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Association between Psychological Integration and Permanent Supportive Housing: An Exploratory Study with a Focus on Ethnicity

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Abstract: There is limited research on the association between Permanent Supportive Housing (PSH) and psychological integration. The purpose of this study was to explore this association among individuals with mental illness and/or substance use disorder (SUD) enrolled in PSH and to identify variables associated with sense of belonging. Given differences in outcomes of PSH by ethnicity, we were interested to determine if an association existed between PSH and psychological integration and whether it was equally observed among Hispanics and non-Hispanics. The target population included individuals who were chronically homeless and diagnosed with a mental illness and/or SUD. Baseline data were collected upon intake (N = 370). Follow-up data were collected at six-months post baseline (N = 286) and discharge (N = 143). Predictor and control variables included demographics, overall health, PTSD symptom severity, interactions with family and friends, and participation in recovery-related groups in the community. Psychological integration scores increased significantly from the baseline to the 6-month follow-up ($t = -3.41$, $p = 0.003$) and between the 6-month follow-up and discharge ($t = -2.97$, $p = 0.007$). Significant predictors of psychological integration included overall health, interactions with family and/or friends, PTSD symptoms, income, education, and diagnosis. No differences were observed between Hispanics and non-Hispanics. The findings from this exploratory study suggest that future research in this area is warranted.

Keywords: homeless; psychological integration; permanent supportive housing

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1. Introduction

Psychological integration, defined as a sense of belonging, is one of three dimensions within the community integration conceptual model identified by Wong and Solomon (2002). With the two other dimensions being social and physical integration, this multidimensional model was developed with the aim of fully operationalizing community integration among individuals with psychiatric disabilities in supportive housing. Physical integration refers to the "extent to which an individual spends time, participates in activities and uses goods and services in the community" (Wong and Solomon 2002, p. 18). Social integration includes two subdimensions and refers to the extent to which individuals engage in social interactions in the community (i.e., the interactional subdimension) and the extent to which an individual's network includes positive relationships with multiple and various people in the community (i.e., the social network subdimension) (Wong and Solomon 2002). While both social integration and physical integration are important, psychological integration has been identified as the defining feature of community life (Sarason 1974) and has been linked to improved mental health, service utilization, and

retention in behavioral health treatment (La Motte-Kerr et al. 2020; Santiago-Rivera et al. 2011; Torres et al. 2012; Townley and Kloos 2011).

The importance of psychological integration is best understood through two complimentary theories: the Sense of Community Theory (Sarason 1974) and the Need to Belong Theory (Baumeister and Leary 1995). The Sense of Community Theory describes the psychological sense of community as the "feeling one is part of a larger dependable and stable structure" (p. 157). Sarason (1974) asserted that the psychological sense of community was one of the major bases for self-definition. The Need to Belong Theory identifies a sense of belonging as a basic human need, similar to the level of importance of food, water, and shelter. The Need to Belong theory posits that a sense of belonging can create value in life and the ability to learn healthy coping skills. These theories underlie the importance of studying psychological integration as a major factor in mental health. However, the majority of previous research on community integration has focused on physical integration followed by social integration (Pahwa and Kriegel 2018). Fewer studies have focused on psychological integration, and none of the studies in a recent systematic review of community integration evaluated psychological integration within the context of Permanent Supportive Housing (Marshall et al. 2020). Given the importance of psychological integration and the ability to enhance it (for example, through creation of social activities that allow for positive social interactions), research is needed to address the gap in the literature and understand characteristics related to sense of belonging and what interventions have an impact on it.

The most recent national prevalence counts indicate that over half a million people are homeless in shelters and on the street on a single night in the United States (AHAR n.d.). However, undercounting is widely acknowledged (Hopper et al. 2008), particularly among Hispanic communities (Castañeda et al. 2014; Conroy and Heer 2003; Jones 2016; Krogstad 2014). As a result of this undercounting, Hispanics tend to be underrepresented in studies on interventions for homeless populations.

Permanent supportive housing (PSH) is an evidence-based intervention that combines affordable housing assistance with voluntary support services to address the needs of chronically homeless people. The goal of PSH is to help people with disabilities maintain stable housing and live productively in the community. Although variability exists in its implementation, many PSH programs adhere to the "Housing First" model, which follows a harm-reduction approach to homelessness and prioritizes community integration alongside recovery and consumer choice (Gilmer et al. 2015; Tsemberis and Henwood 2013). Housing first fosters social inclusion by encouraging normative relationships with informal social ties including landlords, neighbors, and family members—thus increasing contact with people outside of the behavioral health system. PSH has been linked to a number of valuable outcomes among groups with mental illness, including reduced hospitalization and homelessness (Aubry et al. 2015; Rog et al. 2014), reduced emergency health care utilization (Culhane et al. 2002; Doran et al. 2013; Rog et al. 2014), improved mental health status (Crisanti et al. 2017; Gilmer et al. 2015; Kyle and Dunn 2008), and improved quality of life (Aubry et al. 2015; Gilmer et al. 2015; Kyle and Dunn 2008; O'Campo et al. 2016; Woodhall-Melnik and Dunn 2016).

