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Identifying a Typology of Homelessness Based on Self-Sufficiency: Implications for Rapid Re-Housing Interventions

Quinmill Lei
DePaul University, qlei@depaul.edu

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Identifying a Typology of Homelessness Based on Self-Sufficiency: Implications for Rapid

Re-Housing Interventions

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Quinmill Lei

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Department of Psychology

College of Science and Health

DePaul University

Chicago, Illinois

Thesis Committee

Molly Brown, Ph.D., Chair

Jocelyn Carter, Ph.D.

Biography

The author was born in Minnesota in November 1993. Quinmill graduated from Forest Lake

Area High School, Forest Lake, MN in 2012. Quinmill received their Bachelor of Arts from the

University of St. Thomas in 2016.

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Abstract

Aims: There is limited research on the characteristics of individuals experiencing homelessness who achieve positive housing outcomes in rapid re-housing (RRH) interventions. This study aimed to identify a typology of homelessness based on Self-Sufficiency Matrix (SSM) domains and examine its relation to sociodemographic characteristics and housing placement in RRH.

Methods: Homeless Management Information System data, including sociodemographics, SSM domains, and housing outcomes, were obtained for 261 Homelessness Prevention and Rapid Re-housing Program participants in Indianapolis, IN.

Results: Latent class analysis revealed three subgroups based on SSM domains. Latent class regression found the subgroups were significantly associated with race and significantly predicted housing placement during RRH services.

Conclusions: Future research is needed to understand factors influencing differential self-sufficiency, as measured by the SSM, among Black and White individuals. Results affirm that individuals with greater psychosocial self-sufficiency have better housing outcomes in RRH than those with more complex support needs.

Keywords: typologies, homelessness, rapid re-housing, self-sufficiency, housing intervention

Identifying a Typology of Homelessness Based on Self-Sufficiency: Implications for Rapid

Re-Housing Interventions

The population of single adults experiencing homelessness comprises a demographically diverse group of individuals (Cauce et al., 2000; Rosenheck et al., 1999). Further, individual-level risk factors for homelessness, such as severe mental illness, adverse childhood experiences, and substance use disorders, are not universal across all individuals experiencing homelessness (Narendorf et al., 2018; Sullivan et al., 2000; Vangeest & Johnson, 2002). Due to the considerable heterogeneity within this population, a range of housing interventions are needed to address their diverse support service needs (Baggett et al., 2010; Krausz et al., 2013). Although there is breadth of research on the effectiveness of permanent supportive housing (PSH) interventions such as Housing First (Corinth, 2017; Nelson & Laurier, 2010) for individuals with complex service needs, there is limited research on a newer housing approach, rapid re-housing (RRH). RRH is a housing intervention that was initially popularized in the United States in 2009, when $1.5 billion was allocated for the Homelessness Prevention and Rapid Re-Housing Program (HPRP) through the American Reinvestment and Recovery Act (U.S. Department of Housing and Urban Development [HUD], 2016). Over the course of three years, HPRP was intended as a stop-gap for individuals and families financially impacted by the great recession by offering RRH services for those who were experiencing literal homelessness and homelessness prevention services for those at-risk of homelessness. Today, RRH remains an emerging intervention utilized by communities in their response to homelessness, though the characteristics of individuals who attain housing through the intervention are poorly understood.

RRH targets individuals and families experiencing homelessness who do not require long-term or intensive support services and who are more self-sufficient than those requiring

PSH (Cunningham et al., 2015). The intervention is designed to move those experiencing homelessness into permanent housing as quickly as possible through a tailored package of assistance that generally includes temporary housing and time-limited supportive services ranging anywhere between six and eighteen months to help them stabilize their housing situation (U.S. Department of Housing and Urban Development [HUD], 2014). Time-limited supportive services include rent and move-in assistance (i.e., move-in costs, deposits, rental and/or utility assistance) as well as case management services (U.S. HUD, 2014).

The effects of RRH show promise. Although some individuals who receive RRH have been found to re-enter into homelessness after becoming housed through the program (Brown, et al., 2017b), a systematic review of RRH interventions found RRH reduced the overall length of time participants were homelessness and lowered rates of returning to homelessness within a year of program exit (Gubits et al., 2018). Further, between 71% and 84% of individuals are expected to exit an RRH program in a permanent housing placement (Gubits et al., 2018). However, due to the limited scope of services provided through RRH, it is likely that this intervention is not suitable for all individuals. Indeed, Brown and colleagues (2018) found that individuals with disabling conditions had lower odds of attaining permanent housing in RRH compared to those without. Further, although Black individuals had better odds of attaining housing than White individuals (Brown et al., 2018), they were at significantly greater risk of re-entering homeless services after housing (Brown et al., 2017b). Further research is needed to identify the characteristics of individuals for whom RRH is most effective.

