships, with each resident (ego) rating every other person in the house (alters). Each resident is referred to as a node and each relationship between the nodes of a dyad is referred to as an edge. Each edge

is a degree that can either be an out-degree (a rating that the ego node makes about each alter) or an in-degree (a rating that each alter makes about the ego node). Since each resident provides ratings of all other residents, raters may indicate different strengths of relationships, such that A's rating of B is considered a different measure of the relationship than B's rating of A. Density is the proportion of existing edges out of all possible such edges. Denser networks of positive sentiments, such as friendship, are considered to be more "cohesive" [21]. Reciprocity is related to density, but reciprocity could be high even if the density is not, indicating a strong tendency for mutual connection.

2.3. Analytic approach

There were 714 residents of the OHs throughout the study period, of which 666 (93%) agreed to participate in our study [1]. Using the RF scores at the first wave that participants entered the study, we classified residents into those at the highest 25% (scores 5–7) and those at the lowest 25% (scores of 0–2). If a house did not have a person in both categories, it was eliminated. We next only included houses with at least these two individuals (a high and low scorer) who entered the houses at the same time and then had at least two waves of data. This process resulted in selecting 13 of the 42 OHs. We found 21 residents who were in the lower 25% in these 13 recovery homes, and each of these houses had at least one resident who was in the top 25% of recovery scores.

3. Results

For those 21 bottom 25% scoring RF residents at their first wave (all of whom had scored from 0–2 at wave 1), we found that 17 residents increased their scores in their second wave, while scores for 4 residents remained the same. Average RF scores for this group of 21 residents significantly increased from 1.3 (SD = .78) to 3.0 (SD = 1.79) ($t(20) = -5.28, p < .01$).

Based on these findings, we decided to examine two of the 13 houses in this sample, one randomly selected house where the low RF scores did not improve and a randomly selected house where the low RF scores did improve. Two residents whose low recovery factor scores did not improve both lived in the same recovery home selected. We explored the social connections of these two residents with all members of the house. Table 1 provides more details on all members of this house, with residents A and B having scored in the lowest 25%, and residents C and D having scored in the highest 25% at Wave 1. We next reviewed the relationships of these 4 individuals during Wave 1.

In Table 2, we used the symbol (*) to signify a tie or a relationship to occur with a friendship score of either 1 (indicating close friendship) or 2 (friend), with advice seeking score of either 1 (very often) or 2 (quite often), and for a loan score of either 5 (willing to loan \$500) or 4 (willing to loan \$100). Figure 1 indicates that at Wave 1, one of the low RF residents (A) indicated he was only a friend of the other low RF resident (B), but would not offer a loan or seek advice from any of the members. The other low RF resident (B) was a friend of the other low recovery person (A) and one of the high RF residents (D), but would not offer a loan to anyone, and would only seek advice from the other low RF resident (A).

In the second recovery home, there were 3 individuals, and at Wave 1, there was one low RF scorer (E) and one high scorer (F) [Table 3]. Table 4 and Figure 2 portray the social connections for members of this house. The low RF scorer (E) was a friend, was willing to loan, and sought advice from the high RF scorer (F). Overall, there was a dense set of connections in this recovery home.

All the residents who were in the two houses profiled at Wave 1 were included in the network descriptive analysis, including residents who were a low or high RF scorer as well as all others in the house. Also, for these two houses, all residents were in both waves.

4. Discussion

Our study's major finding was that when individuals with low RF scores were situated in houses with at least one resident with high RF scores, in 17 of 21 cases, the scores of the low RF resident increased. However, in one recovery house, where two individuals with low RF scores did not increase their scores from Wave 1 to Wave 2 (both scores stayed at 1), there were few relationships with the other residents with high RF high scores. This finding suggests that RFs may be enhanced when living in houses with high RF residents, but it is also key for the low RF residents to have relationship ties with those other residents. Thus, mere presence in the house with high RF individuals might not be sufficient to observe positive recovery changes over time.

In the introduction, we reviewed previous studies indicating that higher stress and higher relapse occurred in recovery homes with more advice seeking [4,5], but when examining the dynamics of this relationship more closely, advice seeking with higher RF scorers was critical for positive changes to occur over time [6]. Similarly, in the present study, we also found that RF changes could occur for low RF individuals, but the context was also important: those low RF individuals needed to have relationships with those who were higher in recovery. These types of investigations can help us better understand which recovery home environments are most beneficial to residents in the early stages of recovery.

It is clear that in these recovery homes, residents may select friends who already exhibit more recovery behaviors than their own or be influenced by friends to adjust their behavior so it is more like that of the group. Network analyses (i.e., for friendship, etc.) help understand the creation of network ties, and any predictor of such tie formation can be thought of as a "selection effect," in which an ego is an active chooser of an alter. Importantly, characteristics of the network ties and the alters can be used to understand changes in the RF behavior. For example, in the current study, we found that egos who were low on the RF factor that had ties with a relatively high RF alter had an increase in their RF. Such an effect is typically called an "influence effect," and it means that exposing oneself to higher RF individuals as friends are associated with increasing one's own RF.

