

A Longitudinal Study of Predictors of Housing Stability, Housing Quality, and Mental Health Functioning Among Single Homeless Individuals Staying in Emergency Shelters

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Published online: 30 July 2016

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Abstract The current study examined risk and resilience factors at multiple levels that affect homeless individuals' ability to exit homelessness and achieve housing stability. It also examined the relationship between housing status, housing quality and mental health functioning. The methodology is a longitudinal study of single homeless individuals staying in emergency shelters in a medium-sized Canadian city who were followed for a 2 year period. Data were collected from participants at a baseline interview when they were homeless and at a 2-year follow-up. There were 329 participants interviewed at baseline and 197 (59.9%) participants interviewed at follow-up. Results from a structural equation modelling analysis found that having interpersonal and community resources were predictive of achieving housing stability. Specifically, having a larger social support network, access to subsidized housing, and greater income was related to achieving housing stability. On the other hand, having a substance use problem was a risk factor associated with a failure to achieving housing stability. Being female, feeling personally empowered, having housing that is perceived of being of higher quality were directly predictive of mental health functioning at follow-up. Findings are discussed in the context of previous research and their policy implications.

Keywords Homelessness · Resilience · Housing stability · Mental health

Introduction

Homelessness remains a significant and visible problem in cities in North America (Culhane, Metraux, Byrne, Stino, & Bainbridge, 2013; Gaetz, 2010) and across Europe (FEANSTA, 2012). Diverse factors ranging from individual characteristics to societal structures contribute to how and why individuals experience homelessness (Gaetz, 2010). Community psychology, as a perspective, with its interest in ecological models and consideration of multiple levels of analysis is particularly well-suited for guiding research on these matters.

The current longitudinal study is intended to identify factors facilitating or impeding emergency shelter users to exit homelessness and achieve housing stability by adopting a resilience model that considers both resources and risk factors at multiple levels (Luthar, Cicchetti & Becker, 2000; Masten, 2001). In particular, resources and risk factors available to individuals while homeless at the individual, interpersonal, and community levels are investigated. The relationship between housing stability and perceptions of housing quality to mental health functioning is also examined.

In line with the study focus, a brief review of findings from longitudinal research on individual, interpersonal, and community variables associated with exiting homelessness and achieving housing stability is presented next. The review focuses on those variables that can be considered resources or risk factors within a resilience framework. This review is followed by an examination of relevant studies examining the relationship between

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housing and health status. Finally, the introduction will present a heuristic model, developed from reviewed research, that guided the current study.

Factors Associated with Leaving Homelessness and Achieving Housing Stability

Several longitudinal studies have examined pathways out of homelessness and into housing stability. These studies have drawn on data collected in several locations in the United States, as well as in Australia, Canada, and the United Kingdom. They have shown that individual, interpersonal, and community factors that can be considered resources and risk factors are related to the course of homelessness, including the duration of homeless episodes, exits from homelessness, attainment of housing stability, and returns to homelessness.

Individual-Level Factors

Among individual factors, gender has consistently shown a relationship between becoming homeless and the time it takes to leave homelessness. In particular, women have a lower likelihood of experiencing homelessness than men (Johnson, Scutella, Tseng & Wood, 2015); moreover, women typically experience shorter episodes of homelessness than men, but may exit to less stable housing (Wong, Piliavin & Wright, 1998; Zlotnick, Robertson & Lahiff, 1999). Women with children experience shorter homeless episodes and achieve greater housing stability than single women (Wong et al., 1998; Zlotnick et al., 1999). As well, research has shown that having dependent children, regardless of gender, reduces the odds of becoming homeless (Johnson et al., 2015).

Personal disability has also been shown to play a role in the course of homelessness. However, the presence and severity of mental health difficulties have not been consistently related to becoming or exiting homelessness. For both men and women, Johnson et al. (2015) found that being diagnosed with bipolar or schizophrenia actually reduced the odds of becoming homeless. Schanzer, Dominguez, Shrout and Caton (2007) found no significant differences in rates of mental illness for individuals who remained homeless compared to those who attained housing. Similarly, Spicer, Smith, Conroy, Flatau and Burns (2015) reported no differences in the presence of mental illness (notably psychosis) between individuals who exited homelessness and individuals who stayed homeless. On the other hand, in an earlier study, Wong and Piliavin (1997) found that the presence of mental health difficulties was associated with longer periods of homelessness and a greater likelihood of returning to homelessness.

In contrast to the mixed findings concerning the presence of mental health problems, research has shown substance abuse problems to consistently be a risk factor for entering homelessness and contributing to longer periods of homelessness. Wong and Piliavin (1997) found the presence of substance abuse disorders among single women and alcohol abuse among women in families to be associated with longer episodes of homelessness. Similarly, having a substance abuse disorder was associated with unstable housing following homelessness (Zlotnick et al., 1999) and having a history of substance abuse treatment was associated with longer episodes of homelessness (Caton et al., 2005). In another study, engaging in daily crack use and daily heroin use were negatively associated with achieving housing stability (Palepu, Marshall, Lai, Wood & Kerr, 2010). In a qualitative study, McNaughton (2008) found that substance use was a key factor that precipitated and exacerbated homelessness among her respondents.

Interpersonal-Level Factors

Unsurprisingly, social support has been shown to be related to an individual's success in leaving homelessness. In particular, a higher level of family support was associated with shorter episodes of homelessness (Caton et al., 2005); access to support from family and friends increased the likelihood of exiting homelessness (Zlotnick, Tam & Robertson, 2003); greater perceived social support predicted being housed at a 2-year follow-up (Cohen, Ramirez, Teresi, Gallagher & Sokolovsky, 1997); and being in a partnered relationship was positively associated with achieving stable housing among injection drug users (Palepu et al., 2010). Anucha (2003) found that greater social support and greater satisfaction with one's living situation predicted housing stability.

Community-Level Factors

There is substantial evidence that community-level factors play the biggest role in influencing people's ability to exit homelessness, and to achieve housing stability. In particular, being recently or currently employed, having earned income, and participating in job training are associated with a shorter duration of homelessness (Caton et al., 2005; Wong & Piliavin, 1997). On the other hand, having a sparse or inconsistent work history is associated with returning to homelessness after having obtained housing (Piliavin, Wright, Mare & Westerfelt, 1996); however, Johnson et al. (2015) found that employment status did not predict a return to homelessness after obtaining housing. Qualitative results from Anucha's (2003) study revealed that participants viewed unemployment and underemployment as major challenges to achieving housing stability.

