Factors Associated With Departure From Supported Independent Living Programs for Persons With Serious Mental Illness

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Objective: **Supported housing is a viable model that offers independence and opportunity for community integration. However, previous studies have shown that not all residents can sustain long-term tenancy. This study examined the extent to which personal and housing characteristics predicted positive and negative departures from independent housing programs that provided support services to persons with serious mental illness.** _Methods:_ **The sample consisted of 237 persons participating in a supported independent living program in Philadelphia. Cox proportional hazards models were used to estimate the effects of personal and housing characteristics on the probability of positive departure (to an arrangement with more autonomy) and negative departure (to an arrangement with more supervision or to homelessness).** _Results:_ **Most participants (69%) maintained continuous residence in the program for the study period, 14% experienced a positive departure, and 17% a negative departure. A self-reported past substance abuse problem increased the probability of a negative departure, and a more supportive relationship with program staff decreased the probability. A higher income increased the probability of a positive departure, whereas a higher level of social distress in the neighborhood decreased the probability.** _Conclusions:_ **The findings suggest that long-term housing tenure was not uncommon among supported independent living residents, but some were not able to maintain independent living and were discharged to shelters, institutions, or residential settings with more supervision. Predictors of positive and negative departure identified in this study may help service providers design services to meet the various needs of persons with serious mental illness for stable independent living.** (_Psychiatric Services_ **60:367–373, 2009**)

S table housing is a vital component of and a prerequisite for effective treatment of persons with serious mental illness who are living in the community (1–4). Numerous studies have demonstrated that regardless of specific housing approaches, high-quality housing coupled with support services is associated with positive consumer outcomes (5–8). Supported housing, which is independent living coupled with the provision of community-based mental health services, has been considered a preferred and viable housing model that offers an opportunity for community integration through its normalized housing setting, consumer-empowerment perspective, and provision of flexible and individualized services (3,4).

Several studies have demonstrated the effectiveness of supported housing compared with other housing alternatives. Positive outcomes in favor of supported housing include longer housing tenure (4,9,10), better quality of life (11), more meaningful activities and work (12), greater housing satisfaction (13–15), lower rate of psychiatric hospitalization (16), and lower cost (17,18). These positive findings notwithstanding, studies have also found that not all consumers of supported housing sustain long-term tenancy, suggesting that maintaining stable housing may be a primary life challenge for some, because consumers with mental health problems face multiple demands as a result of their medical and psychological conditions (19–21).

Research has documented the incidence of departure from supported housing, but it has not distinguished between different types of departure. Indeed, not all departures from supported housing should be considered a negative outcome. Moving to market-rate rental housing or to subsidized housing without residential support services indicates a higher level of autonomy than that associated with supported housing and may be perceived as a positive exit. Therefore, for effective planning of policies and programs that address the needs of supported housing residents, it is critical not only to address how well

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persons with serious mental illness maintain housing but also to distinguish between different types of departure and to understand their associations with various individual and housing factors.

This study examined personal and housing characteristics as potential predictors of different positive and negative departures from supported independent living programs in Philadelphia. Positive departures denote a higher level of autonomy than is provided in these programs, and negative departures indicate a contrary outcome. The supported independent living programs in this study have features that are consistent with core principles and operational characteristics of the supported housing model, as well as features that deviate from those of the model (22). A multisite evaluation of supported housing funded by the Center for Mental Health Services similarly documented that housing programs represent a continuum of supported housing and that they do not fit one ideal model (23). The study reported here extends previous research on housing tenure that aggregated different departure types into a single category, which may produce misleading results and questionable policy and practice implications.

Methods
Study site and overview of programs
Supported independent living programs in Philadelphia began in 1987 when the city participated in the Robert Wood Johnson (RWJ) Foundation Program on Chronic Mental Illness. The initial allotment included 125 Section 8 housing vouchers to subsidize rents for persons with serious mental illness. From 1987 to 2002 the capacity of the supported independent living programs rose to 632 units through funding from federal, state, and local sources. In 2002 a total of 27 residential support teams provided services to residents to maintain independent living through skills development and by linking residents to community-based mental health services. Admissions were processed through a single-point-of-entry referral and placement unit, which conducted assessments and placements for all applicants to community residential programs (22).

