

## Decreasing Psychiatric Symptoms by Increasing Choice in Services for Adults with Histories of Homelessness

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Despite the increase in consumer-driven interventions for homeless and mentally ill individuals, there is little evidence that these programs enhance psychological outcomes. This study followed 197 homeless and mentally ill adults who were randomized into one of two conditions: a consumer-driven "Housing First" program or "treatment as usual" requiring psychiatric treatment and sobriety before housing. Proportion of time homeless, perceived choice, mastery, and psychiatric symptoms were measured at six time points. Results indicate a direct relationship between Housing First and decreased homelessness and increased perceived choice; the effect of choice on psychiatric symptoms was partially mediated by mastery. The strong and inverse relationship between perceived choice and psychiatric symptoms supports expansion of programs that increase consumer choice, thereby enhancing mastery and decreasing psychiatric symptoms.

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**KEY WORDS:** homelessness; treatment services; choice; psychiatric disabilities.

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The transition to and experience of homelessness alter the trajectory of an individual's life course (Goodman, Saxe, & Harvey, 1991; Milburn & D'Ercole, 1991; Muñoz, Vazquez, Bermejo, & Vazquez, 1999; Seeger, 1990). Basic needs such as shelter and safety are not met and one confronts an unpredictable and overwhelming system of social services. These experiences contribute to higher levels of stress among homeless and poor individuals compared to the general population (Felner, Farber, & Primavera, 1983; Thoits, 1982). Further, stressful life events have been demonstrated to have an even greater psychological impact on disadvantaged individuals (Thoits, 1982).

Indeed, individuals who call the streets their home experience higher rates of psychiatric disabili-

ties compared to the general population (Fischer & Breakey, 1991). Estimates range from 5 to 91% (Koegel, Burnam, & Farr, 1988; Toro & Wall, 1991), with most falling between 25% (Smith, North, & Spitznagel, 1992) and 33% (Lehman & Cordray, 1993). Lifetime prevalence rates for schizophrenia, bipolar disorder, and depression are more than twice as high among the homeless population compared to the domiciled population (Herman, Sussner, & Struening, 1998), although the prevalence rates may not increase with repeated episodes of homelessness (Goering, Tolomiczenko, Sheldon, Boydell, & Wasylenki, 2002). However, the overall incidence of psychiatric disorders among the homeless appears to be rising, at least in some areas of the country (North, Eylich, Pollio, & Spitznagel, 2004). Rates of suicidal ideations and suicide attempts are also high: in one sample of homeless participants, 66% of respondents reported suicidal ideations while 34% reported suicide attempts (Eynan et al., 2002).

One recent study concludes that, in the United States, there are approximately 110,000 chronically homeless individuals with serious mental illness (Culhane, Metraux, & Hadley, 2002). Although

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current initiatives have created needed housing units and social supports for chronic shelter users with psychiatric diagnoses, these efforts have reduced shelter needs for only a small fraction of the annual accommodation needs for this population, which was estimated at 24,143 in 1995 (Metraux, Marcus, & Culhane, 2003). Demand for shelter beds remains high: According to the New York City Coalition for the Homeless, the average daily census of homeless single adult men and women in the city shelter system was 8,867 in March, 2004. Further, approximately 50% of single adults involved in the city's shelter system are diagnosed with a chronic mental illness (National Coalition for the Homeless, online, retrieved May 11, 2004).

These prevalence rates confirm that mental illness is a serious issue that affects a substantial proportion of homeless individuals and suggest that successful intervention and prevention programs must address not only housing but also mental health needs. Some investigations of homelessness interventions are currently concerned with outcomes of the standard approach (the Continuum of Care) compared to alternative consumer choice-driven models, particularly with regard to their ability to reduce homelessness and aid recovery from psychiatric symptoms and substance abuse (e.g., Gulcur, Stefancic, Shinn, Tsemberis, & Fischer, 2003; Tsemberis, Gulcur, & Nakae, 2004). Alternative intervention models differ from standard care primarily in the amount of choice afforded to consumers in treatment and housing services.

### **Comparisons of Continuum of Care and Housing First**

The Continuum of Care is the homelessness intervention strategy recommended by the Department of Housing and Urban Development (U.S. Department of Housing and Urban Development, 1999), and, nationwide it is the standard practice for service delivery to homeless families and single adults, especially for those suffering from mental illness and/or substance abuse disorders. It is also the standard approach adopted by New York City (Bloomberg & Burden, 2004), where the present research was conducted. Two key characteristics of this approach are (1) the provider determines when a consumer is "housing ready," and (2) psychiatric and substance abuse treatment compliance are required. The typical adult consumer of homelessness inter-

vention services in a Continuum of Care model graduates through a series of stages, commonly progressing from (a) outreach, intake, and assessment, to (b) emergency shelter, (c) transitional housing, and then finally to (d) supportive and/or nonsupportive permanent housing, but only if the individual complies with prescribed treatment through "supportive services."

This model is built on two assumptions: (1) homeless adults need transitional and permanent housing in order to develop the daily living skills they either lost or never had, and (2) housing readiness depends on a period of sobriety and compliance with psychiatric treatment when deemed necessary. Indeed, this style of service delivery "has a strong normative orientation in which set pathways in and out of services are prescribed and adherence to behavioral norms are mandated for successfully maintaining [permanent housing]" (Shern et al., 2000, p. 1874). As consumers demonstrate compliance with prescribed treatment and sobriety, they graduate to less and less restrictive residences. At the end of the continuum lies the reward of a permanent place in a single-room occupancy residence or an independent apartment. Failure to comply at any level or relapse into using alcohol or drugs may incur a return to a more restrictive environment. Thus, the journey to independent living is long, complex, and frequently leads clients to drop out of the system to resume their "normal" lives, independently, on the streets (Howie the Harp, 1990).