There is limited research on the impact of PSH with respect to community integration, and specifically psychological integration, despite it being a core goal of the model (Tsemberis and Henwood 2013; Wong and Solomon 2002) and an important catalyst for recovery for persons with mental illness (Aubry et al. 2013; Bond et al. 2004; Kennedy 1989; Prince and Gerber 2005; Townley et al. 2009). A recent systematic review of the effectiveness of intervention targeting community integration among individuals with lived experiences of homelessness reported that housing first has "mixed or poor effectiveness in helping individuals integrate in their communities following homelessness" (Marshall et al. 2020, p. 1844). However, among individuals enrolled in PSH programs, community integration has been associated with improved mental health and decreased substance use (Hwang et al. 2009), housing retention (Nelson et al. 2015), and improved

well-being (Barczyk et al. 2014; Kidd 2013). Similar positive outcomes have been observed in studies that have focused only on psychological integration (La Motte-Kerr et al. 2020; Patterson et al. 2014). Relationships between community integration and variables, such as demographics, health, psychopathology, and social functions, have been examined among individuals with mental health problems, substance abuse problems, and/or other disabilities in the general population, but the findings have been inconsistent (Abdallah et al. 2009; Aubry et al. 2013; Baumgartner and Herman 2012; Cherner et al. 2017; Chinchilla et al. 2020; Cummins and Lau 2003; Gracia and Herrero 2004; Gulcur et al. 2007; Lee and Seo 2020).

Previous research reviews on the effectiveness of PSH have reported inconsistencies regarding outcomes for ethnic subgroups (Leff et al. 2009; Rog et al. 2014). While some studies have found improved outcomes, including drug and alcohol use and hospitalization, many more studies report less housing stability and less satisfaction among minority compared to white participants. Because of these mixed results, further research on the moderating effects of ethnicity have been recommended to provide a more complete understanding of the range of PSH outcomes for various subpopulations. The authors are unaware of any study that has examined the impact of PSH on psychological integration by ethnicity. Of interest is that, in a systematic review of studies on community integration among those who experienced traumatic brain injury, Hispanics experienced significantly lower community integration than non-Hispanic white participants (Gary et al. 2009). The disparities were explained by client-level variables (e.g., cultural traditions and understanding of illness, level of acculturation, language ability), provider attributes (e.g., cultural competency, biases, stereotypes, and demeanor), as well as organization characteristics (e.g., language services and diversity of staff/providers). These same factors are likely to impact the psychological integration of Hispanic individuals with mental illness and/or substance use disorder (SUD) experiencing homelessness. Thus, we expected to observe smaller improvements in psychological integration among Hispanic participants compared to non-Hispanics participants. Psychological integration is of particular importance to examine among Hispanic populations because of their reported lower sense of belonging in majority white communities resulting from discrimination and marginalization (Flores-González 2017; Hondagneu-Sotelo et al. 2020).

The purpose of this study was to explore the association between PSH and psychological integration among individuals with mental illness and/or SUD enrolled in PSH and to identify variables associated with sense of belonging. Because of the previous findings of differences in outcomes of PSH by ethnicity, we were especially interested to determine, if an association between PSH and psychological integration was observed, whether it was equally observed among Hispanics and non-Hispanics. We had three specific research questions. First, did psychological integration improve over time for participants with mental illness and/or SUD enrolled in a PSH program? Second, which variables were associated with changes in psychological integration? Third, if improvements in psychological integration were observed, were improvements comparable for Hispanic and non-Hispanic clients? Because of the proportionately higher numbers of Hispanics served by our PSH programs (nearly half of participants), we are in a unique opportunity to contribute to knowledge in this area.

2. Materials and Methods

This study drew data from the New Mexico Human Services Department, Behavioral Health Services Division (BHSD), Health and Recovery for Homeless Individuals (HHRHI) program funded by the Substance Abuse and Mental Health Services Administration (SAMHSA) Center for Substance Abuse Treatment (CSAT). The goal of HHRHI was to enhance the infrastructure of New Mexico's (NM) behavioral health service system to increase capacity and provide accessible, effective, comprehensive, coordinated, and sustainable services to individuals who experienced chronic homelessness and who had a mental illness and/or SUD in three counties in NM: Bernalillo, Doña Ana, and Santa Fe. The majority

of New Mexicans live in these three counties, with populations ranging from 117,992 to 518,310 (U.S. Census Bureau QuickFacts n.d.). Chronic homelessness was defined as a period of homelessness lasting at least a year—or occurring repeatedly—while struggling with a disabling condition, which in this study included a mental illness and/or SUD (U.S. Department of Housing and Urban Development 2015). PSH services were provided by a community-based agency located within each of the counties that specialized in providing behavioral health services for the homeless. Data from this exploratory study came from participants who were enrolled in the evaluation of the HHRHI program between February 2016 and September 2018.

