Abstract  The current longitudinal study evaluated the individual, housing, and neighborhood characteristics predictive of feeling psychologically integrated within one’s neighborhood among a population of homeless and vulnerably housed individuals. Participants were recruited at homeless shelters, meal programs, and rooming houses in Ottawa, Canada and participated in three in-person interviews, each approximately 1 year apart. Prospective and cross-sectional predictors of psychological integration at Follow-up 1 and Follow-up 2 were examined. There were 397 participants at baseline, 341 at Follow-up 1 and 320 at Follow-up 2. A hierarchical multiple regression uncovered several significant predictors of psychological integration. The most salient and common predictors were being older, having greater social support, living in high quality housing, and residing in a neighborhood with a positive impact. Implications for service provision and policy advancements are discussed.

Keywords  Psychological integration · Sense of community · Community integration · Homeless · Vulnerably housed

Introduction

Psychological integration has been conceptualized as one of three dimensions, along with physical integration and social integration, making up community integration in the field of community mental health (Wong & Solomon, 2002). It is premised upon the concept of “sense of community” a central construct in community psychology, or the “feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (McMillan & Chavis, 1986; p. 9). Research on “locality-based” psychological integration (i.e., with neighbors and in neighborhoods) often focuses on the general population (e.g., Crowe, 2010; Farrell, Aubry & Coulombe, 2004) or as an outcome of housing and support programs for people with severe mental illness (e.g., Gulcur, Tsemberis, Stefancic & Greenwood, 2007; Yanos, Barrow & Tsemberis, 2004). However, the experience of “locality-based” community integration for homeless and vulnerably housed individuals has been a notably neglected research area. Although homeless and vulnerably housed individuals lack stable housing and are at risk of transiency, they are undoubtedly influenced by the communities they live in. As well, few studies have examined community integration in ecological approaches that extend beyond the individual (Wong & Solomon, 2002). The current study attempts to fill this research gap and investigated individual, housing, and neighborhood factors predictive of psychological integration (based upon locality, specifically, neighborhood location) among homeless and vulnerably housed individuals.

Community Integration and Psychological Integration

Community integration is a concept that extends beyond its literal definition of integrating one’s self into one’s community. The term is multifaceted and has grown in dimension. Originally, community integration was thought
to involve: physical and social integration (Wolfensberger, 1972). Physical integration includes the literal physical placement of an individual within the community and the setting in which they reside (Wolfensberger, 1972). Social integration involves the interaction of devalued individuals with valued individuals in the community (Wolfensberger & Thomas, 1983). These interactions are culturally normative and take place in valued settings and context.

Aubry and Myner (1996) and Wong and Solomon (2002) enhance Wolfensberger’s conceptualization of community integration and add a third component—psychological integration. As stated above, psychological integration is likened to the concept of “sense of community” and the work of McMillan and Chavis (1986). It includes four essential pieces: membership, influence, integration and fulfillment of needs, and shared emotional connection. Based upon the work of Aubry and Myner (1996) and McMillan and Chavis (1986), Wong and Solomon (2002) define psychological integration as the “extent to which an individual perceives membership in his/her community, expresses an emotional connection with neighbors, and believes in his/her ability to fulfill needs through neighbors, while exercising influence in the community.”

As this study is grounded in applying the multidimensional model of community integration, the term psychological integration is used with the recognition of the congruency with the term sense of community. The use of psychological integration as an alternative definition of sense of community has been applied in several studies with similar populations (e.g., Gulcur et al., 2007; Patterson, Moniruzzaman & Somers, 2014; Yanos, Stefancic & Tsemberis, 2011).

Predictors of Psychological Integration

Predictors of psychological integration among formerly homeless and low-income individuals can be grouped conceptually into three areas, namely individual characteristics, housing characteristics, and neighborhood characteristics.

Individual Characteristics

Among individual characteristics, increased age (Brodsky, O’Campo & Aronson, 1999) and being employed or participating in meaningful activities within one’s building or neighborhood (Yanos, Felton, Tsemberis & Frye, 2007) has been shown to be associated with higher levels of psychological integration. Higher levels of psychopathology has been found to be predictive of lower levels of psychological integration (Gulcur et al., 2007). Gender may also play an important role, as low-income women may experience psychological integration differently than men (Brodsky, 1996).