Implications of Self-Sufficiency for Understanding Rapid Rehousing Outcomes

Given that RRH is intended for individuals who have the ability to meet their needs without support after temporary services, the notion of self-sufficiency may be a key indicator of

an individual's likelihood of being placed in housing. Within homeless service systems, self-sufficiency is conceptualized as an individual's attainment of an acceptable level of functioning by the person themselves without help from organized assistance through informal or formal service providers (U.S. Department of Housing and Urban Development [HUD], 2019). Moreover, self-sufficiency is now the explicit objective of most federal and state laws that govern welfare and support programs (Long, 2001; U.S. Department of Health & Human Services [HHS], 2019; U.S. HUD, 2019). Taken together, self-sufficiency has broader implications for homeless service systems as there may be a more direct application in identifying various types of support as different groups of individuals may require unique tailored services.

In some communities, self-sufficiency is measured within homeless services by using the Self-Sufficiency Matrix (SSM). This measure assesses self-sufficiency across multiple life domains (i.e., adult education, life skills, mental health, etc.). As such, the SSM can be understood a strengths-based measure of level of functioning, self-determination, and skill set that is sometimes used as an assessment tool within local HMIS coordinating bodies (Snohomish County Self-Sufficiency Taskforce, 2010). The SSM can yield a broad number of scoring patterns and configurations reflecting individuals' unique strengths and needs. Thus, identifying a typology of homelessness based on SSM domains may aid in the identification of subgroups of individuals that may be more or less likely to attain housing through RRH.

Homelessness Typologies

Typological methodologies may be used to identify meaningful groupings of individuals based on shared characteristics (Collier et al., 2012) and typological research is commonly used in homeless services to inform services and policies (Kuhn & Culhane, 1998). Extant research

has identified several typologies of homelessness among single adults. To better understand the

unique needs and illuminate effective intervention strategies associated with single

unaccompanied adults experiencing homelessness, researchers have identified typologies of

homelessness distinguished by patterns of background, situation, behavior or health

characteristics and patterns of homelessness or shelter utilization (Brown et al., 2017a; Kuhn &

Culhane, 1998; McAllister et al., 2010). Additionally, the utility of typological research is not

solely limited to identification as distinguished typologies have been used to predict housing

trajectories and outcomes (Aubry et al., 2012). As such, typological research shows promise with

both identifying meaningful groups and associating these groups to housing outcomes. Although

previous studies have used a wide range of indicator variables to identify homeless typologies,

none have examined a typology based on self-sufficiency and its use in predicting housing

placement.

Demographic Characteristics

There is theoretical and empirical support to posit that typologies of homelessness are

associated with demographic characteristics. Previous homeless typology research has found that

typological groups are often associated with sociodemographic variables (Bonin et al., 2009;

Kuhn & Culhane, 1998; Narendorf et al., 2018). This is consistent with patterns of vulnerability

and prevalence rates within the homeless population. A review on current conceptualizations of

racial identity and homelessness emphasized how race, gender, and other sociodemographic

factors influence entry to and exit from homelessness (Jones, 2016). In other words, different

subgroups based on social identities (i.e., race, gender, age) demonstrate unique profiles of

vulnerability for homelessness.

Within the United States, Black individuals have a unique history regarding the compounding effects of systematic and institutional racism on increased risk of experiencing homelessness. The ongoing legacy of redlining and gentrification has explicitly shaped both our current housing system and the racial wealth gap within American cities (Rothstein, 2017). Although Black individuals represent approximately 13.4% of the general population, this racial minority group is overrepresented, comprising more than 40% of the homeless population (United States Census Bureau, 2018; U.S. Department of Housing and Urban Development [HUD], 2018). Additionally, even within analyses that have controlled for the effects of poverty, Black individuals living in poverty are still at a higher risk for experiencing homelessness compared to white individuals living in poverty (Carter, 2011). Although these disparities have persisted over time, the factors driving Black overrepresentation and increased risk of experiencing homelessness remain understudied (Jones, 2016) and merit further examination.

