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Motivational and Cognitive Correlates of Community Integration In Homeless Veterans Entering a Permanent Supported Housing Program

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Abstract

Objectives: Homelessness is a major public health problem and serious mental illness (SMI) is highly prevalent in the homeless population. Although supported housing services - which provide permanent housing in the community along with case management - improve housing outcomes, community integration typically remains poor and little is known about the underlying determinants of poor community integration post-residential placement. The general SMI literature indicates that motivational and cognitive ability factors are key determinants of successful community integration, which provides a foundation for examining this issue.

Methods: This study evaluated whether interview- and performance based assessments of motivation, non-social and social cognitive ability, and psychiatric symptoms were associated with community integration indices in two samples of homeless Veterans either with (N = 96) or without (N =80) a psychotic disorder, who had recently been admitted to a supported housing program, but who had not yet attained housing.

Results: Motivation indices, including experiential negative symptoms and defeatist performance attitudes, stood out as the most robust correlates (rs = −.30 to −.69) of community integration across both samples, particularly for social role participation. Demographics, general psychiatric symptoms, and non-social cognition showed generally weak relations with community integration, though social cognition showed a few relations.

Conclusions: The consistent findings across samples point to the importance of motivational factors for understanding the determinants of poor community integration in this complex population. Further, interventions that target motivational challenges may have widespread usefulness for enhancing community integration outcomes beyond obtaining housing.

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Conflicts of interest:
None

1. Introduction

Homelessness is a widespread, vexing problem and an urgent priority at a national level (Tsai et al., 2017). Since 2009, the Department of Veterans Affairs has devoted substantial resources to addressing this problem (Affairs, 2009) and has made impressive progress in ending Veteran homelessness. For example, between 2010 and 2017, the number of homeless Veterans decreased by 46% (Henry et al. 2017). Despite this impressive progress, a fundamental problem remains: it has become clear that permanent housing is a necessary, but not sufficient, condition for successful community integration.

Community integration is a broad, multi-faceted construct at the person-environment interface that has been investigated from a wide variety of physical and mental disability and rehabilitation research disciplines (Bronfenbrenner, 1979; Kersey, Terhorst, Wu, & Skidmore, 2018; Resnik, Borgia, & Silver, 2017; Ritchie, Wright-St Clair, Keogh, & Gray, 2014; M.S. Salzer & Baron, 2014; M.S. Salzer, Baron, Menkir, & Breen, 2014; Shaikh, Kersten, Siegert, & Theadom, 2018; Yasui & Berven, 2009). Generally speaking, community integration refers to the extent to which people live, participate, and socialize in their community (Wong & Solomon, 2002). Across disciplines, conceptualizations of community integration and associated terminology vary considerably, though most incorporate multiple dimensions. These dimensions include physical integration (participation in activities and using goods and services in the community), social integration (engaging in social interactions and having a positive social network), and psychological integration (M.S. Salzer & Baron, 2014; M.S. Salzer et al., 2014; Won & Solomon, 2002; Yasui & Berven, 2009), which have been assessed using a diverse array of measures (Babulal et al., 2015; Baumgartner & Susser, 2013; Reinie et al., 2017; M.S. Salzer, Brusilovskiy, Prvu-Bettger, & Kottsieper, 2014; Yasui & Berven, 2009). Such multi-dimensional frameworks stress the dynamic interplay between environmental factors (physical and social barriers) and personal factors (impairments and strengths) that limit opportunities to participate in various life domains, such as housing, employment, social, leisure, healthcare, and civic life. Identifying population-specific determinants can facilitate new community integration enhancing rehabilitation approaches.

While this provides a broad framework for community integration, the VA has identified a somewhat more specific one (Resnik et al., 2012). Recognizing that there is no “gold standard” for assessing all aspects of community integration, the VA Rehabilitation Research & Rehabilitation has espoused the International Classification of Healthy, Disability, and Functioning (WHO, 2001) as a theoretical framework for assessment. This assessment approach emphasizes objective level of participation in important role functions such as work (engaging in paid and unpaid employment) social (engaging in relationships with friends, acquaintances, and family), and self-care (engaging in activities to maintain societal standards of grooming, health, and domestic life). This provides a framework for identifying personal and environmental determinants of level of participation across major role functions. In line with this approach, the current research assesses community integration in terms of level of participation in work, social, and independent living roles.