Substance use, physical health, and social support may also influence psychological integration among homeless and vulnerably housed individuals. Homeless individuals with substance abuse problems are more likely to experience periods of housing instability than those individuals without substance abuse problems (Kreindler & Coodin, 2010; Zlotnick, Robertson & Lahiff, 1999) and this transience can be expected to diminish an individual’s sense of belonging in a locality. Furthermore, individuals living in marginal housing settings often have substance abuse problems that can contribute to housing instability (Gurstein & Small, 2005). In terms of physical health, rooming house residents report poorer physical health in comparison to the general population and other low-income individuals (Hwang, Martin, Tolomiczenko & Hulchanski, 2003). These physical health issues have the potential to limit participation in neighborhoods, thereby impacting negatively a person’s psychological integration. When considering populations receiving support within the community, Prince and Prince (2002) found that having high levels of social support resulted in increased psychological integration.

Housing Characteristics

Research on housing characteristics also suggests that they are associated with psychological integration. Formerly homeless individuals receiving supported housing services were more likely to be stably housed and report feeling at home and that they belong in the community than individuals receiving standard community care and who experienced lower levels of housing stability (Patterson et al., 2014). Among formerly homeless women, significant predictors of psychological integration included having perceived better quality housing and spending a shorter period of time in one’s current housing (Nemiroff, Aubry & Klodawsky, 2011).

For homeless individuals, exiting homelessness into stable housing was associated with shorter periods of homelessness in their lifetime (Dworsky & Piliavin, 2000; Zlotnick et al., 1999) and living in independent housing rather than congregate settings (Dworsky & Piliavin, 2000; Kreindler & Coodin, 2010). This indicates that length of stay in housing and the number of homeless episodes an individual experiences could also play an important role in psychological integration as it relates to a locality like a neighborhood.

Neighborhood Characteristics

Several neighborhood characteristics appear to be related to psychological integration among formerly homeless individuals who achieve housing stability. Neighborhood
characteristics associated with higher levels of psychological integration include a “match” between one’s race/ethnicity and the neighborhood’s (Yanos et al., 2004), higher levels of social cohesion among residents in a neighborhood (Yanos et al., 2007), a higher proportion of immigrants in the neighborhood (Yanos et al., 2011), a higher percentage of owner-occupied housing (Brodsky et al., 1999), a higher level of interaction with neighbors (Nemiroff et al., 2011), a lower proportion of housing living at or below the poverty line (Yanos et al., 2011), and a higher perceived quality of the neighborhood (Yanos et al., 2011). Samples focused on individuals with serious mental illness found that higher levels of satisfaction with the neighborhood were associated with increased psychological integration (Townley & Kloos, 2011).

**Predictive Model of Psychological Integration**

The psychological integration tested in this study is based upon the work of Aubry and Myner (1996), Wong and Solomon (2002), and Yanos et al. (2007), who propose a multidimensional conceptualization of community integration (e.g., physical integration, psychological integration, and social integration). Psychological integration is akin to “psychological sense of community” in the community psychology literature and is defined in the current study as being part of a locally based network of relationships that are supportive and mutually beneficial (Sarason, 1976). More specifically, and as stated previously, it is the feeling of belonging and commitment to one’s neighborhood (McMillan & Chavis, 1986).

The multilevel ecological model guiding the study examines the influence of individual, housing, and neighborhood variables on the psychological integration for homeless and vulnerably housed individuals. Based on previous research, the following variables are hypothesized as being predictors of psychological integration: (a) *Individual*: older age, being female, higher level of social support, being employed, higher level of mental health functioning, higher level of physical health functioning, lower level of drug use, and lower level of alcohol use, (b) *Housing*: being housed, greater length of stay in current residence, lower number of homeless episodes in the past year, and a higher level of perceived housing quality, and (c) *Neighborhood*: lower proportion of unemployed individuals in the neighborhood, lower proportion of low-income households in the neighborhood, lower proportion of residents in the neighborhood that have moved in the past year (residential stability), lower proportion of households requiring major repairs in the neighborhood, higher proportion of individuals who are recent immigrants in the neighborhood, lower proportion of buildings that are high-rise apartments in the neighborhood, higher proportion of individuals without high school education in the neighborhood, and a more positive impact of the neighborhood as perceived by the participants.

**Methods**

Data for this research come from the *Health and Housing in Transition* (HHiT Study), a longitudinal observational study of about 1200 homeless and vulnerably housed individuals living in Ottawa, Toronto, and Vancouver (Hwang et al., 2011). Only the data from the Ottawa site is used for the current study, as the availability of neighborhood-level data on the examined predictor variables was limited to just Ottawa.