Receiving social benefits and accessing subsidized housing are perhaps the most significant community resources associated with leaving homelessness and achieving housing stability. Wong and Piliavin (1997) found that receipt of income support and housing subsidies were associated with reduced risk of returning to homelessness. Similarly, Zlotnick et al. (1999) found that receiving consistent income support benefits and subsidized housing were the strongest predictors of exits from homelessness. They found that women with children became re-housed more quickly than single men or single women, and were more likely than the other groups to receive income support and subsidized housing. The consistent finding that Housing First programs produce significantly better housing outcomes than standard care for individuals with severe mental illness is typically attributed to the fact that participants in Housing First programs receive a rent supplement (Aubry et al., 2016; Stergiopoulos et al., 2015; Tsemberis, 2010).

Relationship Between Housing and Health

Several studies have examined the link between becoming housed and changes in health and well-being among low-income or homeless populations. In a longitudinal study of individuals who started out homeless, Johnstone, Parsell, Jetten, Dingle and Walter (2015) found that individuals who remained homeless over a period of 12 months reported lower and decreasing levels of personal well-being, life satisfaction, and mood compared to those individuals who were successful in moving into housing.

In another study that examined changes in psychological distress for different groups of individuals after becoming housed, Wong (2002) found that the group, which was not diagnosed with mental health problems or addictions, experienced a significant reduction in distress symptoms after obtaining their own apartment. However, acquiring one's own apartment did not have the same effect of diminishing distress for individuals diagnosed with either serious mental illness or substance use problems. In contrast, Kertesz et al. (2005) found that over time, chronically or transitionally homeless individuals with addictions problems had poorer mental health functioning, but not poorer physical health functioning, than did individuals who were stably housed.

Other studies focused on changes in housing quality and its impact on health. In two studies conducted in the United Kingdom, it was found that improvements to participants' housing quality resulted in better mental health functioning over time compared to individuals living in housing that did not improve in quality (Bond, Egan, Kearns, Clark & Tannahill, 2012; Egan et al., 2013). Egan et al. (2013) did not find the same relationship for

physical health. In two other studies that focused on low-income women, improved housing quality was associated with decreased psychological distress (Evans, Wells, Chang & Saltzman, 2000; Wells & Harris, 2007).

The Current Study

Using a resilience perspective, an important goal for researchers in this area is to identify the factors that contribute to establishing housing stability. Resilience is defined as the achievement of positive outcomes when faced with a threat or severe adversity (Luthar et al., 2000; Masten, 2001). In our study, we theorized that resources and risk factors will be predictive of an emergency shelter user's ability to exit homelessness successfully and obtain stable housing.

Based on the research on resilience (Flynn, Ghazal, Legault, Vandermeulen & Petrick, 2004), we identified three types of resources that can contribute to exiting homelessness and achieving housing stability. The first type characterized as individual resources was defined as the internal capacity of individuals to take advantage of opportunities leading to positive adaptation based on previous experience. These individual resources were level of educational attainment and sense of empowerment. The second type defined as interpersonal resources, was defined as opportunities and resources available through interpersonal relationships and includes size of social network and satisfaction with social support. The third type identified as community resources, referred to different kinds of economic resources available to individuals in the community and specifically, entailed level of income and access to subsidized housing.

We predicted that greater access to individual, interpersonal, and community resources would be positively related to leaving homelessness and achieving housing stability. We also hypothesized that risk factors related to mental health functioning and substance use problems would play a role in an individual's capacity to overcome homelessness. In particular, we predicted that lower levels of mental health functioning and the presence of substance use problems would be negatively related to leaving homelessness. We were also interested in determining whether specific demographic characteristics are predictive of success in exiting homelessness, and thus we also examined the explanatory significance of sex and age as risk factors.

A secondary objective of the study was to examine whether achieving housing stability and living in housing perceived as being of higher quality are associated with better mental health functioning. The longitudinal design of the study provided an opportunity to study the relationship between changes in housing status and changes in

mental health functioning. We hypothesized that participants who were successful at leaving homelessness and becoming stably housed would experience better mental health. We also predicted that housing quality would be positively related to mental health functioning.

Overall, the exploratory study was intended to test a model based on resilience theory in a single city on emergency shelter users and contribute to our understanding of facilitators and impediments to becoming stably housed as well as investigate the association of housing stability and housing quality to mental health functioning. Figure 1 presents the heuristic model that guided our study, showing the hypothesized relationships between variables.

Methods

Data examined in this article originated in the Panel Study on Homelessness in Ottawa, Ontario, a longitudinal study made up of two sets of interviews conducted 2 years apart in a medium-sized Canadian city. The initial interviews were completed between October 2002 and October 2003. A second set of follow-up interviews took place approximately 2 years later, between October 2004 and August 2005. The primary goal of the longitudinal study was to identify predictive factors associated with individuals exiting homelessness and becoming stably housed. A secondary goal of the study was to examine the relationship between becoming housed after a period of homelessness and improvements in personal well-being. In the study, “homelessness” was defined as a situation in which an individual has no housing of his own and is staying in a temporary form of shelter.

Participants

The Panel Study’s full sample was made up of single individuals and individuals with dependent children using emergency shelters. Our analyses revealed that individuals with children had significantly higher levels of functioning and were almost all (97%) housed at the 2-year follow-up (Aubry, Klodawsky, Nemiroff, Birnie, & Bonetta, 2007). Therefore, given these differences in presentation and housing outcome of the two groups, we decided to focus the present study on single individuals.

Single individuals who were homeless and living in emergency shelters were recruited to represent each of the main subgroups of homelessness defined by sex and age, namely men, women, male youth, and female youth. The admission criterion of youth used by local youth shelters was adopted, so that youth were defined as adolescents between the ages of 16 and 19 years old. The sampling goal was to recruit 80 individuals in each of these subgroups using either quota sampling or population sampling depending on the group in question. We set the sample size at 80 for each subgroup in order to ensure that even with our expected attrition of 30–40%, we would still have a sufficiently large sample across the subgroups to conduct analyses such as structural equation modeling.

For quota sampling, shelter staff identified potential participants by using sampling guidelines to identify potential respondents based on the characteristics of that subgroup population as reflected in emergency shelter statistics (Aubry, Klodawsky, Hay, & Birnie, 2003). A quota sample of shelter users was used to select single men based on the distribution of length of stay of the population of residents in the men’s shelters in 2001.