In homelessness research, it has become clear that community integration does not arise automatically once housing is provided. Among recently housed Veterans, recidivism into homelessness is common, unemployment levels are very high, and engagement in social networks and community-based treatment services are low (Gabrielian, Yuan, Andersen, Rubenstein, & Gelberg, 2014; Lam et al., 2016; A. E. Montgomery, Cusack, Szymkowiak, Fargo, & O'Toole, 2017; Moore & Rosenheck, 2016; Painter et al., 2017; Szymkowiak, Montgomery, Johnson, Manning, & O'Toole, 2017; Tsai, Mares, & Rosenheck, 2012b). To facilitate recovery, these individuals will need different types of assistance to fully participate in work, social and independent living roles. However, aside from a few studies showing small, and variable, associations with broad sociodemographic variables (A.E. Montgomery, Hill, Kane, & Culhane, 2013; M.J. O'Connell, Kasprow, & Rosenheck, 2009; M. J. O'Connell, Kasprow, & Rosenheck, 2012, 2013; Tsai, Kasprow, & Rosenheck, 2014), the determinants of post-residential placement outcomes are largely unknown. The goal of this research is to identify more specific, modifiable personal factors that can be targeted to enhance community integration in the homeless population.

The homeless population is highly heterogeneous, which complicates efforts to identify personal determinants of poor community integration that are amenable to intervention. One incontrovertible fact is that homelessness is strongly associated with serious mental illness (SMI), particularly among homeless Veterans. SMIs, as well as substance use disorders, are consistently among the strongest risk factors for homelessness (Greenberg & Rosenheck, 2010; Tsai & Rosenheck, 2015) and, among homeless Veterans, the lifetime prevalence rates are very high (approximately 60%; (Tsai et al., 2014)). Outside of homelessness research, there is an extensive and well-developed literature on the personal determinants of community integration in SMI. This work can provide a logical starting point for exploring determinants of social integration in homeless Veterans.

In SMI research, particularly in the area of psychosis, demographic variables, diagnoses, and psychotic symptoms typically explain little of the variance in community integration. It is important to look beyond these domains to have success in explaining variability in community integration. Our team and others have found that variables in the broad categories of “ability”, what one can do, and “motivation”, what one is willing/driven to do, are robust determinants of poor functioning (M. F. Green, Hellemann, Horan, Lee, & Wynn, 2012). Ability variables include performance measures of non-social cognition (e.g., learning, memory, attention) and social cognition (e.g., facial affect perception, mental state attribution) (Fett et al., 2011; M.F. Green, Kern, Braff, & Mintz, 2000; M.F. Green, Kern, & Heaton, 2004; Horan et al., 2012; Reddy & Kern, 2014). Notably, substantial non-social cognitive impairments have been identified in a number of studies of homeless populations (Depp, Vella, Orff, & Twamley, 2015), although links to community integration have rarely been evaluated. Motivation variables, including interview-based measures of experiential negative symptoms and self-report measures of dysfunctional attitudes (e.g., defeatist beliefs about one’s ability to perform tasks), also show strong relationships to community integration (Campellone, Sanchez, & Kring, 2016; Kring, Gur, Blanchard, Horan, & Reise, 2013; Llerena, Reddy, & Kern, 2018; Strauss et al., 2013). While the focus of this research has been on psychotic disorders, these ability and motivation factors are prerequisites for successful community integration in a wide variety of conditions relevant to the homeless

Veteran population, including substance use disorders, PTSD, HIV, and mood disorders (Gould, 2010; Hayes, Vanelzakker, & Shin, 2012; Heaton et al., 2004; Klemanski, Mennin, Borelli, Morrissey, & Aikins, 2012; Lee et al., 2013; Spikman et al., 2013). Thus, investigation of these personal factors may help us start to identify important treatment targets to enhance community integration in the diverse homeless population.

This study examined whether select ability and motivation measures are associated with community integration among homeless Veterans newly enrolled in the U.S. Department of Housing and Urban Development–Veterans Affairs Supportive Housing (HUD-VASH) program at the VA Greater Los Angeles Healthcare System, which has the largest such program in the nation (Cortes, Henry, de la Cruz, & Brown, 2012). The HUD-VASH program is the VA's predominant strategy for ending Veteran homelessness. It uses a "Housing First" model that combines subsidies for permanent, community-based housing and supportive services to persons who are homeless or on the verge of becoming homeless, without treatment mandates (Tsemberis, 2010). The data come from two separate longitudinal studies of community integration in homeless samples that were recruited based on the presence or absence of a primary psychotic disorder. This report focuses on the baseline assessments. Based on prior research in SMI, we expected that higher non-social cognition, social cognition, and motivation measure scores would be associated higher levels of participation in work, independent living, and social roles.