Maintaining contact with consumers in a complex, fragmented, and often uncoordinated system of referrals and providers is one of the most enduring challenges that confronts practitioners of the Continuum of Care (Substance Abuse and Mental Health Services Administration [SAMHSA], 2003). Generally, adults with mental illness "may cycle in and out of hospitals, jails, shelters, and life on the streets at enormous costs to both themselves and their communities" (SAMHSA, p. 5; U.S. Department of Health and Human Services, 1994).

The cyclical character of consumers' connection with this form of service delivery is due, in part, to the realities of a far greater need for services than there are resources. However, consumer dissatisfaction and frustration with a system that provides what it *thinks* they need, rather than what they *say* they need (Owen, Rutherford, & Jones, 1996; Tanzman, 1993), contributes to disengagement from this form of service delivery (SAMHSA, 2003). Further, emergency shelters and transitional housing are often dirty,

dangerous, disempowering, and associated with a range of negative outcomes including negative affect and lowered independent functioning (McCarthy & Nelson, 1991; Nelson, Hall, & Walsh-Bowers, 1999).

Taken together, these characteristics of the Continuum of Care result in dissatisfaction and frustration with services that undermine consumers' autonomy, and is, in part, responsible for the birth of consumer movements that called for an increase in choice and control over treatment and after-care options for mentally ill individuals (Chamberlin & Rogers, 1990; Garfinkel & Dorian, 2000; Hogan & Carling, 1992).

One response to the call by consumers and consumer advocates for increased choice in service provision to homeless adults with psychiatric disabilities has been the development of new housing and social service models (Tsemberis, Moran, Shinn, Asmussen, & Shern, 2003). In New York City, this "Housing First" model differs from the standard Continuum of Care approach on a number of dimensions. Instead of requiring its clients to move through a continuum of services and residential patterns, Housing First clients are given immediate access to their own independent, scattered-site apartments. Further, Housing First clients are not required to be in psychiatric or substance use treatment in order to obtain housing. This model has only two requirements of its clients: that they (1) pay 30% of their income (usually SSI) toward their rent through participation in a money management program with their caseworker and (2) agree that staff can visit their apartment two times per month. Otherwise, the client determines the type and frequency of services, which includes 24-hour access, 7 days a week, to an Assertive Community Treatment (ACT) team. These policies are built on consumer choice and designed to empower Housing First clients by allowing them to determine the priority and order of the services they receive.

### **The Impact of Choice in Treatment and Housing Services**

The consumer movement has long claimed that treatment choice is a fundamental right that should be restored to consumers of mental health and homelessness intervention services, but researchers have only recently begun to systematically investigate the legitimacy of these claims and the effects of such programmatic changes on psychosocial and service utilization outcomes. One study demonstrated that

homeless and mentally ill respondents rated personal choice in community housing higher in importance than their caseworkers did (Massey & Wu, 1993), confirming consumers' beliefs that they and their providers disagree about who should make decisions regarding treatment and services. A multisite longitudinal study of 115 housing service recipients found that greater choice in housing options was positively associated with housing retention, happiness, and life satisfaction (Srebnik, Livingston, Gordon, & King, 1995).

Just how choice achieves these effects remains unclear. The idea that allowing consumers to immediately live independently and to have control over where they live, with whom they live, and who enters their home; to abstain from substance or alcohol use or not; to engage in psychiatric services or not; or to otherwise comply with treatment demands, actually *decreases* time spent homeless and psychiatric symptoms is antithetical to traditional intervention models. These models assume that consumers who are granted choices in services will exercise poor judgment, experience a *worsening* of their psychiatric symptoms, and prolong their time homeless.

We hypothesized, however, that individuals who have more choice in treatment will display *decreased* psychiatric symptoms in part because choice gives them a greater sense of control over their lives. Some indirect evidence for the link between services that enhance self-control and symptom improvement comes from studies of self-help groups. For example, high rates of participation in self-help have been associated with reductions in alcohol-related problems (Gonzalez & Rosenheck, 2002). Direct evidence from the field of stress and coping suggests that mastery, or personal control, is an important resource for dealing with life stressors (Badger, 2001; Blankertz, 2001; Kempen, Jelicic, & Ormel, 1997; Pearlin & Schooler, 1978). Following this line of reasoning, the Continuum of Care model, which limits consumers' choice, may actually exacerbate psychiatric symptoms among homeless and mentally ill consumers by limiting their opportunities to develop greater control.

### **Mastery and Psychological Outcomes**

In the literature on stress and coping, personal control has been conceptualized as mastery, or the "extent to which people see themselves as being in control of the forces that importantly affect their lives" (Pearlin, Menaghan, Lieberman, & Mullan,

1981, p. 340). Mastery is believed to be an important personal coping resource (Pearlin & Schooler, 1978). Low rates of mastery have been linked to decreased overall well-being (Rotter, 1966) as well as to hopelessness and passivity (Rosenfield, 1989). High rates of mastery, on the other hand, have been shown to boost mental health and functioning (Badger, 1993; Roberts, Dunkel, & Haug, 1994). Furthermore, mastery has also been linked to economic autonomy and empowerment (Rosenfield, 1992), all areas of health-related quality of life (Kempen et al., 1997), and the recovery process (Davidson & Strauss, 1997).

More recent research on individuals with psychiatric disabilities has demonstrated that mastery is connected to overall well-being through an indirect path, that is, mastery works its effects through a more proximal mood or state such as depression or self-esteem, which in turn affects individual well-being (Badger, 2001; Blankertz, 2001). Building on this research, which has demonstrated that mastery can improve psychological well-being, we suggest that mastery, or personal control, is a mechanism through which increased choice decreases psychiatric symptoms in the lives of mentally ill adults who have spent a portion of their lives homeless.

### The Present Research

While past research (Srebnik et al., 1995) suggests a link between choice in housing and psychological well-being, no previous research has demonstrated the effectiveness of service and housing choice in reducing psychiatric symptoms. The present research attempts to explore the association between perceived choice in treatment services and changes in psychiatric symptoms with a sample of 197 homeless and mentally ill adults.