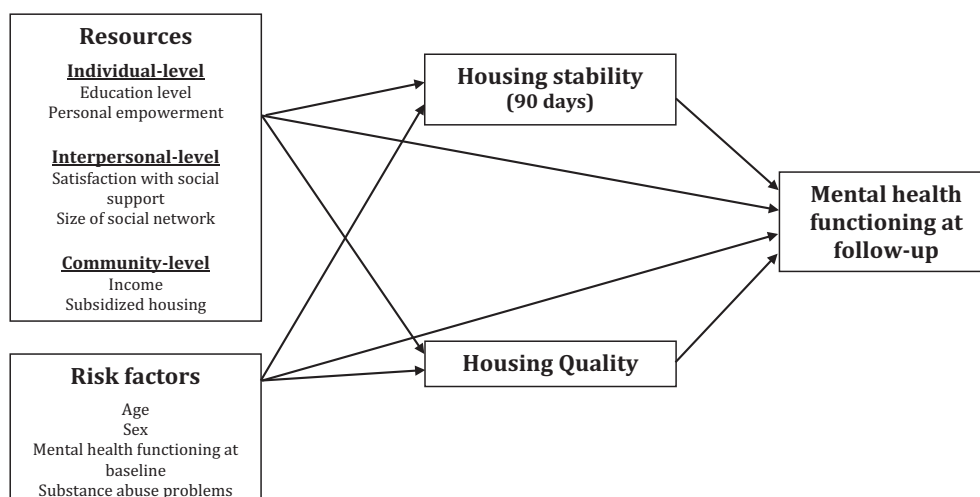


Fig. 1 Theoretical model for the study

Single men were drawn from three men's shelters with the number recruited from each shelter based on its size relative to the other two shelters. A final sample of 80 single men was targeted.

A quota sample was also used to select single women from a large women's emergency shelter, from five small shelters for women escaping domestic abuse, and from a residence providing temporary shelter for new immigrants. This sample was stratified according to citizenship (i.e., a target of 25% were non-Canadians) and length of stay based on the profile of residents staying at the largest women's shelter just prior to the launching the study. A final sample of 80 single women was targeted.

Population sampling was used for the youth subgroups such that all homeless youth met at two emergency youth shelters and at a drop-in center for homeless youth were invited to participate in the study. Recruitment from these different services was continued until the targeted sample size of 80 male youth and 80 female youth was reached.

A sample of 329 persons completed the initial interviews, comprised of 87 men, 85 women, 79 male youth, and 78 female youth. Follow-up interviews were conducted with 197 participants, representing a 59.9% follow-up rate. The follow-up sample, serving as the sample for the current study, was made up of 43 single men, 55 single women, 49 male youth, and 50 female youth.

Measures

Resources

Individual resources. Highest level of education—Participants' level of education was determined at baseline in their response to the question: "What is the highest level of schooling have you ever completed?" Each participant's response was converted into number of years of schooling.

Personal empowerment—The 15-item version of the measure of empowerment created by Rogers, Chamberlin, Ellison and Crean (1997) was administered in the current study to assess the degree respondents felt in control of their life situation at baseline. Examples of items on the scale are "I generally accomplish what I set out to do" and "People are limited only by what they think possible." Response alternatives ranged from 1 (*Strongly Disagree*) to 4 (*Strongly Agree*). Total scores on the 15-item version can range from 15 to 60. The baseline measure of empowerment was used in the current study. The internal reliability for the scale at baseline was adequate (Cronbach's $\alpha = .68$).

Interpersonal resources. Size of social network and satisfaction with social support—Two 5-item sub-scales

of the Social Support Questionnaire (SSQ) (Sarason, Levine, Basham & Sarason, 1983) were used to measure the size and the satisfaction with social support at baseline. The first sub-scale measures the size of an individual's social network by asking them to list individuals who provide them with five different types of support. For satisfaction with social support, respondents are subsequently asked to rate their satisfaction with each type of support on a 6-point scale, ranging from 1 (*Very Dissatisfied*) to 6 (*Very Satisfied*). A sample item from the SSQ is, "Whom can you count on to console you when you are very upset?" A mean rating is then calculated to determine the total score (range: 1–6) with high scores indicating higher levels of satisfaction. Test–retest reliability for the full 27-item satisfaction with social support scale over a period of 1 month has been shown to be high ($r = .83$) (Sarason et al., 1983). For the current sample, internal consistency of the 5-item version of the social support satisfaction scale was found to be high, (Cronbach's $\alpha = .81$).

Community resources. Income—The Housing Income and Services Timeline (HIST) (Toro et al., 1997) was used to query about the housing, employment, and income history of participants between interviews. Starting with where they lived at the baseline interview, participants were asked to systematically recount where they lived right up to the follow-up interview. Specifically, for the HIST they were asked the address of each residence, what type of housing it was, their major sources of income while living there (i.e., financial assistance, employment, other), and the amount of their income. Previous research has shown the HIST to have good test–retest reliability (Toro et al., 1995).

Access to subsidized housing—Access to subsidized housing was assessed through the HIST (Toro et al., 1997) administered at the follow-up interview. Participants were asked, "What type of housing was it?" for each address they reported. If participants reported living in subsidized or social housing at any address listed at Time 2, they were considered to have accessed subsidized housing. In addition, the addresses of housing in which all participants lived were compared to a current listing provided by the City of Ottawa of social housing addresses in which rent was subsidized. Finally, participants who responded "yes" to either of the following questions about their current housing at Time 2 were considered to have accessed subsidized housing: (1) Do you know whether the place you are living in now is social housing? (2) Is the rent for your current housing subsidized? Access to subsidized housing was a dichotomous variable (i.e., *Access* = 1; *No Access* = 0) based on whether participants accessed subsidized housing at any time over the follow-up period.

Risk Factors

Mental health functioning. The SF-36 was used to assess the mental health functioning of participants (Ware & Kosinski, 2001). Mental health functioning is queried in the SF-36 through a series of items that assess for the presence of mental health problems and the extent that these problems limit daily activities. Responses to these items are used to derive a Mental Components Summary (MCS) score for each respondent. For the MCS score, the total raw score on included items are transformed to a normative score based on the distribution of scores on the MCS within the 1998 U.S. general population with the mean set at 50 and the standard deviation set at 10 (Ware & Kosinski, 2001). Both the internal consistency and the test–retest reliability of the MCS has been shown to be good to excellent in studies of populations in 10 countries including the U.S. and U.K. (Ware & Kosinski, 2001). The MCS has also been found to discriminate between groups known to differ in psychiatric conditions. For the present study, the items making up the SF-36 were found to have a Cronbach's alpha of .88.