Methods

2.1. Participants

This report includes baseline data from 176 participants drawn from two separate VA-funded longitudinal studies of community integration in homeless Veterans. Study one included data from 96 participants in a VA Merit grant on homeless Veterans with a history of psychosis ("Psychosis sample"; Principal Investigator: MFG); data collection occurred between 2013-2017. Study two included 80 participants from a project on homeless Veterans without a history of psychosis ("Non-psychosis sample"; Principal Investigator: JKW) supported by the VA Research Enhancement Award Program (REAP) on Enhancing Community Integration for Homeless Veterans; data collection occurred between 2015-2018. Both studies included an overlapping set of baseline ability, motivation, and community integration measures, and 12-month follow-up assessments (not reported here). All participants from both studies were homeless or on the verge of becoming homeless, newly enrolled in VA Greater Los Angeles' HUD-VASH program, had received a Housing Choice Voucher (financial subsidy for independent housing), and were in the process of searching for housing with assistance from the VA. Of note, across the nation, an average of 113 days passes between HUD-VASH enrollment and apartment move-in (M.O'Connell, Kasprow, & Rosenheck, 2010); all participants were evaluated during this time period. For the Psychosis sample, 10% were literally homeless (living on street or place not meant for human habitation), 57% were in temporary housing (e.g., staying with family or friends, safe haven, transitional living facility), and 33% were in an institutional facility (e.g., residential mental health or substance use treatment program). For the Non-psychosis sample, 9% were literally homeless, 39% were in temporary housing, and 52% were in an institutional facility.

For the Psychosis sample, a VA administrative database (VA Informatics and Computing Infrastructure, VINCI) was queried monthly to identify all Veterans who enrolled in the HUD-VASH program in the preceding month who had received a psychotic diagnosis (based on ICD-9 or ICD-10 codes) in the preceding 5 years. Opt-in letters were sent to the last known address of Veterans from this list and Veterans who did not respond to the letter were subsequently contacted by phone. Additionally, research assistants attended patient orientation sessions for the HUD-VASH program and distributed information about the study. The recruitment process for the Non-psychosis sample group also involved research staff attendance at the HUD-VASH patient orientation sessions, but not the VINCI database.

General inclusion criteria included age between 18 to 65 years; estimated premorbid IQ greater than 70; and English proficiency. General exclusion criteria included any medical, physical, cognitive, or language impairment so severe as to adversely affect validity of data.

Regarding specific diagnostic criteria, for the Psychosis sample a diagnosis of schizophrenia, schizoaffective disorder, an unspecified psychotic disorder, or a mood disorder with psychotic features based on Structured Clinical Interview for DSM-5 was required (a substance-induced psychotic disorder was not permitted). For the Non-psychosis sample, exclusion criteria included any history of psychotic disorder. Although participants were not required to have SMI (based on the Substance Abuse, Mental Health Services Administration definition), the prevalence of lifetime mood disorders and PTSD was high in this sample (see below). There were no exclusion criteria for lifetime alcohol or substance use disorders in either sample.

All participants provided written informed consent in accordance with procedures approved by the Institutional Review Board at VA Greater Los Angeles Healthcare System.

2.2. Assessments and measures

2.2.1. Clinical assessments—Clinical interviews were conducted with all participants. All interviewers were trained at the Treatment Unit of the VISN 22 Mental Illness Research, Education and Clinical Center (MIRECC) to a minimum kappa of 0.75 for key psychotic and mood items. Diagnoses were determined using the Structured Clinical Interview for DSM-5 (SCID-5) (First, Williams, Karg, & Spitzer, 2015) mood disorder, psychotic disorder, PTSD, and substance use disorder modules, as well as all available medical records. Symptoms were assessed with the UCLA expanded 24-item Brief Psychiatric Rating Scale (BPRS) (Ventura et al., 1993). We examined the positive, agitation/mania, and depression/anxiety factor components of the BPRS (Kopelowicz, Ventura, Liberman, & Mintz, 2008).

2.2.2. Ability assessments

2.2.2.1. Non-social cognition

Estimated Premorbid Intelligence: The Wide Range Achievement Test 4 (WRAT4, (Wilkinson & Robertson, 2006)) was used to assess premorbid verbal intelligence.

Non-social cognitive composite score: Non-social cognition was assessed using the MATRICS Consensus Cognitive Battery (MCCB) (Nuechterlein et al., 2008). The MCCB includes nine tests that measure 6 domains of non-social cognition, including: speed of processing, attention/vigilance, working memory, verbal memory, visual memory, reasoning and problem solving. Standardized *T*-score were computed for each domain, correcting for age and gender. An "MCCB: Neurocognition Composite" score was based on the average *T*-score from each of the domains.