As a component of the larger evaluation of the Housing First model, we tested a mediational model of the ameliorative effects of choice in treatment and housing services on psychiatric symptoms. In our previous work we reported a direct effect of Housing first on reductions in proportion of time spent homeless and increases in perceived choice in treatment and housing. (Gulcur et al., 2003; Tsemberis et al., 2003, 2004). Based on this finding, we expected that greater perceived choice would be associated with reduced psychiatric symptoms and that this direct relationship would be either partly or fully mediated by a positive relationship between mastery and psychiatric symptoms.

While previous research has demonstrated that consumer-driven models of homelessness intervention have an advantage over the Continuum of Care model in reducing homelessness and costs, this research makes a unique contribution by testing a model that proposes mechanisms through which consumer-driven interventions may not only reduce homelessness but also reduce psychiatric symptoms.

## METHOD

### Sample and Procedures

Eligibility requirements for the larger study were: (1) literal homelessness for at least 15 days out of the past 30 (living on the street or other public places not including shelters); (2) an unsteady housing history for the past 6 months; and (3) a major Axis I diagnosis. Participants were recruited over a 13-month period from 1997 to 1998 either directly from the street ( $n = 157$ ) or from a state psychiatric hospital ( $n = 68$ ). Individuals recruited from the street were either approached by a research interviewer and asked if they wanted to participate in a study examining housing patterns or were referred from an outreach agency. Participants recruited from the hospitals met the same entry requirements with the exception that the literal homelessness eligibility requirement was calculated for the time period immediately prior to hospitalization. Each participant recruited from the hospital was approached by his or her caseworker and asked to participate.<sup>5</sup>

The data reported here were collected from 197 (87.6%) of the original 225 participants using data from six assessments, from the 6-month through 36-month interviews. Most of these participants were men ( $n = 149$ , 75.6%), diagnosed with a psychotic disorder ( $n = 106$ , 53.8%), never married ( $n = 133$ , 67.5%), and childless ( $n = 109$ , 55.3%). Participants' ages ranged from 18 to 70 years, with a mean age of 42.0. The mean age of first homelessness was 29.6 (ranging from 5 to 64) and 31 participants (16.2%) reported they had been homeless before the age of 18.

After research interviewers explained the terms of the study, participants gave written informed

<sup>5</sup>This larger project examined the course of homelessness, service utilization, costs, alcohol and substance use, and residential stability among homeless and mentally ill adults in an urban environment. Results and implications can be read about elsewhere (Gulcur et al., 2003; Tsemberis et al., 2004).

consent and immediately completed a structured baseline interview lasting between 1 and 2 hours for which they received \$25. Following the baseline measure, participants were randomly and blindly assigned to the Housing First program (intervention/experimental group) or to the treatment as usual condition (control group). The control group was purposefully oversampled because the research team anticipated greater attrition from the control condition than the experimental condition. The 197 participants included in the analyses reported here were assigned to each condition as follows: 93 (47.2%) were assigned to the intervention and 104 (52.8%) were assigned to the control condition.

After randomization, participants in the experimental condition received contact information for the intake coordinator at the Housing First agency while control participants received contact information for two social service providers that followed the Continuum of Care model. At this point, the research team distanced itself from the admissions procedure and it was left to the providers and participants to coordinate the intake process.

Every 6 months following baseline, for a total of 36 months, participants completed a face-to-face interview for which they received \$25–50, depending on interview type (quantitative or qualitative) and length. Participant retention rates are among the highest in the field: 88% at 6-month, 87% at 12-month, 84% at 18-month, 78% at 24-month, 82% at 30-month, and 83% at 36-month. These rates represent the number of participants who completed the present relevant measures divided by 225, the total number of recruited participants. Follow-up techniques and strategies that aided retention are described in Stefancic, Schaefer-McDaniel, Davis, and Tsemberis (2004).

## Measures

### *Proportion of Time Homeless*

Residential information was collected at every time point using the Residential Follow-Back Calendar (New Hampshire Dartmouth Psychiatric Research Center, 1995). Interviewers first assessed participants' current living location and then worked backward, day by day, to the date of the last interview. Interviewers recorded all living locations and calculated the time spent in each location. Test-retest-reliability is high, with coefficients con-

sistently ranging from .80 to .91, as is concurrent validity, assessed by associations between agency and self-reports, with coefficients ranging from .84 to .92 (Tsemberis, McHugo, Williams, Hanrahan, & Stefancic, 2004).

Homelessness was defined as residing in a subway or bus, in a subway, train or bus station, in an abandoned building, in a car or any other vehicle, on the street or any outdoor or public place, in an emergency shelter, or in a drop-in center. Proportion of time spent homeless was calculated by dividing the number of days spent in a homeless location by the total number of days reported at the interview.

### *Choice*

The measure assessing perceived choice was modified from Srebnik et al. (1995) so that participants were asked to indicate their perceived level of choice for aspects of housing services such as choosing the place where they live or how they spend their day. Perceived choice was assessed at every interview starting at the 6-month interview until the final interview point.<sup>6</sup> This 16-item scale asked participants to rate their amount of choice on a 5-point Likert scale with answer choices ranging from “no choice at all” to “completely my choice.” Responses were then averaged for each participant. Internal consistency for the sample at the 6-month interview ( $n = 131$ ) was high ( $\alpha = .92$ ).

### *Mastery*

Mastery was assessed at every measured time period from baseline to 36 months using the instrument developed by Pearlin and Schooler (1978). This 7-item scale assessed how strongly participants agree with statements asserting feelings of self-mastery (i.e., “You have little control over the things that happen to you” and “There is really no way you can solve some of the problems you have”). Answer choices were coded on a 5-point Likert scale ranging from “strongly agree” to “strongly disagree.”