**Participants and Procedure**

Data collection for the HHiT study took place in five phases (baseline, 1-year follow-up [FU1], 2-year follow-up [FU2], 3-year follow-up [FU3] and 4-year follow-up [FU4]), from 2008 to 2013. Only the data from baseline to FU2 is used in the current study. At baseline, participants (*N* = 397) completed in-depth, in-person interviews. FU1 (*N* = 341; 85%) and FU2 (*N* = 321; 81%) interviews were completed primarily in person, with a small number of interviews being conducted via telephone for those individuals no longer living in the Ottawa area. Interviews were conducted by either trained graduate students in psychology or social work, or individuals with experience in interviewing and/or working with the study population. Baseline interviews lasted, on average, 68 min. FU1 interviews lasted, on average, 65 min. FU2 interviews lasted, on average, 53 min.

Two stages of sampling were conducted for participant recruitment, with the goal of recruiting approximately 200 homeless and 200 vulnerably housed individuals. In the first stage, the primary sampling units (shelters, meal programs, single room occupancy hotels, and rooming houses) were randomly selected. The second stage involved the random selection of individuals from the primary sampling units. The targeted number of vulnerably housed individuals could not be attained due to difficulty with making contact with residents. Therefore, the recruitment sites of vulnerably housed individuals were extended to include recruitment of individuals meeting the eligibility criteria at drop-in centers, community health centers, and meal programs.

All participants were over the age of 18 and did not live with a partner or dependent child. An individual was defined as homeless if he or she: (a) lived in a shelter, public place, vehicle, abandoned building, or someone else’s
place, and (b) did not have his or her own place (e.g., house, apartment, or room). An individual was defined as vulnerably housed if he or she: (a) lived in a socially marginalized type of housing (single room occupancy hotel or rooming house), (b) met the Canadian Mortgage Housing Corporation (CMHC) criteria for “core housing need” on the basis of paying rent that exceeded 30% of their monthly income, (c) had moved at least twice in the past year, or (d) had moved less than twice in the past year, but experienced homelessness in that period. Participants received honoraria of $20 for each interview.

The methodology used in the HHiT study was approved by the Research Ethics Boards at the University of Ottawa, St. Michael’s Hospital in Toronto, and St. Paul’s Hospital in Vancouver. All participants provided informed consent prior to participating.

Measures

Predictors

Individual characteristics. Employment—Employment status was operationalized as having worked, either full-time or part-time, within the past year. The variable was dichotomized, in that participants who worked were coded as “1” and participants who had not worked were coded as “0”.

Social support—An abbreviated 8-item version of The Social Provisions Scale (SPS) (Cutrona & Russell, 1987) was used to measure the degree to which consumer’s social relationships currently provide social support. It is a self-report measure and items are scored on a 4-point rating system, from “strongly agree” (1) to “strongly disagree” (4). Sample items include, “I have family and friend who help me feel safe, secure, and happy”, and “I lack of feeling of intimacy with another person.” The items are summed to obtain the total score, with higher scores indicating stronger social support. The internal consistency ratings in this study were .77 at baseline, .81 at FU1 and .81 at FU2.

Substance use. DAST-10—The Drug Abuse Screening Tool-10 (DAST-10) is a self-report scale that is intended to identify problematic drug use based upon the participant’s use in the past 12 months (Skinner, 1982). Items in the scale ask respondents if they are engaging in drug use and if problems related to drug use are present. Responses are scored dichotomously as either “yes” (1) or “no” (2). The summed score on the measure was dichotomized (1 = presence of drug use problem; 0 = no drug use problem) with a cutoff of six or more considered indicative of the presence of substantial or severe drug use problems (Skinner, 1982). The internal consistency ratings in the current study were .70 at baseline, .85 at FU1 and .83 at FU2.

Audit—The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item scale that assesses alcohol intake, dependence, and adverse consequences to identify problematic alcohol use based upon a participant’s use in the past 12 months (Reinert & Allen, 2002). This summed score on the measure was dichotomized (1 = presence of alcohol use problems; 0 = no alcohol use problems) with a score of eight or more indicative of the alcohol use problems. The Cronbach’s alpha coefficients for the scale in the current study were .89 at baseline, .91 at FU1 and .90 at FU2.