2.2.2.2. Social cognition

Managing Emotions: The MCCB also includes a social cognition measure: the "Managing Emotions" branch of the Mayer-Salovey-Caruso Emotional Intelligence Test 2.0 (MSCEIT (Mayer, Salovey, Caruso, & Sitarenios, 2003)). This test examines the regulation of emotions in oneself and in one's relationships with others by presenting vignettes of various situations, along with ways to cope with the emotions depicted in the vignettes. The standardized "Managing Emotions" *T*-scores was computed, correcting for age and gender.

Empathic Accuracy task (Lee, Zaki, Harvey, Ochsner, & Green, 2011): Participants watch 9 video clips (2.0 – 2.5 minutes each) of people talking about positive or negative autobiographical events and make continuous ratings of how the individual ("target") is feeling throughout the clip (in 2-sec segments) using a 9-point scale from 1 (extremely negative) to 9 (extremely positive). For each clip, the correlation between the participant's ratings of the targets' emotions and the targets' ratings of their own emotions is computed (in 2-sec segments). An overall score is calculated by computing the average of the correlations across clips.

2.2.3. Motivation assessments

Clinical Assessment Interview for Negative Symptoms (CAINS): The CAINS (Kring et al., 2013) is comprised of two subscales that assess the major negative symptom subdomains: 1) The Motivation and Pleasure (MAP) subscale (9 items) assesses asociality, avolition, and anhedonia; 2) the Expression subscale (4 items) assesses affective flattening and alogia. Our central interest was in the MAP subscale. Ratings for this subscale are based on both patients' reports of motivation, interest, and emotional experiences, as well as engagement in relevant social, vocational, and recreational activities. The measure is administered in a semi-structured clinical interview format and each item is rated on a scale ranging from 0 (no impairment) to 4 (severe deficit).

Defeatist Performance Attitudes Scale (DPAS): Participants also completed the Dysfunctional Attitude Scale (Weissman, 1978), which is a 40-item self-report scale designed to measure the presence and intensity of dysfunctional attitudes. Each item consists of a statement on a 7-point Likert scale (1-7, from "fully disagree" to "fully agree"). Similar to previous studies in SMI (M. F. Green et al., 2012; Horan et al., 2010), we focused on the DPAS, which consists of 15 statements describing overgeneralized conclusions about one's ability to perform tasks (e.g., "If I fail partly, it is as bad as being a complete failure"). These attitudes are theoretically and empirically linked to amotivation and negative symptoms in SMI (Campellone et al., 2016; Rector, Beck, & Stolar, 2005).

2.2.4. Community Integration

Role Participation in the Work and Independent Living Domains: The Role Functioning Scale (Goodman, Sewell, Cooley, & Leavitt, 1993) includes separate ratings for Working Productivity and Independent Living/Self Care, and has been extensively used in SMI research (M. F. Green et al., 2012; Thomas et al., 2017). Ratings were based on a semi-structured interview with standardized probe questions. The interview questions and ratings assess actual level of participation in work and independent living roles in the community. Each domain is rated on a 1–7 scale, with higher scores indicating better functioning.

Role participation in the Social Domain: Because community integration in the social domain is of central interest in this research program, we measured it with two complementary scales. First, the sum of the Social Connections and Family Interactions ratings from the Role Functioning Scale (RFS) (Goodman et al., 1993) were used. Ratings were based on a semi-structured interview with standardized probe questions. The interview questions and ratings assess actual level of social role participation in the community. Each domain is rated on a 1–7 scale, with higher scores indicating better functioning. Second, the Lubben Social Network Scale (LSNS)(Lubben, 1988) is a 12 item self-report index of the size, closeness, and frequency of contact with friends and family. Each item is rated from 0 – 5 and the items are summed to form a total score. This scale has been used in prior SMI studies (de Sousa, Spray, Sellwood, & Bentall, 2015; Johnson et al., 2018; Shioda, Tadaka, & Okochi, 2016) and internal consistency reliability in the current study was acceptable with alpha coefficients of .88 within each sample. We also computed a composite social domain index based on the average of the standardized scores for the two scales within each sample for use in correlational analyses.