There also appears to be a relationship between older age and increased risk of experiencing homelessness. Over the past 20 years, there have been diverging trends in aging patterns for single unaccompanied adults compared to adults with dependents/families (Culhane et al., 2013). Specifically, the single unaccompanied adult homeless population continues to age even after accounting for the aging of the overall U.S. population (Hahn et al., 2006). An ecological analysis of homelessness argued that individual risk factors, such as race and age, are integrated and interact with one another in a manner that often increases vulnerability for homelessness (Nooe & Patterson, 2010). Younger adults report fewer episodes and shorter duration of homelessness compared to older adults (Caton et al., 2005; Tompsett et al., 2009). As such, older age is significantly associated with higher risk of experiencing prolonged homelessness (Goering et al., 2002). Fargo and colleagues (2012) found that older men (e.g., 45-

54 age range) and younger women (e.g., 18-29 age range) were at an increased risk for experiencing homelessness compared to other age groups. Thus, there appears to be an association between age, gender, and increased risk of experiencing homelessness.

Gender is another crucial aspect that must be considered when examining factors contributing to homelessness. Within the United States, among adult individuals experiencing homelessness, men are overrepresented, constituting approximately 70% of this population (U.S. HUD, 2018). Additionally, compared to women, men are more likely to experience unsheltered homelessness, to have experienced isolation from family social support networks, and die prematurely (Montgomery et al., 2017; U.S. HUD, 2018). Furthermore, men are more likely than women to experience homelessness for longer than 6 months (Burt, 2001). Gender and other sociodemographic variables may affect one another and increase risk of experiencing homelessness for certain individuals. For instance, Folsom and colleagues (2005) found that among a large population of patients with severe mental illness, African American ethnicity and male gender were significantly associated with increased risk of experiencing homelessness.

Taken together, evidence suggests that sociodemographic variables, their relationships to greater hegemonic systems of power, privilege, and oppression, and their unique interactions with one another influence and shape the ways in which persons experience homelessness and homeless services. Understanding the specific factors associated with increased risk of experiencing homelessness is necessary to more effectively address this population's health and housing needs. Moreover, sociodemographic variables interact with social and structural factors (e.g., discrimination) to create unique vulnerabilities for homelessness (Jones, 2016; Olivet et al., 2018). Thus, further examination of these sociodemographic factors and their interactions with homeless typological groups is merited. Although previous literature has yet to explore the

relationship between a typology of homelessness based on self-sufficiency and sociodemographic factors, it is possible that this class of typology may also interact with these factors in ways that highlight unique vulnerabilities for increased risk of homelessness.

Purpose of the Present Study

The concept of self-sufficiency assesses the extent to which a person requires various support services (Fassaert et al., 2014). Therefore, to better tailor supportive services it is important to consider various aspects of self-sufficiency when matching individuals to the RRH intervention. As such, the present study aims to examine how different aspects of self-sufficiency relate to one another and how these identified groups may be used to predict favorable housing placement outcomes in a sample of single adults who received RRH intervention through the HPRP program in Indianapolis, IN. The purpose of this study is to (a) identify a typology based on SSM domains in a sample of single homeless adults who received RRH through HPRP; (b) examine whether the typology is predicted by race, gender, and age; and (c) assess the utility of the typology in predicting housing placement in RRH.

Method

The current longitudinal study used Homeless Management Information System (HMIS) administrative data from single unaccompanied adults who participated in HPRP implemented in Indianapolis, IN from 2009 to 2012.

Sample

Through the HPRP program, the Indianapolis area served a total 2,477 adults and children. Of total households served, 515 were single unaccompanied adults. Of the 515 single adults, 296 were currently homeless receiving RRH services and 219 were at-risk of homelessness receiving HP assistance. Inclusion criteria for the present study consisted of single

adult households who: (a) enrolled in the HPRP program between 2009 and 2012 and (b) were currently homeless receiving RRH services. Thus, a total of 296 RRH participants met the inclusion criteria for the study. Of the 296 participants, 22 were excluded due to missing all Self-Sufficiency Matrix data. Further, given the aim of the study to examine differences by race, 12 participants were excluded due to limited and small sample sizes across multiple racial/ethnic groups other than Black individuals and White individuals. Gender information was missing for one participant, who was omitted from the current study. The final sample for the current study included 261 participants.

Materials

The following demographic and program variables were derived from the HMIS: age in years, gender (male, female), race (Black Individuals, White Individuals), and date and total length of enrollment in the RRH program.