Physical and mental health functioning. The SF-12 was used to measure an individual’s level of physical and mental health functioning (Ware, Kosinski & Keller, 1996). It is a self-report measure that queries about an individual’s functioning in the 4 weeks prior to the interview. Sample items include, “During the past 4 weeks, have you accomplished less than you would like as a result of your physical health?” and “How much of the time during the past 4 weeks have you felt calm and peaceful?” Responses are summed to produce total scores for two scales: the Physical Component Summary (PCS) reflecting physical health functioning and the Mental Components Summary (MCS) reflecting mental health functioning. Scores on items are weighted to produce total scores that can range from 0 to 100, with scores higher than 50 indicating above average health status (the general population norms for each scale is 50, with a standard deviation of 10). The internal consistency rating for the PCS scale in the current study was .79 at baseline, .82 at FU1, and .83 at FU2. The internal consistency rating for the MCS scale in the current study was .80 at baseline, .82 at FU1, and .83 at FU2.

Housing Characteristics

Housing status. The housing status of the participants was assessed using the Housing Timeline Follow-Back Calendar (HTFBC) (Tsemberis, McHugo, Williams, Hanrahan & Stefancic, 2007). This method asks participants to recount their previous living situations within a specified amount of time. The type of residence, length of stay, rent price (if applicable), and subsidy status is noted. This technique allows for the determination of the number of moves, length of homelessness, and housing status of a participant.

Current housing status was operationalized into a dichotomous variable. Housed (living in own apartment/ house; living with friends or family and paying rent; rooming house; nursing home; supportive housing) was coded as “0” and homeless (homeless shelter; living on the streets; campground, motel or hotel) was coded as “1”. Those currently residing in prison, a medical or psychiatric hospital, boarding home, group home, halfway...
Length of stay in current residence. This continuous variable was created by examining the participants’ number of days in their current housing situation.

Number of homeless episodes in the past year. This continuous variable was created by examining the participants’ housing histories. A participant was considered homeless if they were living in a shelter, on the streets, in a motel/hotel or in a campground. The number of homeless episodes, defined as the number of different times a participant moved from being housed to homeless, since the previous year’s interview was summed. If a participant was homeless for the entire time, the participant was considered as having one homeless episode.

Housing satisfaction. The total score from a perceived housing quality measure (Toro et al., 1997) was used to assess housing satisfaction. This 6-item self-report scale asks about six areas of an individual’s current living situation: comfort, safety, spaciousness, privacy, friendliness, and overall quality. Responses are provided on a 7-point scale, ranging from “very bad” (1) to “very good” (7). Overall scores range from 6 to 42, with higher scores indicating a higher level of perceived housing quality. The internal consistency ratings in the current study were .81 at baseline, .91 at FU1, and .90 at FU2.

Neighborhood Characteristics

As part of the housing history questions, participants were asked to provide their current address or location of residence. These addresses were entered into Google Maps in order to identify their physical location and then compared to online maps provided by the Ottawa Neighborhood Study (ONS) to locate each participant within the boundary of a neighborhood. The placement in a neighborhood allowed for objective neighborhood indicators to be drawn from the ONS database. The ONS was initiated to better define the neighborhoods in Ottawa and map social determinants of health indicators within each neighborhood (Ottawa Neighborhood Study, 2014). Neighborhood boundaries were created using an iterative process, including real estate maps, community team member knowledge, and city planning department knowledge. In general, the neighborhoods are much smaller than the census areas covered by the Canadian Federal Census.

In total, 107 neighborhoods were included. Objective indicators were created by the ONS using 2011 Canadian Census data, DMTI Enhanced Points of Interest (software used for location-based services), City of Ottawa municipal data, and National Capital Commission data. For this study, seven variables were selected from the ONS and are described below. The eighth neighborhood-level variable is subjective and was taken from the HHiT survey protocol.

Of the 341 respondents at FU1, 293 individuals were coded into a neighborhood. Of the 48 individuals who could not be coded into a neighborhood, four were a result of a missing address and 44 were not living in Ottawa or did not have a residential address (as a result of being in hospital, or being in jail). Of the 321 respondents at FU2, 272 individuals were coded into a neighborhood. Of the 49 individuals who could not be coded into a neighborhood, one was a result of a missing address and 48 were a result of the individual not living in Ottawa or did not have a residential address.

The neighborhood indicators selected were the percentage of: unemployed individuals, residents that have moved in the past year (residential stability), low-income households, households requiring major repairs, high-rise apartments, recent immigrants (settled in Canada less than 5 years ago), and individuals without a high school education.

Several of the neighborhood-level variables were highly correlated with one another and had high Variance Inflation Factor values. As a result, a composite variable was created for the affected variables (percentage of individuals of low-income, unemployed, recent immigrants, and individuals without a high school education). Similar to Yanos et al. (2007), the standardized scores of these four variables were summed to create a “neighborhood socioeconomic index” variable. Linearity and heteroscedasticity were not issues.