2.1. Participants

The target population included individuals who were chronically homeless (defined as housing instability lasting three or more years) and diagnosed with a mental illness and/or SUD as defined by the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (American Psychiatric Association 2013). Diagnoses were determined by a master-level independent licensed counselor through a structured face-to-face clinical interview when participants entered services. Eligible individuals were identified through a coordinated assessment with a focus on selecting individuals with the greatest need due to the length of housing instability and the behavioral health symptom severity (Gardner et al. 2010).

2.2. Services Provided to Participants

All three agencies implemented the PSH model using the housing first approach to provide wrap-around services (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Services n.d.). Participants were provided a housing voucher from a number of different state, local, and federal (e.g., Veterans Affairs) agencies and then worked with housing case managers to find an appropriate housing unit. Participants were assigned to a licensed behavioral health clinician and a peer support worker (PSWs). PSWs are people who self-identify as current or former clients of mental health and/or substance abuse services, who have a period of demonstrated recovery (typically two plus years), and who have completed specialized training in peer support services (Solomon 2004). In New Mexico, PSWs must complete 40 h of classroom training and a certification exam through the New Mexico Credentialing Board for Behavioral Health Professionals. PSWs in the HHRHI program received additional specialized training in housing and supportive services delivery that resulted in expertise in housing laws and regulations, landlord/tenant relationships, tenants' rights, advocacy for clients in court, and strategies for accessing and maintaining housing. Clinicians provided individual and/or group therapy based on need. This included trauma- and substance-use-specific treatment, specifically Seeking Safety (Najavits 2001) and cognitive behavioral therapy. PSWs provided case management and housing support services.

2.3. Procedure

Individuals were asked to participate in the evaluation upon enrollment in the HHRHI program. The consent process and data collection were completed through structured interviews by trained research assistants hired by the agencies. Baseline data were collected within seven days of enrollment into the HHRHI program and after the completion of consent to participate in the evaluation. Follow-up interviews were completed 6-months post baseline and then again at discharge from the HHRHI program. A participant was considered discharged from the program when they were no longer receiving case management or other treatment services from the participating agency. Discharge occurred for many reasons including completion of treatment goals, moving away from the catchment area, and loss of contact (90+ days). Many participants were still active in the program at the end of the three-year evaluation period, and discharge interviews were conducted with these individuals at the end of the evaluation, regardless of their tenure in the program. As such, there is significant variability in the time between baseline and discharge interviews.

It should be noted that discharge from services/evaluation does not imply termination of housing benefits, as these were independent of supportive services under the PSH model.

Participants received a $20.00 gift card for the baseline interview and a $30.00 gift card for follow-up and discharge interviews. This study was approved by the local University's Human Research Protections Office, Institutional Review Board (IRB, ID#15-619). The IRB was responsible for assessing the impact of incentives on study participants and determined that the amount of the gift cards was not unduly coercive. The authors consider it good research practice to thank participants for their time and effort as long as the monetary gift is modest in amount. The IRB also required letters of support from all collaborating agencies.

2.4. Fidelity

The PSH Fidelity Scale was used to assess adherence to the model (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Services, Center for Mental Health Services n.d.). The PSH fidelity scale consists of seven dimensions: Choice of Housing; Functional Separation of Housing and Services; Decent, Safe, and Affordable Housing; Housing Integration; Rights of Tenancy; Access to Housing; and Flexible, Voluntary Services. Each dimension includes specific items related to the extent of implementation of the dimension's primary goal. Items are scored individually and then averaged to provide a score for each dimension. For example, the dimension Choice of Housing is comprised of four items that are scored individually. Individual scores for each of those items are then averaged to determine the score for the Choice of Housing dimension. Across the seven dimensions, the PSH fidelity scale includes 23 items. Most items on the fidelity scale have a four-point rating scale with a rating of 4 meaning the item is successfully implemented to the model's standards and a rating of 1 meaning the item is not successfully implemented to the model's standards. However, there are items that consist of just a three-point rating scale (4, 2.5, and 1) or a two-point rating scale (4 and 1). Noteworthy is that a score of "4" always denotes "perfect" fidelity. The scores of each dimension are combined to provide a total fidelity score. The highest possible score is 28. Fidelity assessments were conducted in person through interviews with PSH staff by independent evaluators in the first and second years of program implementation. The fidelity assessments showed that all three agencies were implementing PSH at high fidelity. With the highest possible fidelity score being 28, the first- and second-year total fidelity scores for all three agencies ranged from 26.66 to 27.56 and 26.57 to 27.56, respectively. Noteworthy is that since PSH programs must adapt to local conditions such as the housing market, service environments, and local politics, few, if any, programs are able to obtain a perfect score on the PSH fidelity tool.