<sup>6</sup>At baseline, however, when all participants were homeless, this scale assessed how much choice participants would like to have in their housing and treatment. For each subsequent interview, participants reported how much choice they perceived they had in housing and treatment. Consequently, due to these differences in measurement, the baseline choice data could not be included in these analyses.

This instrument has robust psychometric properties (Pearlin & Schooler, 1978) and several studies have demonstrated its validity with homeless adults and those who have psychiatric diagnoses or disabilities (Badger, 2001; Blankertz, 2001; Marshall, Burnam, Koegel, Sullivan, & Benjamin, 1996; Ritchey, La Gory, & Mullis, 1991; Rosenfield, 1992; Shern et al., 2000). In this research, internal consistency coefficients were acceptable ranging from .71 to .73. Internal consistency with the present sample was the same ( $\alpha = .70$ ).

### *Psychiatric Symptoms*

The Colorado Symptom Index (CSI; Ciarolo, Edwards, Kiresuk, Newman, & Brown, 1981) was used to measure psychological well-being and functioning. Specifically, this 15-item instrument assessed the presence and frequency of psychiatric symptoms participants experienced within the past month (e.g., “How often have you felt nervous, tense, worried, frustrated, or afraid?”). Responses were coded on a 5-point Likert scale with answer choices ranging from “at least every day” to “not at all,” and were then recoded so that a higher score indicated a higher level of psychiatric symptomatology. The mean was calculated for each participant and served as the dependent variable for the present analysis. With a national sample of homeless persons, Conrad et al. (2001) assessed the validity and reliability of this measure. Positive correlations with the Brief Symptom Index provided evidence of content validity, the test–retest reliability coefficient was acceptable ( $r = .79$ ), and internal consistency was high ( $\alpha = .90$ ). This measure has been successfully used in previous research with homeless samples (Conrad et al., 2001; Lehman, Dixon, Kernan, DeForge, & Postrado, 1997). In the present sample, internal consistency was high ( $\alpha = .90$ ).

### **Data Analysis**

The traditional approach to the analysis of longitudinal data involves either repeated or multivariate measures analysis of variance. While certainly useful, traditional approaches to the analysis of data gathered over time (e.g., repeated measures analysis of variance) have both statistical and conceptual limitations. In the present context, the conceptual focus of repeated measures analysis of variance of any of the outcomes (e.g., psychiatric symptoms) is directed to a comparison of the *average* change in

the outcome for those in the Housing First (the intervention) condition compared to the Continuum of Care (the control) condition. The focus on average change ignores the possibility that individuals in both the intervention and control conditions may have changed over time at different rates. In the intervention group, for example, some individuals may have responded to the Housing First condition more rapidly than others. In the control group, some participants may have shown no change in the outcome, while the condition of others may have worsened. If there are individual differences in the rates at which the outcome varies over time, traditional repeated measures designs cannot test for these differences.

The preceding conceptual problem also translates into a statistical issue for repeated measures designs. The error term that is used in repeated measures analyses of variance is based on a very restrictive assumption about the nature of individual change over time. This assumption is referred to as compound symmetry, which essentially says that change over time for every research participant, is, within sampling error, exactly the same. In many longitudinal problems, this assumption may be violated.

Another statistical limitation of traditional repeated measures analyses of variance is the assumption that the design is balanced in the sense that every individual has an equal number of assessments (i.e. that there are no missing data). This requirement is also frequently violated in longitudinal research. Computer analyses of unbalanced repeated measures designs employ listwise deletion of cases with any missing data. The net result is that the effective sample size is frequently much smaller, thus compromising power.

It is for these reasons that the longitudinal data in this study were analyzed using a growth curve models approach (Moskowitz & Hershberger, 2002; Singer & Willett, 2003). Growth curve analyses are designed to understand group *and* individual rates of change in outcome variables over time. For example, in the present study, psychiatric symptoms was the primary outcome measure. As in traditional repeated measures analysis of variance, growth curve analysis allowed a test for differences in average levels of psychiatric symptoms for those in the Housing First condition compared to those in the control group. However, growth curve analysis also provided information on the extent to which there were individual differences in the rates at which psychiatric symptoms changed over time. Individual differences in the rates of change were compared to the average

rate of change for participants as a group. In addition, it was possible to study the covariation between baseline psychiatric symptoms and individual rates of change in symptomatology. The covariation allows one to ask, for example, whether psychiatric symptoms for participants whose baseline levels were high show slower or more rapid symptom change over time. If there are differences in individual rates of change over time, the explanatory variables are assessed to determine if they can account for these differences.

Growth curve analyses require the use of a mixed linear model approach, which is also referred to as random effects or hierarchic linear model (Moskowitz & Hershberger, 2002). Random effects models can be analyzed using standard computer programs such as the SAS procedure MIXED or specially designed packages such as HLM. They can also be analyzed using a latent growth curve approach with Structural Equation Modeling programs such as LISREL, EQS, AMOS, or MPLUS.

In addition to the ability to assess individual differences in rates of change, the statistical underpinning of these models employs a Maximum Likelihood approach to the estimation of the model's parameters. As a result individuals with missing data on the outcome are not eliminated from the analysis. Their data are used along with the data from participants who have provided data at all assessments under the assumption of ignorable missingness (Little & Rubin, 1987), which will be addressed below.

In the analysis of change over time, it is important to avoid confounding between-person with within-person variance on the explanatory variables (Kreft & De Leeuw, 1998) when investigating problems such as those addressed in this paper. Between-person variance is concerned with the effect of an explanatory variable on the outcome, ignoring time of assessment. In the present context, each person's mean score over the six assessments on the continuous variables homelessness, choice, and mastery were created to understand between person differences on any outcome. To capture the longitudinal effects of homelessness, choice, and mastery, a within-person variance score for each participant was created by calculating the deviation around his/her mean score for the six assessments. In this sense, the within-person variance score represents a time-varying covariate. Thus, in the analysis reported here, we investigated the longitudinal effects of both average (between subjects) and deviation (within

subjects) homelessness, choice, and mastery on CSI scores.