To further justify the creation of the composite neighborhood variable, a principle components analysis was conducted at both FU1 and FU2. Two factors obtained eigenvalues greater than 1.0 at both time points. These factors accounted for 46.5 and 31.3% at FU1 and 45.3 and 30.7% at FU2. One of these factors supported the hypothesized structure of the newly created neighborhood socioeconomic index and this occurred at both time points.

An Oblimin rotation with Kaiser normalization was then performed on factor-analyzed variables at both time points. Factor 1 (the neighborhood socioeconomic index) made up of percentage of unemployed, individuals of low-income, immigrants and individuals without a high school education variables, with factor loadings of .92, .80, .89, and .88 at FU1 and .89, .82, .85, and .83 at FU2. The second factor included the low-income, residential stability, major repairs, and high-rise apartment variables, with factor loadings of .55, .88, .67, and .77 at FU1 and .49, .90, .53, and .80 at FU2. The very high factor loadings for the neighborhood socioeconomic index composite
variable supports its creation. Due to the presence of a second factor with an eigenvalue exceeding 1.0 and high factor loadings, it was determined that a second neighborhood composite variable would be created. This variable included percentage of individuals who have moved in past year, households requiring major repairs, and high-rise apartments and was labeled as “rental housing impacts”. Low-income was not included as it was cross-loaded with the socioeconomic factor and displayed comparatively lower factor loadings on the rental housing impacts variable. Similar to the socioeconomic variable, the standardized scores of these three variables were summed to create the “rental housing impacts index” variable.

Neighborhood Impact

Satisfaction with the impact of one’s neighborhood was based upon a single item from the Quality of Life for Homeless and Hard-to-House Individuals scale (Hubley, Russell, Gadermann & Palepu, 2009). Participants were asked to rate the kind of impact/effect that their neighborhood had on them. Responses are scored on a 7-point scale, ranging from large negative impact/effect (1) to large positive impact/effect (7).

Predicted Variable

Psychological Integration

Psychological integration was measured at FU1 and FU2 using a 6-item version of the sense of community scale used by Farrell et al. (2004). Participants were introduced to the scale before they provided their answers. They were told that they would be asked about their beliefs about the people who live in their neighborhood and about the neighborhood itself. Neighborhood was defined as the surrounding area within normal walking distance of where they were currently residing. The original scale included 14 items, but the scale was reduced to six items that were relevant to the population. The scale was developed based upon the definition of sense of community by McMillan and Chavis (1986). It assesses a participant’s perception of their sense of belonging in their neighborhood (e.g., “I like to think of myself as similar to the people who live in this neighborhood.”), as well as neighborhood safety (e.g., “Compared to other neighborhoods, I view this neighborhood as a safe place.”), availability of support (e.g., “If I had an emergency, even people I do not know in this neighborhood would be willing to help.”), and emotional investment (e.g., “I plan to remain a resident of this neighborhood for a number of years.”) in the neighborhood. Response options range from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). The possible total score ranges from 6 to 30, with higher scores representing greater psychological integration. The internal consistency ratings of the measure in the current study were .78 at FU1 and .79 at FU2.

Data Analysis

Two sequential multiple regressions were conducted. One predicted psychological integration at FU1 and the second predicted psychological integration at FU2. For each multiple regression, the predictor variables were entered sequentially in three blocks: (a) individual variables, (b) housing variables, and (c) neighborhood variables.

Due to the nature of the design, which includes analyses at two time points, it is acknowledged that the analysis has the potential of an inflated risk of Type I error because some variables may only be significant at one time point. Since a strength of the design is the replication process that is being utilized, greater attention was given to those variables that were significant at both periods. Furthermore, a lower alpha level of .01 was used.

An a priori power analysis was conducted using G*Power 3 (Faul, Erdfelder, Land & Buchner, 2007) in order to justify the number of predictor variables as compared to the overall sample. In order to detect a medium effect size ($f^2 = .15$) for a regression equation with 20 predictor variables with power $.80$ and an $\alpha$ set at .01, a sample size of $N = 207$ is needed. Therefore, both the FU1 and FU2 samples are considered to have sufficient power to detect a medium effect for relationships between predictor and predicted variables.