2.3. Data analysis

Given the differences in the selection processes for the two samples, we initially evaluated whether the Psychosis and Non-psychosis samples differed on demographic and general psychiatric symptom characteristics, as well as on the ability, motivation, and community integration measures. Since, as detailed in the results below, the groups differed on the ability/motivation indices and the community integration measures, we conducted correlational analyses within each sample (rather than combining the samples) due to concerns that significant correlations could be induced simply by group mean differences on both sets of variables. We first examined whether community integration correlated with general demographic factors and psychiatric symptoms. We then addressed our primary interest in whether community integration indices correlated with the ability and motivation indices. Given the novelty of this research question, we treated these as exploratory analyses and did not correct for multiple comparisons. For variables showing significant correlations with community integration, Fisher's r-to-z transformation was used to determine whether the magnitude of the relevant correlations significantly differed between the two samples.

3. Results

3.1. Descriptive characteristics

3.1.1. Diagnoses—For the Psychosis sample, the breakdown of lifetime psychotic disorders was: schizophrenia (35%), schizoaffective disorder (12%), delusional disorder (3%), other specified/unspecified schizophrenia spectrum disorder (35%), bipolar I disorder with psychotic features (12%), major depressive disorder with psychotic features (3%). Further, 24% had a lifetime mood disorder and 29% had lifetime PTSD. Regarding substance use, 53% had lifetime alcohol use disorder (moderate or higher) and 70% had at least one lifetime substance use disorder (moderate or higher, not including alcohol use disorder).

For the Non-psychosis sample, 68% had a lifetime mood disorder and 43% had lifetime PTSD. Regarding substance use, 54% had lifetime alcohol use disorder (moderate or higher) and 69% had at least one lifetime substance use disorder (moderate or higher, not including alcohol use disorder).

3.1.2. Demographics—As shown in Table 1, the groups had comparable demographic characteristics. The samples were mostly middle-aged and predominantly male. Regarding race, the prevalence of African Americans was relatively high compared to the local general population, though consistent with the racial composition of Veterans in HUD-VASH at VA population in greater Los Angeles.

3.1.3. Symptoms—The Psychosis sample had significantly higher levels of positive, agitation/mania, and depression/anxiety symptoms than the Non-psychosis sample (see Table 1), though the magnitude of these differences was small.

3.2. Ability, Motivation, and Community Integration

Results for between-group comparisons are summarized in Table 2. For ability, on the non-social cognitive measures the groups did not significantly differ on estimated IQ scores from the WRAT, though scores on the Neurocognitive Composite from the MCCB were significantly poorer in the Psychosis than the Non-psychosis sample. On the social cognitive measures, the Psychosis sample had significantly lower scores on the Managing Emotions and the Empathic Accuracy tests.

For motivation, the Psychosis sample had significantly more severe negative symptoms than the Non-psychosis sample for both the CAINS MAP and Expression subscales. In line with these findings, the Psychosis sample also reported higher scores on the Defeatist Performance Attitude Scale than the Non-psychosis sample.

Regarding community integration, although the groups did not significantly differ for the independent living domain, the Psychosis sample had lower work and social role participation than the Non-psychosis sample.

3.3 Correlations Between Demographic/Symptom Variables and Community Integration

As shown in Table 3, there were few significant associations with the community integration measures for either sample. An exception was that higher depression/anxiety significantly correlated with less social role participation in both groups; the magnitude of correlations did not differ between groups ($Z = -.76$, $p > .05$). In addition, higher positive symptoms significantly correlated with less social role participation within the Psychosis sample.

3.4. Correlations Between Ability/Motivation Variables and Community Integration

As shown in Table 4, there were no significant correlations for three of the four ability measures. Regarding non-social cognition, there were no significant correlations with community integration status for either group. Regarding social cognition, there were a few small-to-medium correlations for Managing Emotions, including positive correlations with the work and independent living domains within the Non-psychosis sample, and with the social domain within the Psychosis sample. The correlation with work was significantly larger in the Non-psychosis sample than the Psychosis sample ($Z = 2.08$, $p < .05$), and the magnitude of correlations with the independent living and social domains did not differ between groups ($Zs < 1.17$, $ps > .05$). However, there were no significant correlations for the Empathic Accuracy test for either group.

In contrast, the motivation variables showed several significant associations with community integration. The strongest relationships were found for the social composite index, which had large negative correlations with CAINS MAP scores, as well as smaller negative correlations with the DPAS, within both samples. For the work domain, there were medium negative correlations with CAINS MAP in both groups, as well as a small significant correlation with DPAS within the Psychosis sample. Finally, independent living negatively correlated with CAINS MAP within the Psychosis sample. The magnitudes of the correlations for these motivation variables did not significantly differ between groups ($Zs < -1.13$, $ps > .05$).