The SAS Mixed Procedure for repeated measures was used to test a growth curve mediation model in which the impact of the Housing First Intervention on psychiatric symptoms is mediated by perceived choice and mastery. A series of equations were tested for the outcome variable "psychiatric symptoms." The predictor variables were: (1) program assignment; (2) proportion of time homeless; (3) perceptions of choice in housing and treatment; and (4) personal mastery. Homelessness and choice were expected to have indirect effects on psychiatric symptoms through the direct effect of mastery.

If there is a mediational effect for homelessness and choice, the following relationships will be observed:

1. In separate models, program assignment, homelessness, choice, and mastery will each significantly predict psychiatric symptoms;
2. The significant relationships among program assignment, homelessness, and psychiatric symptoms will become nonsignificant when choice and mastery is added to the equation.

## RESULTS

### Descriptive Statistics

The racial/ethnic composition of the sample was diverse: 58 (29.4%) were Caucasian, 75 (38.1%) were African American, 27 (13.7%) were Hispanic/Latino, and the remaining 37 (18.8%) described their race as mixed or other. The average amount of time participants spent homeless during their lifetime prior to baseline was 6.64 years ( $SD = 7.36$ ), and the average length of longest single period of homelessness was 3.58 years ( $SD = 5.10$ ). Further, 162 (82.2%) respondents had lived in a shelter and 179 (93.2%) had stayed in a public place at least once in their lives because they had nowhere else to go. Despite the destitute character of the sample, 22 individuals (11.2%) reported being employed at the time of recruitment, the majority of whom were ( $n = 16$ , 72.7%) employed at a vocational program. Please refer to Table I for more detailed participant characteristics.

Descriptive information about variables used in the analyses is shown in Table II (homelessness, choice, mastery, and psychiatric symptoms). Values

**Table 1.** Participant Characteristics,  $N = 197$ 

Variable	<i>N</i>	%
Gender		
Male	149	75.6
Female	48	24.4
Study group		
Experimental	93	47.2
Control	104	52.8
Age (years)		
18–30	33	16.8
31–40	58	29.4
41–50	58	29.4
51–60	38	19.3
61–70	10	5.1
Education		
8th grade or less	21	10.7
Some high school	62	31.6
Completed high school/GED	48	24.5
Trade school	5	2.6
Some college	48	24.5
College/graduate degree	12	6.1
Marital status		
Married	8	4.1
Separated	16	8.2
Divorced	30	15.2
Widowed	9	4.6
Never married	133	67.9
Diagnosis		
Psychotic disorder	106	53.8
Depressive disorder	26	13.2
Bipolar disorder	26	13.2
Other	39	19.8
Race		
Caucasian	58	29.4
African American	75	38.1
Hispanic	27	13.7
Mixed/other	37	18.8
Times homeless:		
Once	59	31.2
Twice	31	16.4
Three to five times	62	32.8
More than five times	37	19.6

for CSI declined from 17.21 at the 6-month to 14.10 at the 36-month assessment. Interestingly, however, CSI scores increased at the fifth assessment period.<sup>7</sup> Values for mastery and consumer choice were essentially constant over the six assessments.

### Preliminary Analyses

Preliminary analyses indicated that the demographic variables age, race, gender, education, and

<sup>7</sup>In our attempt to understand this increase, we realized that 38% of the interviews for this assessment period were conducted in the 3-month period following the September 11, 2001 attacks on the World Trade Center.

marital status were uncorrelated with the predictor and outcome variables and were consequently excluded from further analyses.<sup>8</sup>

An initial model, in which time was the only explanatory variable, was then run to determine whether growth curve modeling would be an appropriate approach for predicting psychiatric symptoms. The results indicated a significant effect for time ( $F = 9.37, p < .002$ ). Depressive symptoms decreased over the six assessment periods, indicated by the negative parameter estimate for time ( $-0.46$ ). Significant differences in the intercept variance ( $Z = 7.33, p < .0001$ ) suggested that individual participants differed in their average baseline psychiatric symptoms compared to the group average (intercept = 17.76). That is, some participants reported more psychiatric symptoms compared with the group average, while others reported fewer psychiatric symptoms.

There were also significant differences in the rates at which participants' psychiatric symptoms changed over time ( $Z = 3.08, p < .001$ ). These significant slope differences suggest that decreases in psychiatric symptoms were more rapid for some participants than for others. Also, the intercept/slope covariance was significant ( $Z = -3.82, p < .0001$ ), which suggests that those who were initially higher had a slower decline in symptoms over time. These results suggested that a growth curve model would be an appropriate method for accounting psychiatric symptoms.

### Mediation Analyses: Direct Effects

The first steps in mediation analysis are to establish that the variable to be mediated is correlated with the outcome and with the hypothesized mediator (Baron & Kenny, 1986). This was accomplished in a series of models in which each of the predictor variables (program assignment, average homelessness, deviation homelessness, average choice, deviation choice, average mastery, and deviation mastery) were included with the time variable to predict psychiatric symptoms.

The first set of models examined the relationship of program assignment and time to the mediator and outcome variables. The Housing First condition was negatively related to proportion of time

<sup>8</sup>Missing data analysis on the full 48-month data set found no differences between completers and noncompleters (Stefancic et al., 2004).