Substance use problems. The CAGE questionnaire (Chan, Pristach & Welte, 1994) was used to assess the extent of respondents' alcohol use. The CAGE asks respondents a series of four questions about their alcohol consumption (e.g., "Have you ever felt you ought to cut down on your drinking?" and "Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover [eye opener]?"). Possible responses are either "Yes" (1) or "No" (0). Total CAGE scores can range from 0 to 4. The CAGE's sensitivity (its ability to identify the presence of alcohol use problems) has been found to range from 61% to 100% depending on the population, while its specificity (its ability to identify non-presence of alcohol use problem) ranges from 77% to 96% (Cherpitel, 1997). An internal reliability analysis of the measure conducted on data in the present study found a Cronbach's alpha of .77.

The Drug Abuse Screening Test ([DAST] Skinner, 1982) was used to measure participants' drug use. The DAST asks a series of 20 questions about substance use, such as "Have you used drugs other than those required for medical reasons?" and "Have you been involved in a treatment program specifically related to drug use?" Potential responses to each question are either "Yes" (1) or "No" (0). A score of 6 or higher on the DAST is considered indicative of a drug use problem (Skinner, 1982). The DAST has been shown to have excellent psychometric properties including a high internal reliability and good concurrent validity (Cocco & Carey, 1998). Internal reliability analysis of the DAST in the current study found a Cronbach's alpha of .93.

For the current study, a dichotomous variable was created with the presence of a substance use problem (alcohol use problem and/or drug use problem) coded "1" and no substance use problem coded "0".

Housing Stability at Follow-Up

As mentioned above, the HIST (Toro et al., 1997) queried participants about their housing history of participants between interviews, including their housing status at the point of the follow-up. Whether or not a participant has exited from homelessness was operationalized as a dichotomous variable: (1) *Housed* - living in a house, apartment, or room considered one's own (i.e., for which one pays rent) other than a health, correctional institution, transitional housing, or group home at the follow-up interview for a period of at least 90 days; or (2) *Homeless* - not having been housed for 90 or more days at the follow-up interview.

Perceived Quality of Housing

A six-item housing quality scale (Toro et al., 1997) for housed respondents was used at the time of the follow-up interview. Respondents were asked about the comfort, safety, spaciousness, privacy, friendliness, and overall quality of their housing. For example, an item asked "How would rate (where you are currently living) in terms of comfort?" For each item, response alternatives ranged from "Very Bad" (scored as 1) to "Very Good" (scored as 7). A mean score on the six items was calculated. The internal reliability for the measure in the study was good (Cronbach's alpha = .85).

Data Collection

Initial interviews were conducted by a group of 11 trained individuals who were either graduate students in a social science discipline or experienced in interviewing and/or working with people who are homeless (Aubry et al., 2003). To ensure confidentiality, the interviews took place in a private area within shelters or drop-in centers. The majority of interviews ($n = 299$) was conducted in English, while 26 were done in French. The remaining four interviews were assisted by interpreters from a cultural interpretation service, and these were done in Arabic, Lingala, Russian, and Ukrainian. For certain questions (such as those with a range of possible answers), interviewers used response cards to assist participants. The average interview length was 81 min. Participants were paid \$10 for the first interview.

Tracking procedures were developed 1 year after the first interviews took place and involved an attempt to

re-contact all participants. At the initial interview, all participants were asked to provide their consent to access their telephone number and address at a later date through the City of Ottawa's Employment and Financial Assistance Branch (EFAB). The City's EFAB kept a computerized, up-to-date record of individual addresses and telephone numbers for all city residents receiving provincial financial assistance (i.e., welfare or disability pension). Respondents were also asked to grant permission to contact family members, friends, and service providers such as shelter and drop-in staff who would be likely to know their whereabouts.

Follow-up interviews were conducted in the same manner and by the same types of experienced interviewers as was the case for the initial interviews. To ensure confidentiality, interviews were conducted in a secure and private location near the participant's residence. A number of phone interviews ($n = 26$) were also conducted in order to accommodate participants who were residing outside the region. The majority of the follow-up interviews were conducted in English (188). Eight interviews were conducted in French. One interview was conducted in Arabic with the services of cultural interpreter. The average length of follow-up interviews was 84 min. Phone interviews were on average 10–20 min longer than in-person interviews. Participants were paid \$20 for the second interview. The methodology used in the study was approved by the Research Ethics Board at the senior author's university.

Analysis

We performed descriptive analysis of the sample with IBM SPSS Statistics 22.

To evaluate the overall model fit, we used indices including chi-square test (chi squared, reported as CMIN in AMOS), the Comparative Fit Index (CFI), the normed fit index (NFI), the Root Mean Square Error of Approximation (RMSEA), and the CMIN/DF ratio (Bentler, 1990; Browne & Cudeck, 1993).

We used conventional cut-off criteria for fit indexes. Non-significant chi-squared values and CFI, and NFI, values $>.9$ indicate a good model fit (Kline, 1998). For RMSEA, a value between .05 and .08 indicates a reasonable model fit (Browne & Cudeck, 1993). For the CMIN/DF ratio, a value below three indicates a good model fit (Browne & Cudeck, 1993).

Structural equation modeling (SEM) was conducted to examine hypothesized relationships of resources and risk factors with housing stability and housing quality, and of housing stability and housing quality with mental health functioning at follow-up.

We tested the proposed structural model in which housing and quality of housing were hypothesized to

mediate the relationship between risk factors and resources and mental health using SPSS AMOS 19.0 statistical software. As our sample size is <200 (Kline, 2011), we performed Bootstrapping $\times 1000$ samples (Mackinnon, Lockwood & Williams, 2004), a non-parametric procedure that involves repeatedly sampling the dataset.

Results

Sample Characteristics

Characteristics of the study sample are presented in Table 1. A comparison of the respondents who participated in the 24-month follow-up interviews with non-respondents found the two groups to be similar on all demographic and housing history characteristics collected in the initial interview with the exception of length of residency. Follow-up respondents, as a group, had lived in the city longer than non-respondents.