2.5. Measures

Self-reported data were derived from measures used in the SAMHSA-funded evaluation, including the Community Integration Scale (CIS) (Goering et al. 2011), the Posttraumatic Symptom Checklist—Civilian Version (PCL-C) (Weathers et al. 1993), and questions from the Government Performance and Results Act (GPRA) tool. The SAMHSA Center for Substance Abuse Treatment (CSAT) requires all grantees to use the GPRA tool (https://www.samhsa.gov/grants/gpra-measurement-tools, accessed on 23 November 2021). Except for diagnosis, which was determined by a clinician, all other data were obtained via self-report.

2.5.1. Outcome Variables

Psychological integration was measured using the psychological subscale of the CIS (Goering et al. 2011). The subscale included four items measured on a five-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). The four items were: (1) I know most of the people who live near me; (2) I interact with the people who live near me; (3) I feel at home where I live; and (4) I feel like I belong where I live. A total score

was computed for each participant with a range from 4 to 20, with higher scores reflecting higher perceptions of psychological integration. Little psychometric information exists on the CIS, but the internal reliability of the psychological subscale has been reported to be 0.75 (Kerman et al. 2019).

2.5.2. Predictor Variables

PTSD symptom severity was measured by the PCL-C (Weathers et al. 1993). The PCL-C is a 17-item self-report scale that measures core PTSD symptoms in the past month from 1 ("Not at all") to 5 ("Extremely"). Responses to 17 items were summed to yield a total severity score ranging from 17 to 85, with higher scores indicative of higher symptom severity. The PCL-C has good internal consistency, test–retest reliability, and convergent validity. A review of the psychometric properties of the PCL-C found, for example, total Cronbach alpha scores above 0.75 among 14 studies that included various target populations (Wilkins et al. 2011).

The number of recovery groups attended in the community was based on responses to three questions included in the GPRA tool, which asked participants if they participated in (1) voluntary self-help groups (e.g., Alcoholics Anonymous), (2) religious/faith-affiliated groups, and (3) other support/recovery groups attended in the past 30 days. For those participants who reported that they attended recovery groups in the community, the number of groups was summed across these three questions.

Rating of overall health was measured by responses to one item in the GPRA measurement tool which asked, "How would you rate your health right now?" Responses were rated on a five-point Likert scale including poor, fair, good, very good, or excellent. Higher scores on the scale indicate higher ratings of overall health.

Interaction with family and friends was measured by a yes/no question that asked, "In the past 30 days, did you have any interaction with family and/or friends who are supportive of your recovery?"

Time was based on when the interview was completed: baseline, 6-month, or discharge. A total of 370 individuals completed a baseline interview. Of those, 77.2% (N = 286) completed a 6-month follow-up interview and 38.6% (N = 143) completed a discharge interview.

2.5.3. Control Variables

Demographic variables included ethnicity (Hispanic/non-Hispanic), county, age, gender, education, and income at baseline. County of residence was determined based on the service agency, while the other five demographic variables were collected from the GPRA tool. Noteworthy is that the Hispanic population in this geographic region is comprised of both established families dating to when the Spanish first settled in the area, as well as newer immigrants from several Latin American countries, primarily Mexico.

Primary diagnosis was recorded by clinical staff based on diagnostic interviews also at baseline. Primary diagnosis was grouped into five categories: Bipolar Disorders, PTSD, Depressive Disorders, Psychotic Disorders, and Anxiety/Other Disorders. With substance use disorder being the primary diagnosis for only 22 participants, these records were included in the Anxiety/Other Disorder category. Seventy percent (N = 258) of participants had a primary mental illness with a co-occurring substance use disorder. Housing status was not included in the analysis as all individuals received housing per funding requirements upon enrollment into the HHRHI Program. Finally, substance use was not included as a predictor because of the extremely low rates of reported use among the target population. Neither alcohol nor drug use has been found to be significantly associated with psychological integration (Cherner et al. 2017).

2.6. Statistical Analyses

Parametric bivariate comparisons of continuous and categorical variables were conducted using t-tests or one-way ANOVAs, as appropriate. Pairwise comparisons of categor-

ical variables between groups were conducted using Pearson's Chi square test, two-way ANOVAs, and post-hoc Tukey tests, as appropriate. Due to the longitudinal nature of the data (repeated measures for each participant) and the nested structure (time within participants and participants within sites), hierarchical mixed modeling was used to assess the psychological integration subscale scores. The variables "participant" and "site" were included as random components of the model. The remaining predictors and control variables were treated as fixed effects. The model included a univariate outcome with multiple predictors (i.e., participation in recovery-related activities in the community, interaction with family and friends, health status, and PTSD score), controlling for gender, ethnicity, education, diagnosis, age, and income. A variance component (VC) correlation matrix was used to model each random effect or repeated effect. We assumed correlated errors between the time points within each subject, which were presumed to be the same over time, regardless of how distant in time. In conjunction with the procedure and matrix structure, a restricted maximum likelihood estimation (REML) was used. This is because REML restricts negative estimates of the random components, making this estimation as unbiased as possible, but it allows for more variation in the fixed effect estimates. Missing data in the variables were about 2.5% per variable where grand mean imputation was done for the numeric variables. There were little to no missing data for the categorical variables. Records that were missing data on psychological integration scores and predictor variables were deleted as imputation would cause bias. The hierarchical mixed modeling analysis was conducted using SAS PROC Mixed (Singer 1998).