**Table II.** Descriptive Statistics for Literal Homelessness, Choice, Mastery, and CSI

Measure	Time of assessment (months)											
	6		12		18		24		30		36	
	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )
Homelessness	197	0.29 (.38)	195	0.15 (.30)	187	0.16 (.32)	175	0.14 (.30)	184	0.15 (.31)	184	0.14 (.30)
Choice	165	3.37 (1.07)	172	3.34 (1.06)	175	3.36 (1.11)	175	3.44 (1.15)	168	3.42 (1.15)	171	3.40 (1.06)
Mastery	196	3.32 (.71)	190	3.32 (.70)	187	3.38 (.70)	175	3.46 (.72)	183	3.44 (.66)	183	3.44 (.65)
CSI	197	17.21 (12.41)	194	16.26 (11.77)	187	15.20 (10.78)	175	15.38 (12.22)	181	16.89 (11.09)	183	14.10 (10.52)

homeless ( $t = -7.68, p < .0001$ ) and positively with perceived choice ( $t = 5.70, p < .0001$ ). Program assignment did not, however, predict mastery ( $t < 1$ ) or psychiatric symptoms ( $t < 1$ ).

In the second model, time and the two homelessness variables were entered into an equation predicting psychiatric symptoms. Deviation homelessness was marginally significant ( $t = 1.77, p < .08$ ), but average homelessness was not ( $t = .108, p < .25$ ). The sign on the estimate for deviation homelessness (2.36) indicated a positive relationship between fluctuations in the proportion of time homeless and psychiatric symptoms over the six assessment periods. The marginally significant effect for deviation homelessness indicates that changes in homelessness over time have a longitudinal effect on psychiatric symptoms. A 20% increase in homelessness over time results in a 5-point increase in psychiatric symptoms. Conversely, a 20% decline in homelessness is associated with a 5-point decrease in psychiatric symptoms. Time continued to be a significant predictor ( $t = -2.58, p < .01$ ).

In the third model, time and the two choice variables were entered into an equation predicting psychiatric symptoms. Deviation choice significantly predicted psychiatric symptoms ( $-2.97, p < .003$ ) but average choice did not ( $t = -0.93, p < .36$ ). As was the case for deviation homelessness, the effects of choice on psychiatric symptoms can only be detected as changes in choice over time. A one standard deviation increase in choice over time for participants was associated with a psychiatric symptom score of 19.01 compared to a symptom score of 20.57 for those one standard deviation below the mean in choice over time. Time continued to be a significant predictor ( $t = -2.66, p < 0.008$ ).

The fourth model focused on mastery. In the initial model containing only time as a predictor, mastery increased significantly as a function of time ( $t = 2.87, p < .005$ ). Next the two choice variables were added. Average choice was significant ( $t = 3.82, p = .0002$ ) but deviation choice was not ( $t = 1.49, p < .14$ ). Higher average consumer choice is associated with greater mastery. Time continued to be a significant predictor ( $t = 2.70, p < .008$ ).

In the fifth model, time and the two mastery variables were entered into an equation predicting psychiatric symptoms. Both deviation mastery ( $t = -5.96, p < .0001$ ) and average mastery ( $t = -9.10, p < .0001$ ) significantly predicted psychiatric symptoms. Average mastery represents the average score for each participant across the six assessment periods

and is a measure of the between-participant effects of mastery on symptoms. The average psychiatric symptom score for those one standard deviation below the mean on mastery across the six assessments was 22.33 while for those one standard deviation above the mean, the average symptom score was 12.69. Mastery also had a longitudinal impact on symptoms as indicated by the significant effect for deviation mastery. Participants who reported a one unit increase in mastery over time had an average symptom score of 14.66 while those reporting a one unit decrease in mastery had an average symptom score of 20.46. Time continued to be a significant predictor of psychiatric symptoms ( $t = -9.10, p < .01$ ).

### Mediated Effects

A second series of models was run to test the hypotheses that choice and mastery mediated the effects of homelessness on psychiatric symptoms. First, to test whether choice mediates the effects of homelessness on psychiatric symptoms, the time, deviation choice, and deviation homelessness variables were entered together. (The nonsignificant variables, program assignment, average choice, and average homelessness, were removed from the equation.) If choice mediates the effects of homelessness on psychiatric symptoms, then homelessness would become nonsignificant when entered with choice (Baron & Kenny, 1986). This is what was observed. Deviation homelessness became nonsignificant ( $t < 1$ ), its effects on psychiatric symptoms fully mediated by choice ( $t = -2.87, p < .004$ ). The sign on the parameter was negative, indicating that greater deviation choice predicted fewer psychiatric symptoms. Time was also significant ( $t = -2.40, p < .02$ ).

Both mastery variables were added in the final equation (See Table III and Fig. 1).<sup>9</sup> If mastery fully mediates the effects of homelessness and choice on psychiatric symptoms, then homelessness and choice would become nonsignificant when mastery is added to the equation (Baron & Kenny, 1986). This occurred for homelessness ( $t = 1.17, p < .24$ ), but not for choice. Although the parameter estimate for choice decreased with the addition of the mastery variables, indicating partial mediation, significant

<sup>9</sup>Coefficients in Fig. 1 and Table III differ because Fig. 1 shows the coefficients for direct effects and the effect of controlling for a limited number of covariates, while Table III reflects the effect of controlling for the entire group of covariates.

**Table III.** Final Model Predicting Psychiatric Symptoms as a Function of Choice and Mastery

Covariance	Parameter estimate	Standard error	Z value	Probability
Intercept	90.75	15.43	5.88	<.0001
Intercept/slope	-6.00	2.42	-2.48	.01
Slope	0.79	0.48	1.63	.05