The Self-Sufficiency Matrix

The Self-Sufficiency Matrix (SSM) is a service provider-administered measure of self-sufficiency that assesses a person's strengths and needs across multiple life domains. It has been psychometrically tested among individuals with serious mental illness and homelessness (Culhane et al., 2007; Cummings & Brown, 2019; Fassaert et al., 2014). Though various versions of the SSM exist with minor variations in the number and content of items, the measure is often composed of 18 life domains. The present study aimed to generate and assess a typology of homelessness from the SSM based on two factors (i.e., Financial Security $\alpha = .63$, Psychosocial health $\alpha = .66$) identified by Cummings and Brown (2019) and four domains that did not load onto the factors: Adult Education, Legal, Health Care and Mobility. A total of four domains (i.e., Housing, Childcare, Child Education, and Parenting Skills) were excluded due to their lack of

relevance and applicability to the sample, as all participants in this study were single adults navigating the homeless service system without dependents. One item (i.e., Credit History) was excluded due to a significant amount of missing data on this item. Mean scores were used for the two factors. Each domain is measured by a single item on a five-point Likert-type scale ranging from 1 (*in-crisis*) to 5 (*thriving*). All items are summed to create an overall self-sufficiency score for an individual, or the individual items may be examined to identify an individual's service needs. Higher scores indicate higher levels of self-sufficiency whereas lower scores indicate a greater need for supportive services (Cummings & Brown, 2019; Fassaert et al., 2014).

Housing Outcome

The distal outcome variable for this study was housing placement at any point during participants' enrollment in HPRP. The housing placement outcome variable was operationalized dichotomously as either (a) residence in either permanent housing (i.e., living in a house or apartment and paying rent or mortgage, living in subsided housing including PSH) or (b) living in a non-permanent situation (i.e., street or shelter homelessness, hospital, incarceration, or other institutional setting) upon exit from HPRP. A total of 74 participants exited RRH into a non-permanent situation and 187 participants exited the program in permanent housing.

Procedure

All study procedures were approved by the DePaul University Institutional Review Board (IRB). HMIS data were given in an SPSS file to the research team for analysis by the local Indianapolis HMIS coordinating entity. As part of their required procedures, all HMIS data for HPRP participants were entered by case management staff (Officer & Sauer, 2011). Additionally, as mandated by the HPRP program, there were monthly meetings and trainings to enforce program eligibility standards and data collection with additional monitoring strategies

for compliance, accuracy documentation (Officer & Sauer, 2011). Altogether, these

programmatic procedures likely enhanced the quality of the administrative data that will be used

in the current study. Furthermore, case management staff in HPRP conducted assessments with

clients to ascertain their needs. The SSM was included as an assessment tool for case

management staff in Indianapolis, IN (HUD Exchange, 2009).

Statistical Analysis

Items with missing data were assessed using Little's MCAR test through the R package

'BaylorEdPsych' (version 0.5) and R (version 4.0.2). Missing values for the SSM's Safety

domain (n=38) were determined to be missing completely at random (MCAR), $\chi 2$ (-4, $N = 38$) =

3.46, $p < .05$. Thus, multiple imputation was performed to reduce potential bias caused by

excluding participants with missing data via the predictive mean matching method with 40

imputations for this variable using the R package 'mice' (version 3.11; Buuren & Groothuis-

Oudshoorn, 2010).

Latent Class Analysis (LCA) was used to identify meaningful typological groups using

Latent GOLD version 5.1 software (Oberski, 2016; Vermunt & Magidson, 2016) from the two

SSM factor mean scores and four SSM domain variables. LCA is a non-parametric model-based

cluster analysis method for identifying homogeneous subgroups that differ on the input variables

used in the clustering method (Vermunt & Magidson, 2004). Bivariate residuals between SSM

domains were examined to test for the assumption of local independence between observed

variables (i.e., SSM domains are independent from one another within each latent class; Collins

& Lanza, 2010; Vermunt & Magidson, 2002). Values greater than 3.84 indicate correlations

between variable pairs that are not adequately explained by the model and thus were set to 0 to

be controlled for in the model. Once the assumption was met, Maximum likelihood (ML) and the

Newton-Raphson algorithm were used to estimate model parameters by determining the

necessary parameter values for which the data are most likely to be observed (Collins & Lanza,

2010, p. 78-79; Vermunt & Magidson, 2002).