3. Results

Table 1 summarizes demographic variables over time (baseline, six-month follow-up, and discharge). Across all time points, there were slightly more males than females; the average age was 45 years old; and the average monthly income was under $1000. The most frequent diagnosis was depression (33.0% at baseline), followed by PTSD (23.2% at baseline). Approximately half of the sample was Hispanic: 46.7% at baseline, 47.2% at six-month follow-up, and 51.7% at discharge. An examination of differences in the demographics of the study population overtime found no significant differences reducing concerns related to selection bias resulting from attrition. The average length of stay in services was 14.4 months (range 0.5 to 32.5 months).

Table 1. Demographic variables over time.

	Baseline (*N* = 370)		**6-Months (*N* = 286)**		**Discharge (*N* = 143)**	
	N	%	*N*	%	*N*	%
Male gender	219	59.2	161	56.3	78	54.5
Hispanic/Latino (yes)	173	46.7	135	47.2	74	51.7
County						
Santa Fe	152	41.1	121	42.3	85	59.4
Doña Ana	91	24.6	64	22.4	29	20.3
Bernalillo	127	34.3	101	35.3	29	20.3
Education						
<High school	110	29.7	79	27.6	42	29.4
High school graduate	113	30.5	80	28.0	35	24.5
>High school	147	39.7	127	44.4	66	46.1
Diagnosis						
Bipolar disorder	61	16.5	50	17.5	25	17.5
Post-traumatic stress disorder	86	23.2	67	23.4	39	27.3
Depressive disorders	122	33.0	100	35.0	48	33.5
Psychotic disorders	34	9.2	32	11.1	17	11.9
Anxiety/other disorders	67	18.1	37	13.0	14	9.8
	M	*SD*	*M*	*SD*	*M*	*SD*
Age	44.7	11.3	43.8	11.3	45	11.3
Monthly income	816	534	974	534	1123	534

Table 2 summarizes the values of predictor and outcome variables at each time point. At every point, the average health rating was 3.5, on a 1 to 5 scale. More than two-thirds of the sample reported that they interacted with family and/or friends who were supportive of their recovery. The average PTSD score was 50.7 (SD = 16) at the baseline and then 47.4 (SD = 16) and 46.8 (SD = 16) at the 6-month follow-up and discharge, respectively. The number of recovery groups that participants attended in the community ranged between 0 and 80. At the baseline, 133 (36%) clients went to at least one recovery group in the community, and 237 (64%) did not go to any. At the 6-month follow-up, 109 (38%) went to at least one recovery group in the community, and 177 (62%) did not go to any. At discharge, 61 (43%) went to at least one recovery group in the community, and 82 (57%) did not go to any. While changes were observed for all predictors over time in the positive direction, pairwise comparisons using a Tukey Test and one-way ANOVAs failed to show significant differences between the baseline, the 6-month follow-up, and discharge. The average psychological integration score was 10.8 (SD = 4) at the baseline, and 13.2 (SD = 4), and 13.1 (SD = 4) at the 6-month follow-up and discharge, respectively. Significant increases were found from the baseline to 6-months ($t = -9.90$, $p < 0.001$) and from the baseline to discharge ($t = -7.12$, $p < 0.001$).

Table 2. Predictor variables and outcome variables over time.

	Baseline N **= 370**		**6-Months** N **= 286**		**Discharge** N **= 143**	
Interacted with family and/or friends	288	77.8%	209	73.0%	102	71.3%
	M	*SD*	*M*	*SD*	*M*	*SD*
Overall health	3.58	1.04	3.61	1.04	3.54	1.04
PCL-C score	50.37	16.04	47.1	16.04	46.75	16.04
Number of recovery groups attended	3.09	7.64	3.62	7.64	4.88	7.64
CIS psychological subscale score	10.78	4.02	13.24 *	4.02	13.06 *	4.02

Note. PCL-C = Post-traumatic Symptom Checklist—Civilian Version; CIS = Community Integration Scale. Significant differences from baseline to 6-months and baseline to discharge are marked. * $p < 0.001$.

The results from the hierarchical mixed model of the effects on the psychological integration scores are presented in Table 3. Accounting for the effects of all predictor variables and demographic covariates, there was a significant increase in adjusted psychological integration scores over time: 0.61 points from the baseline to the 6-month follow-up ($t = -3.41$, $p = 0.003$) and 0.97 points between the 6-month follow-up and discharge ($t = -2.97$, $p = 0.007$).