The current study helps us better understand the therapeutic nature of a recovery-supportive social environment. In a sense, both relationships and behaviors are endogenous, mutually interacting entities that co-evolve over time. Recovery house social environments can change quickly in response to composition change or individual change, and they are

highly interdependent both socially and instrumentally. Thus, our framework recognizes that neither the social environment nor the individuals' behaviors comprising them are fixed.

There are a number of limitations to this study. First, we only focused on two waves of data, and certainly, more long-term analyses would be useful. However, the current study captured the short-term effects of being in houses with high recovery residents. It is also possible that those with low RF scores who stayed for at least two waves were more motivated to stay in the houses, which could have contributed to the positive outcomes. The current study also did not explore other alter characteristics besides RF, for example, whether the alter was employed or not, or the race or gender of the alter. For instance, if the alter has a job, this could form a positive feedback loop, allowing low recovery residents to access resources when needed.

In summary, our study attempted to better understand the mechanisms through which social environments affect recovery outcomes. It does appear that affiliating with others who are more recovered helps the low recovery resident. Social capital theory [22] may help explain the finding, as recovery homes may increase social capital by sharing bonds through friendships, loaning, and advice seeking. However, it is still unclear what occurs in the dyadic relations that influence how social capital arises and its role is in these situations. Better understanding the roles of the house structure and dynamics in supporting the positive recovery trajectory of residents could facilitate the theoretical development of the broader domain of recovery homes.

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References

1. Jason LA, Wiedbusch E, Bobak T, Taullahu D. Estimating the number of substance use disorder recovery homes in the United States. *Alcohol Treat Quarter* 2020;38:506–514.
2. Oxford House. Oxford House Website. 2020. Available from: https://www.oxfordhouse.org/userfiles/file/purpose_and_structure.php.
3. Jason LA, Guerrero M, Lynch G, Stevens E, Salomon-Amend M, Light JN. Recovery home networks as social capital. *J Com Psych* 2020;48:645–657.
4. Jason LA, Guerrero M, Salomon-Amend M, Lynch G, Stevens EB, Light JN, et al. Network measures of advice-seeking and resource sharing are related to well-being in recovery homes. *Internation J Drug Policy* 2021;92.
5. Jason LA, Guerrero M, Salomon-Amend M, Lynch G, Stevens E, Light JM, Stoolmiller M. Advice seeking and loaning of money related to relapse in recovery homes. *J Com Applied Social Psych* 2012;31:39–52.
6. Jason LA, Lynch G, Bobak T, Light JM, Doogan NJ. The dynamic interdependence of advice seeking, loaning, and recovery characteristics in Oxford House recovery homes. 2021.
7. Snijders TAB, van de Bunt GG, Steglich CEG. Introduction to stochastic actor based models for network dynamics. *Social Networks* 2010;32:44–60.

8. Doogan NJ, Light JM, Stevens EB, Jason LA. Quality of life as a predictor of social relationships in Oxford House. *J Substance Abuse Treat* 2019;101:79–87.
9. Jason LA, Guerrero M, Salomon-Amend M, Stevens E, Light JN, Stoolmiller M. Context matters: Home-level but not individual-level recovery social capital predict residents' relapse. *A J Com Psych* 2021;67:392–404.
10. World Health Organization Group. The World Health Organization quality of life assessment (WHOQOL): development and general psychometric properties. *Social Science Med* 1998;46:1569–1585.
11. Sklar SM, Annis HM, Turner NE. Group comparisons of coping self-efficacy between alcohol and cocaine abusers seeking treatment. *Psych Addictive Beh* 1999;13:123–133.
12. Rosenberg M. *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press;1965.
13. Cohen S, Kamarck T, Mermelstein RA. global measure of perceived stress. *J Health and Social Beh* 1983;24:385–396.
14. Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. *Psych Bull* 1985;98:310–357.
15. Cohen S, Mermelstein R, Kamarck T, Hoberman H. Measuring the functional components of social support. In Sarason EG, Sarason BR, editors, *Social support: Theory, research and application* The Hague, Holland: Martinus Nijhoff;1985,73–94.
16. Jason LA, Stevens E, Ram D. Development of a three-factor psychological sense of community scale. *J Com Psych* 2015;43:973–985.
17. Snyder CR, Sympton SC, Ybasco FC, Borders TF, Babyak MA, Higgins RL. Development and validation of the State Hope Scale. *J Personal Social Psych* 1996;70:321–335.
18. Jason LA, Stevens E. The reliability and reciprocity of a social network measure. *Alcohol Treat Quarte* 2017;35:317–327.
19. Jason LA, Light JM, Stevens EB, Beers K. Dynamic social networks in recovery homes. *A J Com Psych* 2014;53:324–334.
20. Light JM, Jason LA, Stevens EB, Callahan S, Stone A. A mathematical framework for the complex system approach to group dynamics: The case of recovery house social integration. *Group Dynamics: Theory, Research, Pract* 2016;20:51–64.
21. Wasserman S, Faust K. *Social Network Analysis: Methods and Applications*. Cambridge, UK: Cambridge University Press;1994.
22. Bourdieu P. The Forms of Capital. In Richardson J, editor. *Handbook of Theory and Research for the Sociology of Education*, New York: Greenwood;1985:241–58.