Discussion

This study examined whether personal ability and motivation factors that have been linked to community integration in SMI show comparable relations to community integration in diverse samples of homeless Veterans entering a permanent supported housing program. Although the Psychosis sample showed somewhat greater impairments than the Non-psychosis sample across symptom, ability, motivation, and community integration measures, the patterns of correlation with community integration were remarkably similar across samples. The most striking result was that, across samples, motivation measures were similarly robust correlates of community integration. Social cognitive ability also showed a few associations with level of integration. Overall, the findings suggest that motivational variables are particularly important for both understanding and enhancing community integration in this challenging to treat population.

The participants in this study reflect the diverse personal characteristics and mental health treatment needs typically seen in homeless samples. Although the two samples were selected

based on the presence or absence of a psychotic disorder, they were demographically highly similar. Notably, the proportion of African Americans was elevated compared to the greater Los Angeles population, which is similar to prior research on Veterans receiving permanent supported housing in this region (Harris, Winetrobe, Rhoades, Castro, & Wenzel, 2017). High lifetime levels of substance use disorders also characterized both samples, which are very similar to national prevalence rates for Veterans in HUD-VASH (Tsai et al., 2014). The Non-psychosis sample, which had no inclusion criteria requiring mental illness, also had high levels of SMIs including mood disorders and PTSD. Overall, demographics and psychiatric symptoms showed few associations with community integration, with the exception of a small-to-medium association between higher anxiety/depression and less social role participation in both samples. These findings demonstrate the need to look beyond broad demographic and clinical variables to identify new treatment targets.

Specialized measures of motivation clearly stood out as the strongest correlates of community integration. Experiential negative symptoms, assessed by the recently developed CAINS, demonstrated particularly large associations with social role participation, as well as moderate associations with work role participation. These results converge with an extensive literature demonstrating that experiential negative symptoms, including avolition, asociality, and anhedonia, are more strongly and consistently associated with community integration than expressive negative symptoms in people with psychotic disorders (Kring et al., 2013; Llerena et al., 2018; Strauss et al., 2013). The presence and functional significance of these experiential negative symptoms extends beyond psychosis to other types of psychopathology, such as bipolar disorder (Tabak et al., 2015).

While it is possible that the relationship between the CAINS and community integration might reflect shared content, the finding that higher defeatist performance attitudes, assessed with the DPAS, also relate to poorer social functioning across samples helps to mitigate such concerns. The DPAS assesses broad dysfunctional attitudes/beliefs with item content that does not overlap with the CAINS, though these dysfunctional attitudes have strong theoretical and empirical linkages to experiential negative symptoms (Campellone et al., 2016; Grant & Beck, 2009). The convergent findings for the CAINS and DPAS, across both samples, strongly support the importance of motivation and related dysfunctional beliefs for understanding community integration in the homeless population.

The importance of motivation variables at the time of entry into supported housing points to new directions for translational research into the determinants of poor community integration and for treatment development. Regarding translational research, motivation has received considerable recent attention from an affective science perspective (Alcaro & Panksepp, 2011; Berridge, 2004; Berridge & Kringelbach, 2015; Diekhof, Falkai, & Gruber, 2008; Romer Thomsen, Whybrow, & Kringelbach, 2015). Contemporary models conceptualize the motivation construct as consisting of multiple components which act in concert to drive reward and punishment related decision-making and learning. Similar to studies in SMIs (Kring & Barch, 2014; Reddy, Horan, & Green, 2016), affective science methods can be used to more precisely specify the component(s) (e.g., reward anticipation, effort valuation, initial responsivity to rewards) that are linked to community integration in homeless samples.

Regarding treatment implications, motivational disturbances are also interesting because of the existence of relevant evidence-based psychosocial treatment approaches. For example, Motivational Interviewing has been highly useful in helping individuals, including those with substance use and SMI, to progress toward personal behavioral goals (Barrowclough et al., 2010; Bellack, Bennett, Gearon, Brown, & Yang, 2006; Fiszdon, Kurtz, Choi, Bell, & Martino, 2016). Further, cognitive behavior therapy has been found to improve experiential negative symptoms, as well as associated defeatist performance beliefs and community integration, in people with psychosis (Granholm, Holden, & Worley, 2018; Grant, Bredemeier, & Beck, 2017; Grant, Huh, Perivoliotis, Stolar, & Beck, 2012). The applicability and potential value of these approaches to homeless people has been demonstrated in a few initial studies (Kennedy et al., 2018; Okuyemi et al., 2013; Osilla, Kennedy, Hunter, & Maksabedian, 2016; Pontoski et al., 2016).