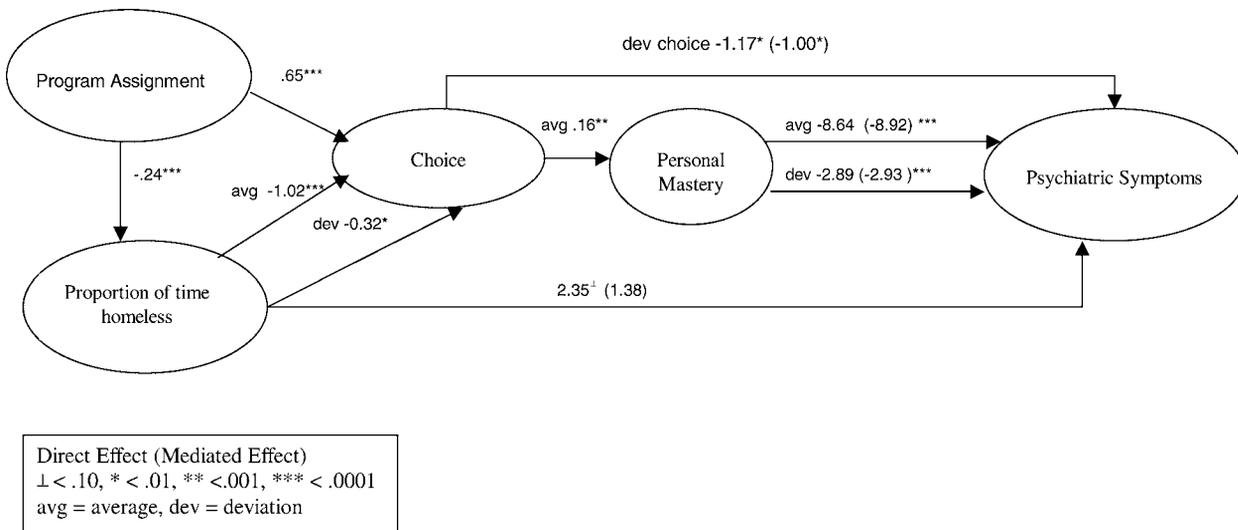
Tests of fixed effects					
Effect	Estimate	Standard error	df	t-value	Probability
Intercept	47.49	3.47	208	13.68***	.0001
Time	-0.29	0.15	792	-1.91	.06
Deviation homelessness	1.84	1.57	792	1.17	.24
Deviation choice	-1.01	0.37	792	-2.75**	.006
Deviation mastery	-2.93	0.50	792	-5.87***	.0001
Average mastery	-8.93	0.98	208	-9.07***	.0001

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

direct effects remained ( $t = -2.75, p < .006$ ). Both average mastery ( $t = 9.07, p < .0001$ ) and deviation mastery ( $t = -5.87, p < .0001$ ) also predicted psychiatric symptoms. The negative signs on the parameters (-8.93 and -2.93, respectively) indicated that the relationship was in the expected direction. The effect of time was reduced ( $t = -1.91, p < .06$ ), indicating that the effect of time on psychiatric symptoms is also partially mediated by mastery.

The magnitudes of the intercept, slope, and intercept-slope variances were reduced by the addition of the choice and mastery variables. In the original equation with time as the single predictor, the intercept variance decreased from  $Z = 7.33, p <$

.001 to  $Z = 5.88, p < .05$ , a 5.94% reduction, indicating that choice and mastery partially explain differences in individuals' baseline psychiatric symptoms. Slope variance was reduced from  $Z = 3.08, p < .001$  to  $Z = 1.63, p < .06$ , a 20.61% reduction. This decrease indicates that the addition of choice and mastery made a substantial contribution to understanding variation in the rate of change in psychiatric symptoms over time. Finally, the intercept/slope covariance decreased from  $Z = -3.82, p < .0001$  to  $Z = -2.48, p < .01$ , a 31.23% reduction, suggesting that differences in rate of change as a function of initial psychiatric levels are also partially explained by choice and mastery.



**Fig. 1.** Final path-analytic model: Direct effects of program assignment on proportion of time homeless and perceived choice; mediated effects of homelessness and choice on psychiatric symptoms.

## DISCUSSION

The present study compared participants in a randomized, controlled evaluation of the Housing First consumer-driven model on the effects of choice in housing and treatment services, mastery, and psychiatric symptoms. Our findings indicate that participants experienced a decrease in psychiatric symptoms over the six assessments reported here. Although program assignment was not associated with decreased psychiatric symptoms, Housing First was associated with smaller proportions of time homeless and greater perceived choice than was the Continuum of Care condition. Not surprisingly, the Housing First model is most strongly associated with changes in these types of structural outcomes, while, except for perceived choice in housing and treatment, its direct associations with psychological variables such as mastery and psychiatric symptoms have been more difficult to establish.

This is the most significant and substantial contribution of the present research to the literature on consumer choice-driven models of service delivery. This is the first to propose and test a mediational model of the mechanisms through which consumer-driven models of service delivery may not only improve material circumstances, but also psychological circumstances, namely personal control and psychiatric symptoms.

We assert that the results of the present study demonstrate that Housing First is a critical distal link in a chain of associations between structural and psychological outcomes. In a recent revision of the classic model of mediation articulated by Baron and Kenny (1986), Shrout and Bolger (2002) suggest that the failure to observe direct relationships between two theoretically related constructs might *not* invalidate claims to mediation. Specifically, when the relationship between two variables is distal, such that they occur far apart in time, or when there are multiple intermediary mediating variables (both measured and unmeasured), direct effects between the two variables are unlikely to be observed (Shrout & Bolger, 2002). This characterizes the relationship between program assignment and psychiatric symptoms, in which there are three intermediary mediating variables: proportion of time homeless, choice, and mastery, between the program assignment and psychiatric symptoms. However, there are substantial links between each of these variables, such that program assignment is strongly and directly linked to proportion of time homeless and perceived choice,

and perceived choice is strongly linked to mastery and to psychiatric symptoms. Finally, the link between homelessness and psychiatric symptoms is partially mediated by choice. These links form a chain of relationships between structural and psychological factors that, taken together, suggest that consumer choice-driven models of service delivery may not only have a direct effect on reductions in homelessness and increases in perceptions of choice, but may also have a distal effect on important psychological outcomes such as reductions in psychiatric symptoms.