A variety of housing units were available for residents, including single-room-occupancy units, one- to three-bedroom apartments, and single-family homes. A majority (60%) of supported independent living residents in 2002 lived in rental units that were either owned by or leased through a quasi-government housing development agency established at the time of the RWJ program. The role of the housing agency was that of a regular property owner for persons with psychiatric and other disabilities; the agency was not involved in providing support services for its tenants. An equal proportion of residents lived in rental units that were owned privately and leased through residential support teams (20%) and in buildings that were owned by mental health agencies that also operated residential support teams (20%) (22).

Although supported independent living programs provided long-term subsidized housing with support for independent living, access to and maintenance of housing was contingent upon sobriety, making these programs resemble the "treatment first" approach (24). A majority (85%) of residential support teams instituted drug and alcohol testing for residents. Program rules and regulations were used to exert behavioral control over residents and facilitate treatment compliance. For example, more than one-third of the 27 teams required resident participation in house and community meetings, and one in five implemented a mandatory escrow policy for residents to put aside savings for future use. Despite these program requirements, residential support staff discouraged noncompliant and problematic behaviors, such as treatment noncompliance and potentially self-destructive behavior, but staff did not regard these behaviors as warranting immediate discharge from housing. A protracted process for working with "noncompliant" residents was generally put in place to avoid undesirable housing discharges.

Participants
The study presented here was a secondary analysis of data from a cross-sectional study of supported independent living residents in Philadelphia. The protocol of the parent study, conducted in 2002–2003, examined the extent to which housing and service characteristics were associated with community integration of a sample of 252 residents. The sample size of 252 in the parent study was determined by conducting power analyses to arrive at an appropriate number of study participants (25). The study reported here tracked 237 individuals in the original sample, because data on stays in and discharges from supported independent living were available for them. Study participants were tracked for 30 months from the date of the 2002–2003 interview to determine whether they stayed in or left the supported independent living program. Participation in the original study was based on the following eligibility criteria: residence at the current supported independent living housing unit for six months or more, a primary diagnosis of a serious mental illness (schizophrenia or a major mood disorder) ascertained by a psychiatric evaluation conducted by the agency, age 18 years or older, and voluntary agreement to participate in the research as demonstrated by a signed consent form.

Data sources
Data were collected from structured self-report interviews by trained interviewers with study participants. The interviews, which were conducted in 2002 and 2003, lasted an average of two hours. The interview protocol included questions on basic sociodemographic and clinical characteristics, income, social support, perceived relationship with residential support staff, and housing preference. The residential outcome data, drawn from the administrative database of the supported independent living program, consisted of dates of admission and discharge and destinations of discharge. Data on environmental characteristics of the housing were compiled by using home addresses of 237 residents. Block-group–level data on neighborhood

sociodemographic characteristics and crime were drawn from the 2000 U.S. Census data file and the Philadelphia police crime database, respectively. This research was approved by the University of Pennsylvania Institutional Review Board.

Measures

Demographic and clinical characteristics and control variables. Age was determined at the time of the interview. Gender, race (African American or other), psychiatric diagnosis (schizophrenia or other), and housing preference (yes or no) were all binary coded. Previous length of stay in housing provided by the supported independent living program was measured by number of days between the admission date and the interview date. Substance abuse history was measured by a one-item yes-or-no question in the original interview: "In your lifetime, have you considered your use of any substances on the list a major problem?" Substances on the list included alcohol, heroin, methadone, other opiates and analgesics, barbiturates, sedative-hypnotics and tranquilizers, cocaine and crack cocaine, amphetamines, cannabis and marijuana, hallucinogens, inhalants, and other substances. Severity of psychiatric symptoms was measured by 14 items of the Colorado Symptom Index (CSI), a self-report measure that has been found to be reliable and valid (26,27). Possible scores range from 0 to 70, with higher scores indicating more severe psychiatric symptoms. Self-reported health status was measured by the 12-item Short-Form Health Survey (SF-12), which is known to be a reliable and valid instrument for measuring functional health status (28,29). Possible scores range from 0 to 100, with higher scores indicating better health. These instruments were administered as part of the interview protocol in the parent study.

Personal resources. Income was measured as the total amount of money received from all sources during the past month. We included two aspects of social support—number of social network members as an objective dimension and satisfaction with social relations as a subjective dimension.