In contrast to motivation, ability measures showed relatively few associations with community integration. Notably, both samples showed large impairment on the MCCB Neurocognition Composite, with scores falling 1 – 1.5 standard deviations below normative standards. This level of impairment is consistent with a recent review of 24 studies of cognition across various types of homeless samples (Depp et al., 2015). The current study is the first to demonstrate that social cognition is similarly impaired in this population. Both groups scored approximately 1 - 1.5 standard deviations below the norm on the MCCB Managing Emotions index, and scored similarly to scores previously reported in schizophrenia outpatients on the Empathic Accuracy test (Kern et al., 2013). Despite substantial ability impairments in both samples, only one measure, the MCCB Managing Emotions index, was associated with community integration, though the specific domains differed across samples. The most notable finding was the medium correlation with the work domain in the Non-Psychosis sample, which was significantly larger than the correlation in the Psychosis sample. These findings are broadly consistent with prior studies demonstrating social cognition is associated with community integration in SMI (Fett et al., 2011), though we found no significant relations for the empathic accuracy test.

The absence of significant associations between non-social cognition and community integration in these homeless samples is inconsistent with expectations based on the large literature demonstrating such links in psychosis, as well as other forms of SMI. The reason(s) for this lack of association is unclear. To our knowledge, only three prior studies of homeless people directly examined correlations between cognition and indices associated with community integration, though substantial differences in their samples and methods make comparisons to our study difficult. Saperstein et al. (2014) reported that poorer global cognition was associated with a decreased likelihood of earning a “living wage” in 55 homeless young adults in a transitional living and employment program (though it was not associated with employment status or hours worked). Stergiopoulos et al. (2011) reported that several aspects of cognition correlated with poorer performance on a functional capacity measure in 30 homeless psychiatric inpatients with schizophrenia. In an 18-month longitudinal study of 112 homeless individuals randomized to either group or independent living settings, Schutt et al. (2007) reported that different aspects of cognition were differentially associated with improvements in life skills (e.g., self-care, communication, turbulent behavior), though the correlations were moderated by type of living situation.

Thus, the small literature in this area is not particularly consistent. The participants in our study were receiving considerable resources and assistance from the VA, which might help to compensate for reduced cognitive ability. It is also possible that our relatively broad community integration measures, which are commonly used in non-homeless SMI research, are insufficiently sensitive to the aspects of community integration that are most relevant for homeless people.

The current study is unique in evaluating how several personal ability and motivation factors relate to community integration across two distinctive, rigorously assessed homeless samples. However, several limitations must be considered. First, this report focuses on cross-sectional bivariate correlations from the baseline assessment point in two longitudinal research projects. We are therefore unable to make any inferences about causal relationships. Further, the correlational analyses were not corrected for multiple comparisons, and the replicability of these associations needs to be established. In planned future reports, we will evaluate integrative multi-factorial models of determinants of community integration by incorporating 12-month follow-up data, which will allow for stronger inferences regarding causality. Second, we examined a homeless Veteran sample, which raises questions about generalizability to non-Veterans. Although Veteran homeless samples tend to be older, include a higher proportion of males, and have a higher level of education than non-veteran samples, no consistent differences in mental health or substance use have been reported (see review by Tsai & Rosenheck, 2015). Of particular relevance to the current study, a large-scale study found that Veteran and Non-Veteran samples admitted to supported housing programs were remarkably similar in terms of mental health diagnoses, clinical severity, service utilization, and responsiveness to housing intervention (Tsai, Mares, & Rosenheck, 2012a), supporting the broad applicability of our findings. Third, this study focused one set of potential personal determinants of community integration, as defined by participation in important life roles. Many additional factors will be important to consider, including environmental determinants (e.g., neighborhood and housing characteristics, stigma) and other aspects of community integration (e.g., subjective sense of belonging and quality of life).

Permanent housing programs are a central component of both VA and non-VA efforts to address the vexing problem of homeless, and the number of people in these programs are rapidly growing. This study suggests that further understanding and treatment of motivational disturbances will be broadly useful for helping these people achieve a more complete community reintegration beyond having a roof over one’s head.

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Public Policy Relevance Statement

Although supported housing services improve housing outcomes among homeless individuals, community integration typically remains poor and little is known about the underlying determinants of poor community integration post-residential placement. This study examined potential motivational and cognitive correlates of community integration across two samples of homeless individuals, either with or without a psychotic disorder, who had recently been admitted to a supported housing program. Across samples, specialized motivation measures stood out at the most robust correlates of community integration, suggesting that interventions targeting motivational challenges may have widespread usefulness for enhancing community integration beyond obtaining housing.

Table 1.