Three predictor variables were significantly related to changes in psychological integration including the rating of health status, interaction with family and/or friends, and PTSD symptom severity scores (Table 3). As ratings of overall health increased, psychological integration scores increased ($t = 5.28$, $p < 0.001$). Those who did not interact with family and/or friends had significantly lower psychological integration scores compared to those who did ($t = -5.13$, $p < 0.001$). Higher PTSD symptom severity was significantly associated with lower psychological integration scores ($t = -6.04$, $p < 0.001$). Three demographic variables were significantly related to improvements in psychological integration, including education, income, and diagnosis. Those who had a high school education compared to those who had less than a high school education had a 0.75-point higher psychological integration score ($t = 2.22$, $p = 0.027$). Those who had a high school education compared to those who had more than a high school education had a 1.15 higher psychological integration score ($t = 3.02$, $p = 0.003$). A significant positive relationship was found between income and psychological integration ($t = 3.34$, $p = < 0.001$). Compared to participants with anxiety/other disorders, lower psychological integration scores were observed among participants with PTSD ($t = 1.23$, $p = 0.015$), depressive disorder ($t = 1.42$, $p = 0.006$), or psychosis ($t = 1.47$, $p = 0.023$). No significant interactions were found for any of the covariates and time.

Table 3. Full hierarchical mixed model of the fixed effects on the CIS psychological integration.

Variable	Effect	Estimate	SE	*t*	*p*
	Intercept	10.502	1.129	9.31	0.011
Gender	Female	0.424	0.329	1.29	0.197
	Male (*ref*)	0	.	.	.
Education	Less than HS	1.146	0.380	3.02	0.003
	More than HS	0.746	0.335	2.22	0.027
	High School (*ref*)	0	.	.	.
Time	6-month	−0.613	0.206	−2.97	0.003
	Discharge	0.354	0.276	1.28	0.200
	Baseline (*ref*)	0	.	.	.
Age	Age	0.008	0.015	0.51	0.607
Income	Income	0.001	0.000	3.34	0.001
Ethnicity	Non-Hispanic	0.013	0.337	0.04	0.970
	Hispanic (*ref*)	0	.	.	.
Diagnosis	Bipolar disorder	0.730	0.563	1.30	0.195
	Depressive disorder	1.425	0.519	2.75	0.006
	PTSD	1.233	0.506	2.44	0.015
	Psychotic disorder	1.467	0.643	2.28	0.023
	Anxiety/other (*ref*)	0	.	.	.
Health Status	Rating 1–5	0.680	0.129	5.28	<0.001
Interaction with Family/Friends	No	−1.312	0.256	−5.13	<0.001
	Yes (*ref*)	0	.	.	.
PCL-C score	PCL-C score	−0.049	0.008	−6.04	<0.001
# of recovery groups attended	# of recovery groups attended	−0.007	0.014	−0.52	0.606
	Observations	796			
	Log-likelihood	5678.5			
	Total variance	14.811			

Note. PCL-C = Post-traumatic Symptom Checklist—Civilian Version.

4. Discussion

To our knowledge, this is the first study that explored changes in psychological integration among a population with an equal distribution of Hispanics and non-Hispanics with mental illness and/or SUD enrolled in a PSH program. With respect to our research questions, we found significant increases in perceptions of psychological integration over time from the baseline to 6-months and from the baseline to discharge; Hispanics and non-Hispanics fared equally well. The significant change in psychological integration from the baseline to 6-months suggests that PSH has the potential to increase psychological integration within a relatively short time. The observed increases in psychological integration are consistent with other research in this area (Patterson et al. 2014).

Several variables were identified as being significantly associated with increases in psychological integration, including positive ratings of health, a mental health diagnosis of anxiety compared to psychosis, depression or PTSD, lower PTSD symptom severity, interacting with family and friends, higher income, and education. With respect to education, psychological integration scores were highest among individuals with a high school education, compared to lower (less than high school diploma) or higher (post-secondary) education levels. Previous studies likewise found an association between community integration and high school completion (Yanos et al. 2012). Studies have also reported positive associations between community integration and interacting with family and friends (Henwood et al. 2014; Yanos et al. 2012). The finding that psychological integration was lower among individuals with a PTSD diagnosis and among those with higher PTSD symptom severity at the baseline is not surprising given that people with PTSD tend to isolate themselves, and one of the questions on the CIS psychological subscale asks about the extent to which individuals interact with people who live near them. While our analysis did not account for changes in PTSD symptom severity overtime, PTSD symptom

severity decreased (although not significantly) at the six-month follow-up and discharge compared to the baseline, and the decrease likely influenced the observed increase in psychological integration. Depression has been reported as a predictor of lower CIS in adults with mental health problems (Abdallah et al. 2009) and the general population (Gracia and Herrero 2004). The positive association between income and psychological integration is consistent with other studies (Abdallah et al. 2009; Chinchilla et al. 2020) and reinforces the need for the integration of the supported employment evidence-based practice within PSH programs (Housing-and-Employment-Works-Employment-Supports-What-Permanent-Supportive-Housing-Providers-Need-to-Know.pdf n.d.). The strengths of this study include the inclusion of a large Hispanic population, which have been underrepresented in research on PSH, a relatively large sample size, and follow-up data collected at two time-points.