Categories of relationship in the social network included spouse, partner, or significant other; family member; housemate or living companion; work, volunteer, or school associate; friend or acquaintance; group or organization member; service professional; and peer consumer. The number of social network members was dichotomized, with 1 indicating ten or more members and 0 fewer than ten members. Satisfaction with social relations was measured by a ten-item subscale from Lehman's Quality of Life interview, which has satisfactory reliability and validity (30,31). Possible scores range from 0 to 70, with higher scores indicating more satisfaction with social relations (Cronbach's α=.89).

Supportiveness of the program's residential staff as perceived by participants was measured by an adapted version (29-item) of the Community Oriented Programs Environment Scale developed by Moos (32) to indicate the extent to which the consumer-staff relationship is considered to be respectful, spontaneous, consumer-oriented, and proactive on the part of the staff. Possible scores range from 0 to 29, with higher scores indicating a more supportive relationship with staff as perceived by the consumer (α=.88).

Housing environmental characteristics. To construct the measures of neighborhood distress and crime level, we extracted data from the 2000 Census data file on demographic, housing, and socioeconomic characteristics of 1,816 block groups in Philadelphia. A neighborhood distress score was derived by principal-components analysis reflecting the percentages in the block group with female-headed households with children under age six, households below 75% of the poverty line, vacant housing units, the unemployment rate for the block group, and households with public assistance income. From the same principal-components analysis, a crime factor score was derived, reflecting crimes against persons per 1,000 population and crimes against properties per 1,000 population.

Housing outcomes. On the basis of the discharge codes reported in the administrative data, two types of housing departure were distin-

guished. Positive departure referred to moving to a higher level of independence, including living alone or living with a spouse in other subsidized housing, living in unsubsidized market-rate rental housing, and living in privately owned housing. Negative departure referred to leaving supported independent living for less independent settings, including those requiring higher intensity of care and institutionalized settings, or for unstable living arrangements, including nursing homes, psychiatric hospitals, congregate mental health residential programs, drug or alcohol treatment facilities, jails, or return to the streets or homeless shelters. To qualify as having departed, study participants had to have left supported independent living for 90 days or longer. This definition precluded temporary moves to other housing settings that were followed by a return to supported independent living.

Creating the housing outcome variable required quantifying the length of time each participant stayed in supported independent living. For persons who departed, length of stay was computed as the difference between date of admission to supported independent living and date of discharge. For those who remained in supported independent living through the end of the study, length of stay was computed as the difference between date of admission and date at the end of the study, or 30 months after the interview date. To capture the three housing outcomes—two types of departure and remaining in the program—an indicator variable was constructed for each participant, coded 1 for a positive departure, 2 for a negative departure, and 0 if the participant remained in supported independent living throughout the study period.

Analysis

Data analysis included computation of descriptive statistics for all study variables. A Cox proportional hazards model was used to analyze the effects of predictor variables on the probability of departure, with control for sociodemographic and clinical characteristics, length of stay in the supported independent living program, and

housing preference. Different entry time was handled by including length of stay in the program before the interview as a covariate in the regression model. Because the study participants were nested within census block groups, robust sandwich estimation for the covariance matrix in SAS 9.1 was used to account for intrablock group correlation of outcomes. This particular option corrected for nonindependence within clusters (in this case, block groups) by specifying the COVSANDWICH (aggregate) statement in the procedure statement and then specifying the block group identifier variable as the level of aggregate in the model (33,34).

Results

Participant characteristics

As Table 1 shows, the mean age of study participants was 45. Women accounted for more than half of the sample (58%), and 60% of participants were African American. Most participants (71%) had a diagnosis of schizophrenia. The mean CSI and SF-12 scores were, respectively, 30.8 and 56.5. Nearly half (54%) reported a lifetime history of substance abuse. The mean income was $796.80 per month. About two-thirds of the sample (68%) listed ten persons or more in their social network. The average perceived satisfaction with social relations score was 49.9. The average score of perceived supportiveness of residential staff was 20.7. Of the 237 participants in the sample, 17% experienced a negative departure and 14% experienced a positive departure. Sixty-nine percent stayed in supported independent living continuously.

The mean neighborhood distress score was –.03, and the mean crime score was –.37. Because the factor scores were standardized with a mean of 0 and a standard deviation of 1, reflecting the city average, a score of less than zero indicates lower than average distress or crime level, and a score of greater than zero indicates higher than average distress or crime level.