Demographics and Symptom Variables in the Non-Psychosis (N = 80) and Psychosis (N = 96) Samples

	Non-Psychosis Sample			Psychosis Sample		
	Mean or Ratio	**SD**		**Mean or Ratio**	**SD**	**Statistic**
Demographics						
Age	50.6	(11.1)		48.9	(10.7)	t = 1.05
Gender (% Male:)	90%			95%		$X^2 = 2.34$
Personal Education (in years)	13.2	(2.0)		12.9	(1.4)	t = 1.17
Parental Education (in years)	13.4	(2.6)		12.9	(3.0)	t = 1.16
Race (% Black: %White: %Other)	54%: 29%: 17%			58%: 27%: 15%		$X^2 = 6.38$
Ethnicity (% Non-Hispanic)	87%			83%		$X^2 = .75$
Symptoms						
BPRS						
Positive Symptoms	1.3	(0.3)		2.1	(0.8)	$t = -8.4^{***}$
Agitation/Mania	1.2	(0.3)		1.3	(0.5)	$t = -2.4^{*}$
Depression/Anxiety	2.2	(0.8)		2.4	(0.9)	$t = -2.00^{*}$

Notes: *p < .05; ** p < .01; *p < .001.

Table 2.

Ability, Motivation, and Community Integration Variables in the Non-Psychosis (N = 80) and Psychosis (N = 96) Samples

	Non-Psychosis Sample			Psychosis Sample		
	Mean	**SD**		**Mean**	**SD**	**t-value**
Ability						
Non-Social Cognition						
WRAT-4	42.6	(8.7)		43.9	(6.3)	−1.13
MCCB: Neurocognition Composite	41.3	(10.0)		36.1	(11.5)	3.06***
Social Cognition						
Managing Emotions	41.0	(11.8)		36.9	(12.7)	2.16*
Empathic Accuracy	.64	(.13)		.60	(.14)	2.04*
Motivation						
CAINS: Motivation & Pleasure	12.4	(7.7)		17.2	(9.5)	−3.94***
CAINS: Expression	1.5	(2.6)		3.4	(3.7)	−3.8***
Dysfunctional Performance Attitudes Scale	43.6	(17.4)		50.0	(15.5)	−2.53*
Community Integration						
Work: Role Functioning Scale	3.2	(1.5)		2.3	(1.3)	4.39***
Independent Living: Role Functioning Scale	4.3	(1.4)		4.2	(1.3)	.68
Social Variables						
Family/Social: Role Functioning Scale	9.5	(2.6)		8.6	(3.1)	2.14*
Lubben Social Network Scale	27.9	(13.4)		22.8	(13.0)	2.51*

Notes: df = 174. *p < .05; ** p < .01; *p < .001.

Table 3:

Correlations Between Demographic/Symptom Variables and Community Integration Within the Non-Psychosis Sample (N = 80) and the Psychosis (n = 96) Samples

	Non-Psychosis Sample				Psychosis Sample		
	Work: RFS	**Independent living: RFS**	**Social Composite Index**		**Work: RFS**	**Independent living: RFS**	**Social Composite Index**
Age	−.08	.02	−.06		−.03	−.10	.02
Education	.20	.20	.09		.05	.04	−.06
BPRS: Positive	−.15	−.18	−.20		.01	−.09	−.24*
BPRS: Agitation/ mania	−.11	−.09	−.01		−.16	−.12	−.17
BPRS: Depression/anxiety	−.10	−.17	−.35**		−.08	−.11	−.21*

Notes: *p < .05; ** p < .01.

Table 4:

Correlations Between Ability/Motivation Variables and Community Integration Variables: Combined Sample

	Non-Psychosis Sample				Psychosis Sample		
	RFS: Work	**RFS: Independent living**	**Social Composite Index**		**RFS: Work**	**RFS: Independent living**	**Social Composite Index**
Ability							
Non-Social Cognition							
WRAT	−.10	.01	.05		−.08	−.20	−.08
MCCB Neurocognition composite	.16	.07	.15		.10	.12	.08
Social Cognition							
Managing Emotions	.44**	.28*	.17		.15	.14	.27**
Empathic Accuracy	.13	.16	.05		.05	−.18	−.07
Motivation							
CAINS Motivation & Pleasure	−.32**	−.22	−.71***		−.42***	−.30**	−.68***
CAINS Expressive	−.16	−.14	−.24*		−.11	−.07	−.22*
Defeatist Performance Attitudes Scale	−.03	−.10	−.37**		−.23*	−.12	−.27**

Notes: *p < .05; ** p < .01; *** p< .001.