Unrestricted models with 1–5 clusters were examined in order to determine an optimal

number of classes that most accurately represent the data. Criteria for model-fit included the

Akaike information criterion (AIC), the Bayesian information criterion (BIC), the modified AIC

(AIC3), and the entropy statistic. Regarding interpretation of the AIC, BIC, and AIC3 fit indices'

values, lower values indicate better data representation from the model (Vermunt & Magidson,

2004). Entropy values range from 0 to 1, and higher entropy values indicate more accurate model

classification. Lastly, the most parsimonious cluster solution that reflects meaningful patterns

relevant for interpretation was selected. Once the number of classes is decided, the final model

generates each participant's probability of belonging to a class (Vermunt & Magidson, 2004).

Models were estimated 250 times to search for a global solution and avoid multiple solutions in

LCA parameter estimates.

Latent class regression analysis (LCR; Harel et al., 2013) was used to examine whether

group membership in the final LCA model was predicted by age, gender, and race. Additionally,

LCR was used to examine whether group membership, after controlling for participant variables

(i.e., age, gender, race, length of enrollment in RRH), predicted the distal outcome of housing

placement (i.e., permanent housing or a non-permanent situation).

Results

Participants in the current study ($N = 261$) were an average age of 45.4 ($SD = 10.6$) years

old, and more than half (61.7%) identified as male (see Table 1). The majority (67.4%) identified

as Black and 32.6% identified as White. The average length of program enrollment was 232 (*SD* = 160) days.

Characterization of Identified Classes

Results from the latent class analysis suggested the optimal number of identified classes was the three-class solution. A total of five models were tested and based on a comparison across goodness-of-fit indices (i.e., decrease in AIC3 and BIC values, highest entropy value) the 3-class solution was found to be the best fitting model (see Table 2 for model comparisons). Conditional bootstrapping was used to further statistically assess model improvement–significant p-values indicate model improvement. Results indicated model improvement when comparing 2-class to 3-class (-2LL Diff = 45.56, *p* < .001) and no model improvement when comparing 3-class to 4-class (-2LL Diff = 12.40, *p* = .31). Taken together, the results suggested the 3-class solution was both statistically supported and the most interpretable model. Local independence was assessed by examining bivariate residuals between observed variables and one minor violation was found in the 3-class solution between the SSM domains Adult Education and Legal; this relationship was controlled for in the model by setting it to 0.

Table 3 shows the descriptive statistics of all three classes across each SSM domain as well as pairwise comparisons. Class 1 accounted for 45% (*n* = 118) of the sample. Class 1 was best characterized as "High Self-Sufficiency," distinguished by greater self-sufficiency across most domains, including financial security, psychosocial health, educational attainment, limited legal involvement, and access to transportation. However, this class displayed the lowest self-sufficiency in terms of access to health care. Class 2 accounted for 30% (*n* = 78) of the sample. It was best characterized as "Low Socioeconomic Self-Sufficiency," with comparatively lower scores on financial security and educational attainment, and moderate self-sufficiency across

psychosocial health, legal involvement, access to health care, and mobility. Class 3, termed

"Low Psychosocial Self-Sufficiency," represented 25% of the sample ($n = 65$) and exhibited the

lowest self-sufficiency in terms of psychosocial health and legal issues but greater self-

sufficiency in terms of access to health care.

Sociodemographic Variable Prediction of Class Membership

Latent class regression analysis was used to examine the association between covariate

sociodemographic characteristics (i.e., age, gender, and race) and latent class membership. Of the

three sociodemographic variables, only race Wald $\chi2(2) = 5.91$, p $= .046$, Nagerlkerke $R^2 = .36$

significantly predicted class membership (see Table 4). As such, Black individuals endorsed the

highest probability (probability mean $= .52$) of being classified within the High Self-Sufficiency

group. Further, White individuals displayed the highest probability (probability mean $= .36$) of

being classified as Low Socioeconomic Self-Sufficiency. Pairwise comparisons revealed Black

individuals had a significantly higher probability of being in the High Self-Sufficiency class than

the Low Socioeconomic Self-Sufficiency class Wald $\chi2(1) = 4.33$, p $< .05$, and the Low

Psychosocial Self-Sufficiency class Wald $\chi2(1) = 4.29$, p $< .05$. There were no differences on

race between Low Socioeconomic Self-Sufficiency and Low Psychosocial Self-Sufficiency

classes Wald $\chi2(1) = .04$, p $= .85$).