The finding that psychological integration increased equally for Hispanics and non-Hispanics suggests that the benefits of PSH are not specific to either ethnic group in this sample. This finding is important given the reported lower sense of belonging among Hispanics across the U.S. (Flores-González 2017; Hondagneu-Sotelo et al. 2020). Disparities in mental health outcomes for Hispanic individuals are theorized to result from experiences of discrimination and acculturative stress (Alegría and Woo 2009), which are likely attenuated by the cultural context of this sample. Specifically, this study was conducted in a "majority minority" state in which Hispanics are the largest racial/ethnic group. As a result of being in the numerical majority, Hispanic individuals in the state in which this study was conducted had greater access to supportive communities, including a large Spanish-speaking population.

The term Hispanic describes all people descending from Spanish-speaking countries and encompasses many groups that differ across race, country of origin, immigration status, and acculturation. To account for some of these group differences, as well as the unique population from which our sample was drawn, we conducted a series of post hoc analyses comparing those with self-reported Spanish/Hispanic ancestry to those from Latin America. All participants who endorsed Hispanic ethnicity were also asked to identify a country of origin. Approximately half of the Hispanic sample (N = 90) identified a Latin American country (e.g., Mexico and Central America) as their country of origin, suggesting more recent immigration. The other half (N = 88) identified "Spanish" or "Hispanic" ancestry, suggesting longer family history in the region. The Spanish/Hispanic and Latin American subgroups did not significantly differ on psychological integration scores at the baseline (m = 10.98 and 11.41, respectively; F = 0.49, p = 0.486), 6-months (m = 12.64 and 12.90; F = 0.18, p = 0.671), or discharge (m = 12.32 and 12.08; F = 0.13, p = 0.715). Results of these analyses suggest once again that the impact of the intervention did not differ by ethnicity.

It is important to note that our findings are likely influenced by substantial efforts to mitigate ethnic disparities in the HHRHI program. The PSH model was adapted to the specific cultural needs of the three communities involved in this study based on the recommendations outlined by Samuels et al. (2009). Several cultural sensitivity and awareness trainings were provided to staff at all sites. Services and evaluation interviews were provided in both English and Spanish, minimizing the impact of language barriers. Also noteworthy is that providers and staff working at the agencies were largely representative of the populations they served, including a high percentage of Hispanic providers. Agencies who are planning on implementing PSH should consider the unique needs of their consumers, including ethnicity, prior to implementation and should make necessary adaptations while still maintaining fidelity to the model.

Those who have histories of housing instability have typically faced discrimination and social exclusion, which makes the focus on community integration within PSH, especially psychological integration, which is especially important (Chinchilla et al. 2020). In a qualitative study of factors affecting community integration among veterans in the HUD-VASH program, participants identified neighborhood safety concerns and a focus

on their own recovery as reasons for limited community integration (Chinchilla et al. 2020). During the initial stages of recovery, participants wanted social distance from other veterans, likely to keep distance from those in their social network who were actively using drug and/or alcohol. Though the staff reported that community integration was important, housing retention was the priority, and they often had limited time and resources to devote to fostering community integration. Chinchilla et al. (2020) recommended that increased access to safe neighborhoods and hiring staff dedicated to community integration (e.g., peer-support workers) would improve community integration in the HUD-VASH program. A systematic review of the literature shows that community integration is a key outcome of many housing programs, but the extent to which housing interventions effectively target community integration varies (Marshall et al. 2020). Of the studies reviewed, Marshall et al. (2020) found that psychosocial interventions, especially those that include elements of peer support, were the most promising. Given the findings of this systematic literature review on CI and those of Chinchilla et al. (2020), it appears as though having interventions focused on the development of peer support would be wise for future supportive housing programs.

In the HHRHI program, PSWs were responsible for delivering case-management services. More specifically, they provided assistance in the development of interpersonal, community coping and functional skills, promoted linkages to natural supports, assisted in the development of the recovery/resiliency plans, and provided support in crisis situations and necessary follow-up to determine if needs were adequately addressed. PSWs also served as liaison between landlords and tenants for participants once housed. Organizationally, PSWs served on a multidisciplinary team. They provided behavioral observations to staff and offered insights into clients' perspectives from the viewpoint of an advocate/PSW. PSWs also attended and contributed to treatment planning sessions, agency-wide committees, staff training sessions, and other meetings/committees as assigned. While it is difficult to interpret the impact of PSWs on psychological integration without a control group, it is likely that they played a role in our findings. While the impact of PSWs on mental health outcomes and retention in services is growing, further research on the value of peer-delivered services within the PSH model is needed (Cook et al. 2012; Sells et al. 2006). In a previous study, the lead author reported the potential role and value of PSWs delivering PSH (Crisanti et al. 2017).