Factors associated with departure

Table 2 displays results of the Cox proportional hazards model, indicated by conditional hazards ratios associated with predictor variables included in the regression model. Study participants who reported more income were more likely to experience a positive departure. The risk ratio of 2.60 for income indicates that for each unit increase in monthly income (logged), the probability of a positive departure increased by an estimated 160%. Neighborhood distress was inversely associated with a positive departure. For each unit increase in neighborhood social distress, the probability of a positive departure decreased by an estimated 56%. Substance abuse and perceived supportiveness of supported independent living staff were significant predictors of a negative departure. Specifically, the risk of negative departure for those who reported a past substance abuse problem was nearly twice that for those without a history. A greater level of perceived supportiveness of program staff was associated with a lower risk of negative departure.

Discussion

The overall rate of housing retention found in this study was high. However, it should be noted that the study sample comprised individuals who had long stays; most had participated in the supported independent living program for an average of four years before the interview. Only 12% of participants had been in the program for a year or less. Residents who left the program within six months of their admission were not included in the study. The findings also show that maintaining a stable and independent housing situation was a challenge for some residents. These residents could not sustain tenancy in supported independent living and eventually

Table 1

Characteristics of 237 participants in a supported independent living program

Variable	N	%
Control variable		
Age	45.0±8.6	
Male	98	41
African American	143	60
Schizophrenia	168	71
Psychiatric symptoms (mean±SD score)[a]	30.8±10.4	
Health status (mean±SD score)[b]	56.5±17.7	
Self-report of a past substance abuse problem	129	54
Preference for supported independent living	93	39
Previous length of stay in program housing (mean±SD days)	1,359±989	
Personal resources		
Monthly income (mean±SD $)	796.8±432.9	
>10 social network members	160	68
Satisfaction with social support (mean±SD score)[c]	49.9±10.5	
Perceived supportiveness of staff (mean±SD score)[d]	20.7±6.1	
Housing and environmental characteristic[e]		
Neighborhood distress	–.03±.80	
Crime level	–.37±1.1	
Housing outcome		
Positive departure	32	14
Negative departure	41	17
Continuous tenure	164	69

[a] 14 items of the Colorado Symptom Index. Possible scores range from 0 to 70, with higher scores indicating more severe psychiatric symptoms.

[b] 12-item Short-Form Health Survey. Possible scores range from 0 to 100, with higher scores indicating better health.

[c] 10-item subscale from Lehman's Quality of Life interview. Possible scores range from 0 to 70, with higher scores indicating more satisfaction with social support.

[d] Adapted from the Community Oriented Programs Environment Scale (32). Possible scores range from 0 to 29, with higher scores indicating the consumer's perception of a more supportive relationship with staff.

[e] Standardized with a mean of 0 and a standard deviation of 1, reflecting the city average. A score of less than zero indicates lower than average distress or crime level, and a score of greater than zero indicates higher than average distress or crime level.

made a transition to homeless shelters, institutions, or community residential settings that required a higher level of supervision and care. Nonetheless, one in eight participants moved to more independent housing.

The study identified several characteristics that predicted departure from supported independent living. Self-report of a past substance abuse problem was associated with an elevated risk of leaving the program for more dependent and potentially less stable living arrangements. Given the fact that all program applicants are admitted to housing only after they attain sobriety for six to 12 months, it is possible that a portion of residents who had past substance abuse problems had a recurrence at some point during their stay. Although our data did not allow us to ascertain which participants departed housing because of recurrent substance use problems, our finding highlights the importance of continuity of care in substance use treatment for residents with a history of substance abuse problems in order to avoid a negative housing outcome.

There has been much debate on whether abstinence from alcohol and illicit drugs should be mandated in housing programs for persons with serious mental illness. Proponents of the sobriety mandate believe that providing immediate access to independent housing without requiring sobriety enables residents to continue substance use and that residents with a past substance abuse problem may be motivated to stop using substances if continued access to housing is contingent on abstinence (35). The "housing first" approach, on the other hand, is based on the premise that provision of housing before treatment may facilitate recovery from substance abuse and lead to housing stability. The housing-first model adopts a "harm reduction approach" to substance use and provides permanent independent apartments without requiring treatment compliance (10). Research findings have not been conclusive regarding the benefits and risks of the two housing approaches. Although several studies have suggested that substance abuse is a strong predictor of negative housing

outcomes among persons with serious mental illness (2,4,6,36–38), others have found that persons with co-occurring disorders served by the housing-first model achieve superior residential outcomes without increased substance use (4,10,24,39). Few studies, however, have examined the mechanisms through which these two contrasting housing approaches enable residents with mental disorders to achieve residential stability. Although it is unclear which approach works best for whom (40), housing programs need to respond with individualized support services to meet the heterogeneous needs of consumers as they progress toward recovery from substance abuse.