The mediation model tested in this study was most clearly supported by the associations among homelessness, choice, mastery, and psychiatric symptoms. Perceived choice significantly accounted for the decrease in symptoms and was partially mediated by mastery (perceptions of personal control). Personal control is a cognitive resource previously demonstrated to reduce the negative consequences of a variety of stressors and to be associated with greater levels of psychological well-being (Badger, 2001; Blankertz, 2001). It is often construed as a dispositional characteristic that one may possess to a greater or lesser degree but the present research demonstrates that mastery can be enhanced or attenuated by situational factors.

Traditional models of service delivery are built on the assumption that poor choices have led consumers to their poor predicaments: homelessness, psychological disorganization, and so forth. The results of this study challenge these assumptions and suggest that, at least in part, a *lack* of personal control and choice, rather than too much of it is associated with the experience of psychiatric symptoms. Models that make housing contingent on relinquishment of control over daily living practices and preferences actually erode an important tool for coping with the very circumstances they are intended to redress. Programs that are designed to *restore* choice and enhance perceptions of personal control may actually be more successful in the reduction of psychiatric symptoms among this population.

Yet, the effects of choice were not fully mediated by mastery, suggesting that additional factors are unaccounted for by this model. Future research should identify additional processes through which choice works its effects on psychiatric symptoms. The role of coercion should also be considered: the absence of choice, or the experience of coercion, may actually exacerbate existing psychiatric symptoms by increasing frustrations with the

service delivery systems, by contributing to a decision to return to the stressors of the street rather than comply with treatment demands, or by inducing a feeling of helplessness from the inability to act autonomously.

Indeed, the qualitative component of our evaluation project indicates the many participants had left that many had left programs that demand abstinence and compliance with psychiatric treatment as contingent for housing. This does not mean, however, that participants in the Housing First condition refused to use psychiatric medications or used alcohol or illicit substances at higher rates. Indeed, our data indicate that participants in the experimental condition reported lower service utilization, while their rates of alcohol and drug use were not different from the control participants (Gulcur et al., 2003). The experience of being coerced into restrictive psychiatric settings or taking medications with seriously uncomfortable side effects is understandably aversive. Perhaps many chronically homeless individuals would experience greater recovery were they afforded the opportunity to refuse services or to direct the course of their own treatment. Indeed, this is one of the major thrusts of the recovery and harm reduction movements (Chamberlin, 1995).

In this analysis, we separated the homelessness, choice, and mastery variables into two components: between-person and within-person variances. Interestingly, for both homelessness and choice the within-person, but not between-person variance, was the significant predictor. We do not believe that between-person variance in either choice or housing has no impact on the experience of psychiatric symptoms. Rather, we believe the failure of between-person variance in these two variables to predict psychiatric symptoms may have been due to low variability.

Nevertheless, the finding that the crucial variables were fluctuations in individuals' proportion of time homeless and perceptions of choice in housing and treatment, but not mean differences between individuals over time, suggests that the mainstream emphasis on between-person differences is misplaced. It is only possible to detect this type of finding in designs like this one with repeated measurements over an extended period of time. Future research should investigate the relative contribution of both between and within variance, and identify factors associated with fluctuations, as well as average differences, among different populations.

In such longitudinal research, effort should be put toward identifying factors that can even out fluctuations in homelessness, choice, and mastery. Individuals experience many events, challenges, and opportunities that may increase perceptions of choice and personal control. Life events such as illness or relapse, death of friend or relative, or hospitalizations; programmatic factors such as obtaining or losing housing, or staff turnover; and environmental factors such as community integration may account for individuals' fluctuations in these factors. Additionally, exacerbation of psychiatric symptoms may reduce an individual's perceptions of both choice and mastery so that the relationship among the predictors and outcome is reciprocal rather than unidirectional.

The finding that perceived choice, but not program condition, was significantly associated with the mediator and outcome variables supports the notion that Housing First is not synonymous with treatment and service choice. While program condition was a strong predictor of perceived choice and perceived choice was a strong predictor of both mastery and psychiatric symptoms, program condition itself predicted neither mastery nor psychiatric symptoms. This suggests that clients of Continuum of Care services *may* perceive high choice, while clients of consumer-driven services *may* perceive low choice, and that while the Housing First model itself is responsible for important outcomes such as reductions in homelessness, decreases in service use and cost, the consumer's *subjective* experience of choice influences psychological outcomes such as mastery and psychiatric symptoms. Future research should identify the characteristics of both standard care and consumer-driven models that improve objective and perceived choice, as well as reduce objective and perceived coercion.

Although in the final model, in which proportion of time homeless, choice, mastery, and time predicted psychiatric symptoms, there were substantial decreases in variance in the intercepts, slopes, and intercept-slope covariance, each of these remained significant, indicating that much variance in individual differences in psychiatric symptoms remained unexplained. Psychiatric symptoms, of course, are not fully explainable by homelessness, choice, and mastery. Rather, psychiatric symptoms are rooted in a complex web of individual, biological, and social factors that have a substantial impact on their expression. Nevertheless, the finding that lower levels of psychiatric symptoms are associated with greater choice in treatment and housing choice, as well

as with mastery, suggest that the management of psychiatric symptoms, even among the most difficult to serve consumers of mental health services, may be achieved through the implementation of policies that *increase*, rather than reduce, consumer choice.

Indeed, the finding that the effect of choice continued to have an effect on psychiatric symptoms even after mastery was added to the equation has implications for both policy and for future research. Allowing individuals to have choice over how they live, and when and what kind of treatment services they receive is an important aspect of intervention planning. Policy makers and funders should encourage direct care providers to develop and implement policies that allow consumers to regain control over these important aspects of their lives. This is increasingly the case. For example, New York State recently awarded a contract for statewide ACT team training and development to the Housing First practitioners that are the subject of this article. But it has far from wide acceptance. Most policy makers and programs continue to be skeptical about the harm reduction approach rooted in consumer choice, one of the basic premises of the Housing First model. We believe these findings, along with those reported elsewhere, support the need to put consumer-driven philosophies into widespread practice.

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