Model Goodness of Fit

The chi-squared associated with the proposed model was not significant, ($p = .19$), suggesting that the proposed

Table 1 Characteristics of the sample

Variable	%	Mean	SD	Range
Age at baseline		28.28	13.22	15–62
Sex (women)	53.30			
Mental health at baseline		36.31	12.51	6.72–63.75
Substance use problem (yes)	60.00			
Education level at baseline				
High school not completed	68.37			
High school	20.41			
College or other (less than university)	8.16			
University	3.06			
Personal empowerment at baseline		40.55	5.17	26–55
Satisfaction with social support at baseline		11.17	5.69	5–30
Size of social support network at baseline		14.16	9.77	0–30
Current monthly income at 24 months		692.76	631.66	0–3840
Subsidized housing over the 2-year period	16.58			
Housing stability at 24 months (>90 days)	71.57			
Housing quality at 24 months		5.30	1.25	2–7
Mental health at 24-month follow-up		40.57	13.58	3.25–66.15

model was consistent with the observed data. The indices used showed a good model fit to the data: CFI = .996; NFI = .992; RMSEA = .058 and CMIN/DF = 1.66.

Direct Effects

As shown in Table 2 and presented in Figure 2, many direct effects hypothesized in our model were significant.

Housing stability. Resources at the interpersonal and community levels were found to be predictive of housing stability in the model. Specifically, having a larger social support network ($\beta = .15$, 95% CI = .03; .26), a higher level of income, and access to subsidized housing ($\beta = .18$, 95% CI = .08; .27) were related to housing stability at follow-up. Among risk factors, the presence of substance use problems was associated with housing instability ($\beta = -.15$, 95% CI = $-.26$; $-.03$).

Housing quality. Being older ($\beta = .21$, 95% CI = .04; .37) and having substance use problems ($\beta = .14$, 95% CI = .03; .28) predicted a better perceived housing quality.

Mental health functioning. A higher level of personal empowerment ($\beta = .17$, 95% CI = .05; .28) and perceived better housing quality ($\beta = .14$, 95% CI = .04; .25) predicted a higher level of mental health functioning at follow-up. As well, being a woman ($\beta = -.17$, 95% CI = $-.30$; $-.07$) and the presence of substance abuse

problems ($\beta = -.19$, 95% CI = $-.29$; $-.07$) predicted a lower level of mental health functioning at follow-up.

Indirect Effects

SEM results also showed two indirect effects that were significant, namely older age \rightarrow better perceived housing quality \rightarrow a higher level of mental health functioning at follow-up ($p = .02$) and the presence of substance use problems \rightarrow better perceived housing quality \rightarrow better mental health at follow-up ($p = .02$) suggesting a mediation of the effect of age and substance use problems on mental health functioning through housing quality.

Discussion

Based on a resilience model, this study examined resources and risk factors related to an emergency shelter user's ability to exit homelessness successfully and obtain stable housing. It also examined whether overcoming homelessness and perceived housing quality were associated with better mental health functioning.

Results demonstrated resources at the interpersonal and community levels, and the absence of the risk factor of having a substance use problems as being predictive of achieving housing stability. As well, being female, not having a substance use problem, feeling personally empowered, and having housing in good quality were directly predictive of better mental health functioning at follow-up. Also, findings showed older age and the presence of substance use problems to be related to better perceived housing quality. In turn, better perceived housing quality is associated with better mental health functioning.

Housing Stability

Resources

Individual-level. Educational level at baseline was not predictive of housing stability at follow-up. The low level of education attained by a large majority of participants, with 89% having a high school education or less may play a role in the lack of a relationship between level of education and housing stability. In other words, educational level is not a resource for the large majority of participants.

Feeling personally empowered was also not a significant predictor of housing stability in the model. This finding suggests that individual empowerment on its own is insufficient as an individual resource for assisting emergency shelter users who are homeless to become stably housed. However, having a greater feeling of empowerment at baseline was associated with a higher level of mental health

Table 2 Standardized coefficients of the theoretical model

Parameters	Housing stability		Housing quality		Mental health functioning at FU	
	β	p	β	p	β	p
Individual resources						
Education level	-.03	.75	-.08	.39	.04	.76
Personal empowerment	.16	.05	.03	.72	.17	.02*
Interpersonal resources						
Satisfaction with social support	.02	.78	-.02	.75	-.14	.17
Size of social support network	.15	.03*	.12	.24	-.10	.39
Community resources						
Current income	.16	.02*	.11	.07	-.02	.78
Subsidized housing	.18	.01**	-.01	.90	.01	.90
Risk factors						
Age	-.18	.06	.21	.04*	-.07	.54
Sex	.13	.07	.13	.11	-.17	.03*
Mental health at baseline	-.07	.40	.16	.09	.10	.19
Substance use problem	-.15	.03*	.14	.03*	-.19	.01*
Housing quality	n/a		n/a		.14	.02*
Housing stability	n/a		n/a		.03	.66

* $p < .05$, ** $p < .01$.

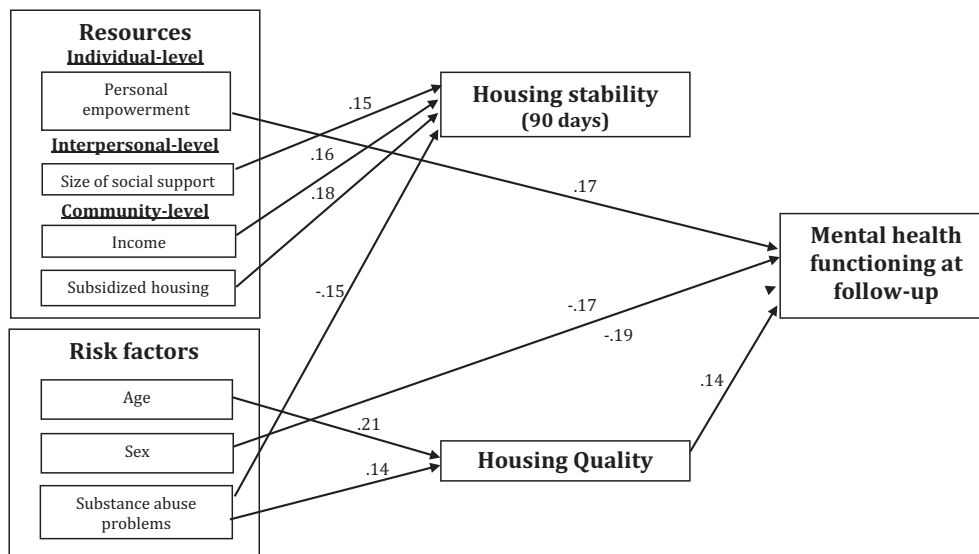


Fig. 2 Statistically significant relationships between variables in the tested model

functioning at follow-up. Previous research has shown a relationship between experiencing a sense of mastery and the severity of mental health symptoms among people with severe mental illness receiving services from Housing First programs (Greenwood, Schaefer-McDaniel, Winkel & Tsemberis, 2005). Other research has shown that higher levels of personal control and empowerment are related to better coping with stressors (Blankertz, 2001) and higher levels of quality of life (Rogers et al., 1997) among people with severe mental illness.