An inverse relationship was found between a consumer's perceived supportiveness of residential staff and the likelihood of a negative departure. It is plausible that a trustful relationship with support staff may facilitate housing stability by ensuring continuous provision of supports, which is especially important in times of crisis and emergencies.

Having more income was associated with an increased likelihood of a

positive departure. Conversely, limited income may act as a barrier for residents to move on to living situations that require higher levels of financial independence, as in the case of market-rate housing. Given the fact that persons with serious mental illness have generally low and often fixed incomes, the significance of financial resources is not a surprising finding. Services that may augment personal income by facilitating access to education and employment opportunities may provide avenues for consumers to procure additional financial resources and reduce future financial difficulties, thereby increasing their opportunities to access more independent housing options.

The inverse relationship between neighborhood distress and a positive departure signals the importance of environmental factors in the likelihood of successful housing outcomes. Distressed conditions in the neighborhood surrounding a supported independent living residence may affect mental health outcomes of residents by exacerbating psychiatric symptoms, fostering a sense of social isolation, and increasing exposure to

Table 2

Cox proportional hazards ratios for predictors of departure type among 73 persons who left supported independent living[a]

Variable	Positive departure (N=32)	Negative departure (N=41)
Control variable		
Age	1.00	.97
Male (reference: female)	1.03	1.04
Race (reference: non–African American)	1.26	1.75
Psychiatric diagnosis (reference: not schizophrenia)	1.53	1.19
Psychiatric symptoms	1.02	.97
Health status	1.01	1.00
Self-reported past substance abuse problem (reference: no)	1.31	2.09*
Preference for supported independent living (reference: preference for a "different place")	1.05	1.71
Personal resources		
Monthly income (logged)	2.60**	.80
≥10 social network members (reference: <10)	2.19	1.67
Satisfaction with social support	1.04	.97
Perceived supportiveness of staff	.94	.95*
Housing and environmental characteristic		
Neighborhood distress	.44***	1.13
Crime level	.94	.80

*p<.05
**p<.01
***p<.001

illicit drug use (41–43). The principal implication for policy makers and service providers is that the environment of housing programs needs to be considered in service planning and development.

This study had several limitations that need to be addressed in future research. First, data on variables pertaining to personal resources were based on self-report, which is susceptible to bias. Second, although admission to supported independent living was based on a common set of eligibility criteria, there may be selection bias that was not captured in the analysis. For example, selection bias might exist if supported independent living residents with similar characteristics were more likely to be placed in the same housing environment. However, potential effects of differential selection were controlled for statistically by including sociodemographic and clinical characteristics and by using statistical modeling that corrected for clustering of residents in the same census block group. Third, the study focused on supported independent living programs in Philadelphia, which has a unique service context that may differ from those of similar housing programs in other communities. This includes a centralized gatekeeping system for assessing and placing program applicants and the availability of a variety of support from federal, state, and local governments in providing housing subsidies and support services to persons with psychiatric disabilities (44).

Moreover, our findings cannot be generalized to populations served by the housing-first model or independent housing programs that do not require sobriety before admission, given that extended sobriety is an eligibility criterion for supported independent living. Finally, it should be noted that findings were based on a sample of residents who consented to participate in the study. Thus caution is needed in generalizing the findings to the entire population of supported independent living residents. In addition, although inclusion in the study required residents to have a continuous six-month stay in supported independent living, a large portion of study participants had much longer stays. Although the analysis adjusted for length of stay in supported independent living before the interview, interpretation of our findings, strictly considered, should be limited to residents who had achieved residential stability for at least six months.

Conclusions

Because housing resources for persons with serious mental illness are limited, it is important for services planning and resource allocation to be able to predict who will be successful or unsuccessful in subsidized independent housing with support. This study makes a contribution to the knowledge base on housing for persons with psychiatric disabilities by identifying personal and environmental factors that may be modified to promote positive housing outcomes and reduce negative outcomes.

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