Respondents at Follow-Up Versus Non-Respondents

Respondents at FU1 ($n = 341$) were compared to non-respondents ($n = 56$) on the nine individual and four housing variables at baseline to determine if differences existed between the two groups. Neighborhood variables were not examined as a large proportion of participants had moved since FU1. Significant differences emerged on two variables: housing status and physical health functioning. Respondents were more likely to be housed, $\chi^2 (1, N = 397) = 16.46, p < .001$, and to have poorer physical health functioning, $t (381) = 2.43, p < .05$ at baseline than non-respondents.

The same analyses were run for respondents at FU2 ($n = 321$) to non-respondents ($n = 76$) at baseline. Significant differences emerged on two variables: housing status and length of stay in current housing. Respondents were
more likely to be housed, $\chi^2 (1, \ N = 397) = 4.27, P < .05$, and to have stayed longer in their current residence, $t (303.15) = -3.37, p < .01$, at baseline than non-respondents.

Sample Characteristics

Sample characteristics are presented in Table 1. The sample was predominantly male, white, single, and in their early 40s. Slightly more than half of the sample (56.4%) had a high school education and approximately one-third were employed in the past year. Approximately 25% of the sample had problematic drug use and around 36% had problematic alcohol use. Physical and mental health functioning averages, as measured by the SF-12, were both below the general population norms (mean = 50, standard deviation = 10), with the sample having particularly lower mental health functioning. At FU1 and FU2, approximately 60% of the sample reported a mental health diagnosis in their lifetime, with depression being most common. The sample had moderate levels of social support as measured by the Social Provisions Scale (a mean of 22 out of a total possible score of 32). The majority of individuals (72.3%) were housed at FU1 and this percentage increased in FU2 (81.5%). The average number of homeless episodes was one in FU1 and less than one in FU2. Individuals had lived in their current place of residence for approximately two-thirds of the year in FU1 and for close to a year in FU2. Perceived quality of housing was in the moderate range at both time points.

On average, neighborhoods in which participants lived had low percentages of unemployed individuals, recent immigrants, and individuals without a high school education. Approximately 10% of houses required major repairs and 32% of individuals were considered to be low-income. Approximately 23% of individuals had moved in the past year and 40% of individuals lived in high-rise apartments. The sample had an average neighborhood impact score indicating a neutral impact on their lives.

Of the 107 possible neighborhoods in Ottawa, participants were coded into 37 of them at FU1 and 38 of them at FU2. At FU1, 60% of individuals lived in four specific neighborhoods. These neighborhoods were generally centrally located and one of the neighborhoods contained the majority of the city’s homeless shelters, meal programs, and drop-in programs. These neighborhoods also had a slightly higher rate of high-rise apartments (50.3%) and residential mobility (27.4%), than the average of all the neighborhoods included in the analysis. The remaining characteristics of these four neighborhoods were similar to that of the other neighborhoods. At FU2, the percentage of individuals living in these four specific neighborhoods dropped to 53%.

<table>
<thead>
<tr>
<th>Table 1 Individual, housing, and neighborhood characteristics</th>
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<tbody>
<tr>
<td>FU1 ($N = 261$) Mean ($SD$) or $n$ (%)</td>
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<tr>
<td><strong>Individual characteristics</strong></td>
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<tr>
<td>Age</td>
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<td>Race (white)</td>
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<td>High school graduate (yes)</td>
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<td>Low-income individuals</td>
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<td>Movers</td>
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<td>Neighborhood impact</td>
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<td>Psychological integration</td>
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*Total score ranges from 0 to 100. The general population norm is 50, with a standard deviation of 10.*

*Total score ranges from 8 to 32.*

*Total score ranges from 1 to 7.*

*Total score ranges from 6 to 30.*

**Results**

**Levels of Psychological Integration**

At FU1, the mean psychological integration score was 18.54 with a standard deviation of 5.16. At FU2, the mean psychological integration score was 18.80 with a standard deviation of 5.09. The means at both time points indicate that individuals were reporting psychological integration ratings that fell above the mid-range of the scale that is more in line with being in agreement with items reflecting psychological integration.

Examination of individual items demonstrated interesting trends. When combining the agree and strongly agree response alternatives, 60.6% (FU1) and 66.0% (FU2) of
The model was significant at the end of the first step, with just the entry of individual characteristics included in the equation, \( F(8, 224) = 8.90, p < .001, R^2 = .24, 95\% CI [1.15, .33] \) (see Table 2). Three significant predictors emerged: age, \( \beta = .20, 95\% CI [1.14, .26], p < .01 \), mental health functioning, \( \beta = .23, p < .01, 95\% CI [1.18, .28] \), and social support, \( \beta = .24, p < .001, 95\% CI [0.08, .40] \). Individuals who were older, individuals who had higher mental health functioning, and individuals with greater levels of social support reported higher levels of psychological integration. Physical health functioning approached significance, \( \beta = .16, p = .02, 95\% CI [1.11, .21] \), indicating that there was a trend toward individuals with higher physical health functioning also having higher psychological integration.