Interpersonal-level. Having a larger social network was associated with achieving housing stability in the current study. Previous longitudinal research has also found social support from family and friends (Anucha, 2003; Caton et al., 2005; Cohen et al., 1997; Zlotnick et al., 2003) and support from service providers (Patterson, Currie, Rezansoff & Somers, 2015) to be an important resource that contributes to leaving homelessness. The results in the current study indicate that the size of the network, as opposed to subjective quality of the social support, plays a role in successfully exiting homelessness. It could be that having a larger network allows homeless individuals to acquire a diverse array of supports (e.g., connections to services, information about housing opportunities, encouragement to become housed) needed to exit homelessness. Exiting homelessness could be related to the cumulative impact of accessing these supports.

Community-level. Our study findings highlight the critical role played by having access to subsidized housing and a greater income to achieve housing stability. These findings are consistent with previous research (Wong & Piliavin, 2001; Zlotnick et al., 1999). The

interpretation of the relationship between having economic resources, whether in the form of having higher income or subsidized housing, and success in exiting homelessness is straightforward, namely having greater economic resources facilitates being able to access housing when homeless and decreases the risk of losing it once housed because of an inability to pay the rent. Greater economic resources also allow an individual to live in better housing, which can also be expected to contribute to housing stability.

The significance of economic factors as predictors of housing status emphasize the importance of developing social policies that address extreme poverty by assisting people to be able to afford housing. One such intervention recognizing the critical importance of financial supports is Housing First (Tsemberis, 2010). Within this model, homeless individuals with serious mental illness are provided rent subsidies, so that they do not spend more than 30% of their income on rent. This financial commitment has contributed to the successful housing retention rates of consumers of Housing First (Aubry et al., 2016; Stefancic & Tsemberis, 2007; Stergiopoulos et al., 2015; Tsemberis & Eisenberg, 2000).

Risk Factors

As predicted, the presence of substance use problems was a risk factor for continued homelessness as it predicted a lower level of housing stability. Problematic substance use has been well established as negatively impacting housing retention. Substance use has been associated with longer episodes of homelessness (Caton et al., 2005; Wong & Piliavin, 1997), unstable housing following homelessness

(Zlotnick et al., 1999), and a precipitating factor for becoming homeless (McNaughton, 2008). Problematic substance use remains a challenge for homeless individuals who acquire housing, as many individuals report substance use as a means to cope with the challenges that becoming housed brings about (Patterson et al., 2015). Thus, continued and sustained efforts should be made to address substance use problems among homeless and newly housed individuals.

Mental Health Functioning at Follow-up

Housing Stability

Surprisingly, achieving housing stability was not a predictor of mental health at follow-up. This finding runs counter to some previous research which shows decreases in distress for people who are homeless once they become housed (Wong & Piliavin, 2001). However, it is in line with other research comparing homeless individuals who acquired housing to those that remained homeless (Spicer et al., 2015) as well as the research conducted on Housing First which shows mixed results regarding improvements in the severity of mental health symptoms being associated with becoming housed (Aubry et al., 2016).

There are a few possible interpretations of this finding. Insufficient time in housing may explain the absence of a relationship between housing status at follow-up and improvement in mental health. Homelessness is a traumatic experience (Goodman, Saxe & Harvey, 1991) and experiencing homelessness is related to higher levels of psychiatric distress (Castellow, Kloos & Townley, 2015). Therefore, it may require a longer period of time housed before normal mental health functioning of individuals is recovered. A large proportion of individuals in the current study experienced multiple moves between the two interviews (Aubry, Klodawsky, & Coulombe, 2012).

Also, a large proportion of individuals in the study reported having previously been diagnosed with mental health problems as well as being assessed with substance use problems (Aubry et al., 2012). These individuals may continue to experience continued high levels of distress associated with these difficulties despite being re-housed. Previous research has shown that higher levels of distress can remain unchanged for people diagnosed with mental illness or substance use problems even subsequent to exiting homelessness (Wong, 2002).

Housing Quality

Ultimately, housing quality appears to be more important in our findings than housing stability. Perceived better

quality of housing at follow-up is associated with higher levels of mental health functioning. These results are not surprising, as when housing quality is improved, research has demonstrated that it can lead to decreases in psychological distress (Evans et al., 2000; Wells & Harris, 2007) and improvements in psychological health (Evans et al., 2000). The stress of living in unsafe, poorly maintained, or crowded conditions may negate any benefits associated with being housed (Dunn, 2002).

Housing quality also served as a mediating variable in the model for the relationship between age and mental health functioning, and between substance use problems and mental health functioning. Being older and having substance use problems predicted greater housing quality which in turn predicted better mental health functioning. It makes intuitive sense that housing quality would be a mediating variable between age and mental health functioning. Housing or assistance to find housing may also be more available for older people.

The mediating relationship of housing quality between the presence of substance use problems and mental health functioning is less clear. One possible explanation is that some participants with substance use problems were assisted because of their difficulties to access better quality housing. Moreover, it suggests that living in good quality housing contributes to better mental health functioning even in the presence of substance abuse problems.

Limitations

Our study has a number of limitations that need to be taken into account in interpreting the findings. The sample in the study is not representative of the homeless population of single individuals in the city in which it was conducted. We purposely sampled relatively equal subgroups based on sex and age and using emergency shelters. It is also likely that individuals with more severe difficulties were less likely to participate in the study because of the demands being a participant. We relied on shelter staff to find participants in the single adult subgroup who matched specific characteristics. This process has the potential to introduce some bias toward sampling higher functioning individuals. There were also refusals by some of the individuals invited to participate. It is also important to note that our sample did not include single homeless adults who were living on the street or temporarily living with friends or family.

A related limitation is the fact that the study was conducted in one Canadian city providing an initial test of a model for understanding how resources and risk factors contribute to becoming stably housed. It remains to be seen if our findings supporting the model are generalizable to other cities in North America and in Europe.

Another limitation is the level of attrition in the study, as 38% of the original participants were lost at follow-up. There were no differences found between participants and non-participants in the follow-up interview on the compared characteristics with the exception of length of residency in Ottawa. However, it is possible that non-respondents experienced greater housing problems than respondents, contributing to the difficulty in locating them.

A further limitation was the lack of investigation in the study of utilization of services as a community resource. The parameters of the study did not include an examination of service use by participants. Lastly, all of the information collected in the study was self-report in nature. Self-report information may be prone to inaccuracy because of faulty memory, lack of information, or discomfort with self-disclosure.