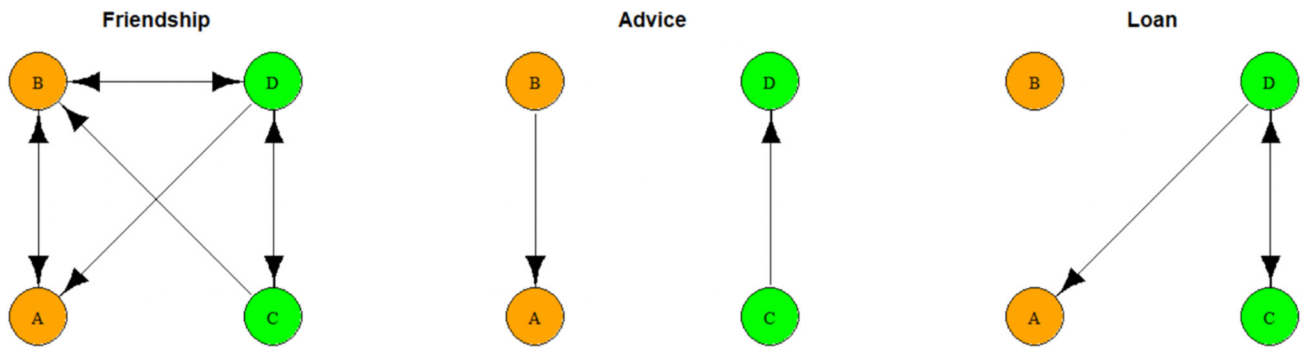


Figure 1. Ties in Oxford House where no change in RF occurred (Gold color is low RF resident; Green is high RF resident).

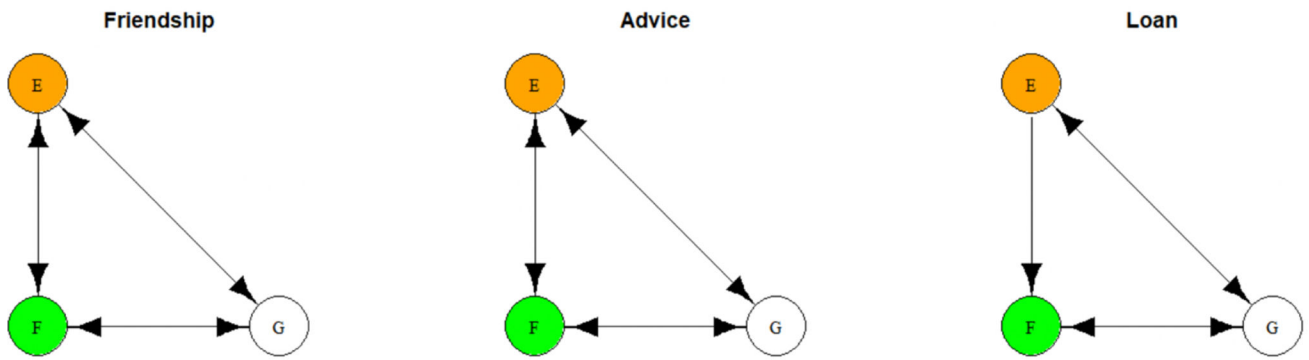


Figure 2. Ties in Oxford House where positive change in RF occurred (Gold color is low RF resident; Green is high RF resident; White is neither high or low RF).

Table 1.

RF scores in the home without improvements in low scoring residents

Resident	W1	W2
A	1	1
C	6	6
B	1	1
D	5	5

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Table 2.

Wave 1 relationship scores for the home with no RF improvements

Ego	Alter	Friend	Advice	Loan
A	B	1*	4	2
A	C	3	5	2
A	D	3	5	2
B	A	1*	1*	3
B	C	5	3	2
B	D	2*	5	1
C	A	3	4	2
D	A	2*	3	4*
C	B	2*	4	2
D	B	1*	4	3
D	C	1*	3	5*
C	D	1*	2*	5*

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Table 3.

RF scores in home with improvements in low scoring resident

Residents	W1	W2
E	2	6
F	5	5
G	4	5

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Table 4.

Wave 1 relationship scores for the home where RF scores improved

Ego	Alter	Friend	Advice	Loan
E	F	2*	2*	4*
E	G	2*	2*	4*
F	E	2*	2*	3
F	G	1*	2*	4*
G	E	2*	1*	4*
G	F	2*	1*	4*

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