The second step, with the entry of individual and housing characteristics in the equation, was also significant, \( F(4, 220) = 19.04, p < .001, R^2 = .44, 95\% CI [0.35, .53] \). One significant housing predictor emerged:
housing quality, $\beta = .50$, $p < .001$, 95% CI [.43, .56]. Individuals who had higher perceived housing quality reported higher levels of psychological integration. Length of stay approached significance, $\beta = .14$, $p = .02$, 95% CI [.14, .14] indicating that there was a trend in the direction of individuals who had longer lengths of stay in their current residence having higher levels of psychological integration. Social support remained significant.

The third step, with the entry of individual, housing, and neighborhood characteristics in the equation, was also significant, $F_{\text{change}} (3, 217) = 11.19$, $p < .001$, $R^2 = .37$, 95% CI [.33, .40]. One significant neighborhood predictor emerged: neighborhood impact, $\beta = .37$, $p < .001$, 95% CI [.33, .40]. Individuals who rated their neighborhood as having a positive impact on them reported higher levels of psychological integration. Social support and housing quality remained significant.

**Discussion**

This study examined predictors of psychological integration among a sample of homeless and vulnerably housed individuals. Scores on the psychological integration measure remained consistent from FU1 to FU2 and fell in the midrange of the spectrum. This result is similar to Aubry and Myner (1996), Brodsky et al. (1999), and Nemiroff et al. (2011). The scores indicate that, on average, participants had a moderate sense of belonging to their neighborhoods.

Examination of individual items in the psychological integration measures found that participants were more apt to view their neighborhoods as safe and have confidence that they could acquire assistance if there was an emergency compared to the other items. These findings support Townley and Kloos’ (2011) finding that individuals living in neighborhoods they perceive to be safe have higher psychological integration. The remaining items all had support from less than half of the respondents and focused on feeling similar to others in the neighborhood, planning long-term residency in the neighborhood, feeling connected to their neighbors, and neighborhood friendliness. Differential item responses may indicate that respondents felt safe and assured in their neighborhoods, but lacked the meaningful connections with those residing in their neighborhoods and therefore lacked some crucial elements of psychological integration.

The model of predictors tested in this study accounted for the most variance in psychological integration at both time points, and the most robust individual characteristics to emerge as predictors were age and social support.

The relationship of older age with higher levels of psychological integration replicates findings from Brodsky et al. (1999). Older individuals may be more likely to maintain their current housing (Kreindler & Coodin, 2010), and thus be able to create meaningful bonds within their neighborhoods. However, length of stay in one’s current housing only approached significance at FU2. This puzzling association of older age as a significant predictor but not length in housing was also reported by Brodsky et al. (1999). Brodsky et al. (1999) surmise that older individuals, regardless of length of stay in their residence, develop stronger commitments to their neighborhoods. Older individuals in the current study may also have a stronger association with their neighborhoods than younger individuals because they are more apt to spend more time close to home. Older individuals may also be less mobile and require more assistance from their neighbors, facilitating an increased opportunity for a bond to develop among neighbors.

Higher levels of social support resulted in higher psychological integration among the respondents, which is supported by the work of Prince and Prince (2002). This result is intuitive, as the social support that many respondents receive may be from individuals located in their neighborhoods; however, these social supports may also exist outside of their neighborhoods, indicating the importance of more relational types of communities (Dalton, Elias & Wandersman, 2001). The relational ties may not be bound by interactions with neighbors, but instead through supports existing in other relationships in the larger community, such as through encounters with people at meal programs and drop-in centers. Social support is very important for individuals experiencing homelessness and vulnerable housing, as enhanced social support has been linked with exiting homelessness (Thompson, Pollio, Eyrich, Bradbury & North, 2004).

Mental health functioning was also a significant individual characteristic predictor, but only at FU2. Individuals with better mental health functioning tended to have higher psychological integration. Gulcur et al. (2007) found that higher levels of psychopathology resulted in lower levels of psychological integration, so the positive relationship in the current study makes intuitive sense. Individuals with better mental health may be more apt to explore their neighborhoods and engage socially with neighbors than individuals with poor mental health who may be less interested or less likely to leave their housing.