Policy Implications

Our findings highlight the important role that community resources of an economic nature play in assisting homeless individuals in emergency shelters to exit homelessness. Our study joins previous research in showing the difference that subsidized housing can make in helping individuals who are homeless become re-housed on a long-term basis (Piliavin et al., 1996; Stojanovic, Weitzman, Shinn, Labay & Williams, 1999; Wong et al., 1998; Zlotnick et al., 1999). A lack of affordable housing units has fuelled the homelessness problem in cities across Canada (Gaetz, 2010).

In addition to those who had access to subsidized housing, people with higher incomes were more likely to be housed at follow-up. The fact that economic factors emerged as significant predictors of housing status highlights the importance of developing policies that will assist people who are homeless or at risk of becoming homeless to afford housing. A straightforward strategy toward this end is to increase income support benefits.

The provision of rent supplements enabling people on low income to access private market housing is another strategy that is indicated by our findings. Research has shown that rent supplements are effective in assisting individuals with a history of homelessness to achieve housing stability, including people with severe mental illness (e.g., Aubry et al., 2016; Stergiopoulos et al., 2015).

Finally, another policy strategy worth pursuing to assist people on low income to better afford housing involves increasing the minimum wage. A small proportion of participants (11%) in our study were working for pay at the time of the first interview (Aubry, Klodawsky, Hay, & Birnie, 2003). At follow-up, 29% of participants were

working for pay but in low-paying jobs (Aubry, Klodawsky, Nemiroff, Birnie, & Bonetta, 2007).

Acknowledgments The authors gratefully acknowledge funding for the research from the Canada Mortgage Housing Corporation, Human Resources Social Development Canada, and the Social Sciences Humanities Research Council.

References

- Anucha, U., & Hulchanski, J. D. (2003). Where do they come from? Why do they leave? Where do they go? A Study of Tenant Exits from Housing for Homeless People. Canada Mortgage and Housing Corporation. Available from: http://publications.gc.ca/collections/collection_2011/schl-cmhc/nh18-1-2/NH18-1-2-158-2003-eng.pdf [last accessed July 17 2016].
- Aubry, T., Klodawsky, F., Hay, E., & Birnie, S. (2003). *Panel study on persons who are homeless in Ottawa: Phase 1 results*. Ottawa, ON: University of Ottawa, Centre for Research on Educational and Community Services.
- Aubry, T., Klodawsky, F., Nemiroff, R., Birnie, S., & Bonetta, C. (2007). *Panel study on persons who are homeless in Ottawa: Phase 2 results*. Ottawa, ON: University of Ottawa, Centre for Research on Educational and Community Services.
- Aubry, T., Klodawsky, F., & Coulombe, D. (2012). Comparing the housing trajectories of different classes within a diverse homeless population. *American Journal of Community Psychology*, 49, 142–155.
- Aubry, T., Goering, P., Veldhuizen, S., Adair, C. E., Bourque, J., & Tsemberis, S. (2016). A multiple-city RCT of housing first with assertive community treatment for homeless Canadians with serious mental illness. *Psychiatric Services*, 67, 275–281.
- Bentler, P.M. (1990). Comparative fit indices in structural models. *Psychological Bulletin*, 107, 238–246.
- Blankertz, L. (2001). Cognitive components of self-esteem for individuals with severe mental illness. *American Journal of Orthopsychiatry*, 71, 457–465.
- Bond, L., Egan, M., Kearns, A., Clark, J., & Tannahill, C. (2012). Smoking and intention to quit in deprived areas of Glasgow: Is it related to housing improvements and neighbourhood regeneration because of improved mental health? *Journal of Epidemiology and Community Health*, 64, 299–304.
- Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J.S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Castellow, J., Kloos, B., & Townley, G. (2015). Previous homelessness as a risk factor for recovery from serious mental illness. *Community Mental Health Journal*, 51, 674–684.
- Caton, C.L.M., Domingues, B., Schanzer, B., Hasin, D.S., Shrout, P.E., Felix, A., ... Hau, E. (2005). Risk factors for long-term homelessness: Findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95, 1753–1759.
- Chan, A.W.K., Pristach, E.A., & Welte, J. (1994). Detection by the CAGE of alcoholism or heavy drinking in primary care outpatients and the general population. *Journal of Substance Abuse*, 6, 123–135.
- Cherpitel, C.J. (1997). Brief screening instruments for alcoholism. *Alcohol Health & Research World*, 21, 348–351.
- Cocco, K.M., & Carey, K.B. (1998). Psychometric properties of the Drug Abuse Screening Test in psychiatric outpatients. *Psychological Assessment*, 10, 408–414.