Finally, community integration, and, within that construct, psychological integration has been measured with different instruments among different populations (Abdallah et al. 2009; Cummins and Lau 2003). As a result, findings among the scant research have been inconsistent and difficult to understand. In addition, the instruments that have been used to measure the various dimensions of community integration have shortcomings, particularly when used in research on homeless populations enrolled in PSH programs (Baumgartner and Herman 2012; Wong and Solomon 2002). This is true for all dimensions of community integration, including psychological, social, and physical integration. For example, measures such as the External Integration Scale (Segal and Aviram 1978) or the physical subscale of the CIS (Goering et al. 2011), which ask about the frequency of participating in events in the community that require money (e.g., going to a movie, going out for dinner, and going to health club) will systematically underreport physical integration among populations that are homeless. Therefore, to reduce measurement bias and advance knowledge in this area, researchers may first need to develop more valid measures of the various dimensions of community integration that are meaningful for a diverse homeless population experiencing mental health problems.

4.1. Limitations

This exploratory study was limited by the lack of a comparison group, which prohibits conclusions regarding causality. In addition, conclusions regarding association were put forth with caution because of the reliance on self-report data. However, the accuracy of self-reported data is more questionable when respondents are asked to report about events that

may be highly sensitive (e.g., experiences with trauma) or behaviors that may be perceived as unfavorable (e.g., substance use), which was not the case in our study (Crisanti et al. 2003, 2005; Fowler et al. 2010). While predictor and control variables were selected based on clinical relevance and the literature, the variables included in our models were limited to those where data were available. Aside from the PCL-C, the demographic data and other predictors were based upon data collected from the GPRA, which have no established psychometric properties. With respect to the measure of psychological integration, the subscale of the CIS included only four questions which unlikely fully captured sense of belonging, and existing data on the validity of the subscales are non-existent. We were unable to control for number and type of services that participants received, which undoubtedly impacts psychological integration. Loss to follow-up is a typical challenge in research on populations who are homeless and who have a mental illness and/or SUD (Ojo-Fati et al. 2017; Strehlau et al. 2017; Veldhuizen et al. 2015). Despite extensive efforts to maintain frequent and ongoing contact with participants, research assistants often had difficulty locating individuals to conduct follow-up interviews, especially at discharge. However, an examination of differences in the demographics of the study population overtime found no significant differences, reducing concerns related to selection bias resulting from attrition. Finally, our choice to focus on ethnicity was based on two reasons. First, in the state in which this study was conducted, 49.3% of the individuals that our PSH programs serve is Hispanic (U.S. Census Bureau QuickFacts n.d.). It was especially important for our community-based partners to learn, if an association was found between PSH and psychological integration, whether it was equally observed among Hispanics and non-Hispanics. Second, the number of participants who identified with non-white race categories was small. We were concerned that if we included the race category in our model, the small sample sizes in the other minority categories would have resulted in a Type I error. However, ethnicity is not the only factor that determines minority status. Race, along with other factors such as sexual orientation, also play a possible role in discrimination and can impact perceptions of belonging to a community. Among non-Hispanics, 26.5% of participants selected Native American, 15.5% reported Black, and 3.6% reported Asian/Hawaiian and Alaskan Native. The large number of racial minorities among our non-Hispanic comparison group likely contributed to the lack of observed differences between the Hispanics and non-Hispanics in this study. Although the goal of our analysis was to examine the impacts of Hispanic ethnicity on psychological integration, we were unable to fully account for the ethnic diversity within this sample. Future research should examine the impact of PSH on psychological integration among Hispanics as well other racial minority groups compared to the white non-Hispanic group.

4.2. Conclusions and Recommendations

This exploratory study adds to the small body of literature on the positive effects of PSH on psychological integration and identified a number of variables that are associated with higher ratings of belonging within this sample of individuals with mental illness and/or SUD. Several aspects of this PSH program, including inclusion of peer support workers and a focus on cultural- and trauma-informed practices can serve as a model for future implementation of PSH in similarly diverse populations. Importantly, this study also contributes to knowledge on psychological integration among a Hispanic population who have traditionally been underrepresented in studies on PSH and community integration. Given that psychological integration has been identified as the defining feature of community life (Sarason 1974) and has been linked to decreased mental health symptoms, service utilization, and retention in behavioral health treatment (La Motte-Kerr et al. 2020; Santiago-Rivera et al. 2011; Torres et al. 2012; Townley and Kloos 2011), more research is needed on what increases psychological integration within PSH programs.

Noteworthy is that this study was conducted prior to the COVID-19 pandemic, and it is likely that psychological integration among individuals enrolled in PSH programs has been substantially impacted from the required social isolation enforced throughout

the country (Clair et al. 2021; Hwang et al. 2020; Pietrabissa and Simpson 2020). Once determined safe, the need for PSH programs to create community events, such as walking groups and movie nights, to encourage positive social opportunities to occur, will be even more necessary than ever before.

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