The block of housing characteristics also significantly contributed to the variability in the psychological integration scores.
integration scores. Housing quality had a particularly robust influence, as higher quality housing was significantly related to better psychological integration at both time points. Nemiroff et al. (2011) reported similar findings among their sample of formerly homeless women. Poor housing conditions are a major concern for roaming house residents (Mifflin & Wilton, 2005) and poor housing quality has been linked to poor health conditions among roaming house residents (Hwang et al., 2003). Homeless shelter quality has received less attention, however, Elias and Inui (1993) found that some of their older, “hard to house” participants preferred shelter living to residing in poor quality housing accommodations and received more social support in the shelter compared to when they were housed. This may indicate that homeless individuals may have difficulties with disaffiliating from their status as a homeless individual upon the acquisition of housing (Patterson, Rezansoff, Currie & Somers, 2013).

Among neighborhood characteristics, perceived neighborhood impact was the only significant and robust predictor of psychological integration. Townley and Kloos (2011) report a similar finding in that individuals more satisfied with their neighborhoods had greater psychological integration. This result makes sense, as individuals who enjoy their neighborhoods should feel a sense of belonging to it and prefer to remain there. The comparatively small predictive influence on psychological integration of the neighborhood characteristics is in contrast to what is reported in previous studies (i.e., Brodsky et al., 1999; Yanos et al., 2004, 2007). As psychological integration is a subjective experience (McMillan & Chavis, 1986), perhaps objective indicators based upon socioeconomic indicators are less salient than how individuals feel about their neighborhoods. Similarly, O’Campo et al. (2015) argue that there has been an overreliance on census-based measures when conducting research on the effects of neighborhoods. They suggest a broader range of indicators coming from several sectors including justice, transportation, housing, and subjective accounts.

Limitations

A primary limitation of this study was the lack of neighborhood variability. Approximately 60% of individuals were living in four neighborhoods, one of which housed the majority of the city’s main homeless shelters and drop-in services. These neighborhoods also displayed similar trends on the objective indicators, creating a relatively homogeneous sample of neighborhoods. This is in part a limitation of the sampling frame used and a reality of where individuals who experienced homelessness or are vulnerably find themselves living. As a result, the findings of this study may not be generalizable to larger cities where low-income housing is present in greater dispersion.

Besides, the self-report data may have been vulnerable to the effects of bias or inaccuracy due to memory lapses or defensiveness. In particular, the psychological integration questions may have been particularly difficult for individuals residing in a homeless shelter as trying to define who a neighbor is could be difficult. Prompts were provided in the questioning to ensure that fellow shelter residents were not to be considered neighbors, but this exclusionary wording may have been in contrast to how they would define a neighbor.

Future research on psychological integration for homeless and vulnerably housed individuals should take several directions. Firstly, psychological integration scales tailored to this population should be created in consultation with the population. Integration, neighborhood, and neighbors may have different connotations for individuals experiencing housing transitions compared to the general public. Secondly, there should be attempts to sample individuals from a wide range of neighborhoods. Holistic and ecological models should continue to be used, however, with objective and subjective neighborhood indicators.

Implications

The results from this study present several implications for service providers and policy advisors. Younger and socially isolated homeless and vulnerably housed individuals should be encouraged to engage with their neighbors and neighborhoods. By developing bonds within their communities and acquiring social support, they may reduce the risk of entering homelessness again. One way to facilitate this is to create community events, such as community dinners or festivals, to allow for positive social opportunities to occur. It is also important for housing workers to consider the importance of housing quality when considering housing placements. Although easier said than done, particularly with the poor stock of good quality affordable housing available in many urban settings, housing of high overall quality should be sought. Service providers should also consider creating specific post-housing service plans to promote socialization within the neighborhood.

There needs to be a greater emphasis on creating and maintaining affordable housing that is safe, comfortable, provides adequate living space, and privacy, in a friendly environment and of high overall quality. It is clear that housing is more than just the physical space it provides. Good quality housing located in a variety of neighborhoods will lead to a sense of belonging and social
opportunities for individuals who may otherwise not have such opportunities. By doing so, formerly homeless and vulnerably housed individuals may find a home and remain stably housed.

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Conflict of Interest

The authors report no conflicts of interest. The submitted manuscript complies with APA ethical principles in the treatment of individuals participating in the described research. The methodology used in the HHiT study was approved by the Research Ethics Boards at the University of Ottawa, St.-Michael’s Hospital in Toronto, and St.-Paul’s Hospital in Vancouver.

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