- Cohen, C.I., Ramirez, M., Teresi, J., Gallagher, M., & Sokolovsky, J. (1997). Predictors of becoming redomiciled among older homeless women. *The Gerontologist*, 37, 67–74.
- Culhane, D.P., Metraux, S., Byrne, T., Stino, M., & Bainbridge, J. (2013). Aging trends in homeless populations. *Contexts*, 12, 66–68.
- Dunn, J.R. (2002). Housing and inequalities in health: A study of socioeconomic dimensions of housing and self reported health from a survey of Vancouver residents. *Journal of Epidemiology and Community Health*, 56, 671–681.
- Egan, M., Katikireddi, V.S., Kearns, A., Tannahill, C., Kalacs, M., & Bond, L. (2013). Health effects of neighbourhood demolition and housing improvement: A prospective controlled study of natural experiments in urban renewal. *American Journal of Public Health*, 103, e47–e53.
- Evans, G.W., Wells, N.M., Chang, H.Y., & Saltzman, H. (2000). Housing quality and mental health. *Journal of Consulting and Clinical Psychology*, 68, 526–530.
- FEANSTA (2012). *On the way home? FEANSTA monitoring report on homelessness and homeless policies in Europe*. Brussels, Belgium: Authors.
- Flynn, R.J., Ghazal, H., Legault, L., Vandermeulen, G., & Petrick, S. (2004). Use of population measures and norms to identify resilient outcomes in young people in care: An exploratory study. *Child and Family Social Work*, 9, 65–79.
- Gaetz, S. (2010). The struggle to end homelessness in Canada: How we created the crisis, and how we can end it. *The Open Health Services and Policy Journal*, 3, 22–26.
- Goodman, L.A., Saxe, L., & Harvey, M. (1991). Homelessness as psychological trauma: Broadening perspectives. *American Psychologist*, 46, 1219–1225.
- Greenwood, R.M., Schaefer-McDaniel, N.J., Winkel, G., & Tsemberis, S.J. (2005). Decreasing psychiatric symptoms by increasing choice in services for adults with histories of homelessness. *American Journal of Community Psychology*, 36, 223–238.
- Johnson, G., Scutella, R., Tseng, Y., & Wood, G. (2015). *Entries and Exits from Homelessness: A Dynamic Analysis of the Relationship Between Structural Conditions and Individual Characteristics*. AHURI Final Report No. 248. Melbourne: Australian Housing and Urban Research Institute. Available from: <http://www.ahuri.edu.au/research/final-reports/248> [last accessed July 17 2016].
- Johnstone, M., Parsell, C., Jetten, J., Dingle, G., & Walter, Z. (2016). Breaking the cycle of homelessness: Housing stability and social support as predictors of long-term well-being. *Housing Studies*, 31, 410–426.
- Kertesz, S.G., Larson, M.J., Horton, N.J., Winter, M., Saitz, R., & Samet, J.H. (2005). Homeless chronicity and health-related quality of life trajectories among adults with addictions. *Medical Care*, 43, 574–585.
- Kline, R.B. (1998). *Principles and practice of structural equation modeling*. New York, NY: Guilford.
- Kline, R.B. (2011). *Principles and practice of structural equation modeling* (3rd ed). New York, NY: The Guilford Press.
- Luthar, S.S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71, 543–562.
- Mackinnon, D.P., Lockwood, C.M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioural Research*, 39, 99–128.
- Masten, A.S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56, 227–238.
- McNaughton, C.C. (2008). Transitions through homelessness, substance use, and the effect of material marginalization and psychological trauma. *Drugs: Education Prevention and Policy*, 15, 177–188.
- Palepu, A., Marshall, B.D.L., Lai, C., Wood, E., & Kerr, T. (2010). Addiction treatment and stable housing among a cohort of injection drug users. *PLoS ONE*, 5, e11697.
- Patterson, M.L., Currie, L., Rezanoff, S., & Somers, J.M. (2015). Exiting homelessness: Perceived changes, barriers, and facilitators among formerly homeless adults with mental disorders. *Psychiatric Rehabilitation Journal*, 38, 81–87.
- Piliavin, I., Wright, B.R., Mare, R.D., & Westerfelt, A.H. (1996). Exits from and returns to homelessness. *Social Service Review*, 70, 33–57.
- Rogers, E.S., Chamberlin, J., Ellison, M.L., & Crean, T. (1997). A consumer-constructed scale to measure empowerment among users of mental health services. *Psychiatric Services*, 48, 1042–1047.
- Sarason, I.G., Levine, H.M., Basham, R.B., & Sarason, B.R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology*, 44, 127–139.
- Schanzer, B., Dominguez, B., Shrout, P.E., & Caton, C.L.M. (2007). Homelessness, health status, and health care use. *American Journal of Public Health*, 97, 464–469.
- Skinner, H.A. (1982). The drug abuse screening test. *Addictive Behavior*, 7, 363–371.
- Spicer, B., Smith, D.I., Conroy, E., Flatau, P.R., & Burns, L. (2015). Mental illness and housing outcomes among a sample of homeless men in an Australian urban centre. *Australian & New Zealand Journal of Psychiatry*, 49, 471–480.
- Stefancic, A., & Tsemberis, S. (2007). Housing first for long-term shelter dwellers with psychiatric disabilities in a suburban county: A four-year study of housing access and retention. *Journal of Primary Prevention*, 28, 265–279.
- Stergiopoulos, V., Hwang, S.W., Gozdzik, A., Nisenbaum, R., Lattimer, E., Rabouin, D., ... Goering, P.N. (2015). Effect of scattered-site housing using rent supplements and intensive case management on housing stability among homeless adults with mental illness: A randomized trial. *The Journal of the American Medical Association*, 313, 905–915.
- Stojanovic, D., Weitzman, B.C., Shinn, M., Labay, L.E., & Williams, N.P. (1999). Tracing the path out of homelessness: The housing patterns of families after exiting shelter. *Journal of Community Psychology*, 27, 199–208.
- Toro, P.A., Bellavia, C., Daeschler, C., Owens, B., Wall, D.D., Passero, J.M., & Thomas, D.M. (1995). Distinguishing homelessness from poverty: A comparative study. *Journal of Consulting and Clinical Psychology*, 63, 280–289.
- Toro, P.A., Rabideau, J.M., Bellavia, C.W., Daeschler, C.V., Wall, D.D., & Thomas, D.M. (1997). Evaluating an intervention for homeless persons: Results of a field experiment. *Journal of Consulting and Clinical Psychology*, 65, 476–484.
- Tsemberis, S. (2010). *Housing first: The pathways model to end homelessness for people with mental illness and addiction*. Center City, MN: Darmouth PRC and Hazelden.
- Tsemberis, S., & Eisenberg, R.F. (2000). Pathways to housing: Supported housing for street-dwelling homeless individuals with psychiatric disabilities. *Psychiatric Services*, 51, 487–493.
- Ware, J., & Kosinski, M. (2001). *SF-36 Physical and mental health summary scales: a manual for users of version 1* (2nd edn). QualityMetric Incorporated: Lincoln, RI.
- Wells, N.M., & Harris, J.D. (2007). Housing quality, psychological distress, and the mediating role of social withdrawal: A longitudinal study of low-income women. *Journal of Environmental Psychology*, 27, 69–78.
- Wong, Y.I. (2002). Tracking change in psychological distress among homeless adults: An examination of the effect of housing status. *Health & Social Work*, 27, 262–273.

- Wong, Y.I., & Piliavin, I. (1997). A dynamic analysis of homeless-domicile transitions. *Social Problems*, 44, 408–423.
- Wong, Y.I., & Piliavin, I. (2001). Stressors, resources, and distress among homeless persons: A longitudinal analysis. *Social Science and Medicine*, 52, 1029–1042.
- Wong, Y., Piliavin, L., & Wright, B. (1998). Residential transitions among homeless families and homeless single individuals: A comparison study. *Journal of Social Service Research*, 24, 1–27.
- Zlotnick, C., Robertson, M.J., & Lahiff, M. (1999). Getting off the streets: Economic resources and residential exits from homelessness. *Journal of Community Psychology*, 27, 209–224.
- Zlotnick, C., Tam, T., & Robertson, M.J. (2003). Disaffiliation, substance use, and exiting homelessness. *Substance Use & Misuse*, 38, 577–599.