Class Membership Prediction of the Distal Housing Outcome

Latent class regression with a distal outcome analysis was used to analyze the association

between latent class membership and housing placement during RRH. Results from the LCR

revealed that, controlling for age, gender, race, and length of enrollment in RRH, class

membership significantly predicted housing placement Wald $\chi2(2) = 8.06$, p $< .001$, Nagerlkerke

$R^2 = .73$. Pairwise comparisons indicated the Low Psychosocial Self-Sufficiency class had a

significantly lower probability of exiting to a permanent housing situation compared to the High

Self-Sufficiency class, Wald $\chi2(1)$ = 9.08, p = .003, and the Low Socioeconomic Self-

Sufficiency class, Wald $\chi2(1)$ = 4.82, p = .03. There were no differences between High Self-

Sufficiency and Low Socioeconomic Self-Sufficiency classes on the housing outcome Wald

$\chi2(1)$ = .70, p = .40.

Discussion

Given the heterogeneity of the adult homeless population who utilize RRH services, the

aim of this study was to identify meaningful groups based on SSM scores and determine if these

patterns of SSM scores longitudinally predicted housing placement outcome. Findings from the

latent class analysis suggest the existence of three distinct subgroups based on indicators of self-

sufficiency as measured by the SSM. The largest class, High Self-Sufficiency, was primarily

classified by individuals exhibiting the greatest self-sufficiency across five domains whereas the

smallest class, Low Psychosocial Self-Sufficiency, was characterized by individuals with

complex needs impacting their self-sufficiency (i.e., psychosocial health issues and legal issues),

but also the ability to access health services. The Low Socioeconomic Self-Sufficiency class

contained individuals with the lowest financial security and educational attainment and moderate

levels of self-sufficiency (i.e., psychosocial health, legal involvement, access to health care).

Identification of these groups not only illustrates the heterogeneity of single adult RRH

recipients in Indianapolis but also expands the homeless typology research as this is the first

study to identify a typology of homelessness based on self-sufficiency.

Results suggest that out of the commonly measured sociodemographic variables (i.e.,

age, gender, and race), race may be differentially represented across the identified classes.

Although the current study did not find significant age or gender differences within the single

adult sample, more research is needed to identify potential differences in self-sufficiency across age and gender in other homeless samples (e.g., families). Black individuals were most likely to be classified within the High Self-Sufficiency class whereas White individuals were more likely to be classified in the Low Socioeconomic Self-Sufficiency class. The influence of race on homeless typologies is consistent with previous typological research (e.g., Kuhn & Culhane, 1998; Narendorf et al., 2018). However, these results should be interpreted cautiously as there is a wealth of research documenting racial disparities in homelessness such that Black individuals are overwhelmingly overrepresented despite controlling for the effects of poverty (Carter, 2011; HUD, 2018). Given that Black individuals experiencing homelessness in this study were assessed to have higher self-sufficiency overall, future research is needed to understand their vulnerabilities to homelessness. It is likely that there are other individual or social factors not measured by the SSM that increase risk or perpetuate homelessness among Black individuals that should be accounted for when tailoring housing interventions to diverse groups.

It is also possible that racial bias occurred during the SSM assessment process such that Black individuals' areas of difficulty were minimized. Previous research suggests unexamined racial biases among health care providers' decision-making processes frequently lead to treatment disparities such that White physicians were more likely to give preferential treatment towards White patients over Black patients and that White providers were more likely to hold the false belief that Black patients have a higher pain tolerance than White patients (Dovidio & Fiske, 2014; Hoffman et al., 2015). Taken together, it is theoretically possible that unexamined racial biases may have influenced the case managers who administered the SSM. Future research should examine racial bias among homeless service providers, as the possibility for inequitable service delivery is great due to their gatekeeping role for housing services. Additionally, the

relationship between homeless typologies and sociodemographics suggests a need for further

exploration into how sociodemographics and their relation to greater systems of power, privilege,

and oppression affect how persons experience homelessness and homeless services.

In terms of housing placement outcomes in RRH, individuals classified within the High

Self-Sufficiency and Low Socioeconomic Self-Sufficiency classes both had significantly higher

probabilities of exiting into a permanent housing situation compared to those in the Low

Psychosocial Self-Sufficiency class. Findings affirm the intention of RRH as an intervention for

individuals who are generally self-sufficient or those primarily in need of temporary financial

assistance. Further, RRH is not posited to be an intervention for those with more complex

support needs. In turn, individuals in the Low Psychosocial Self-Sufficiency group may have

required more intensive services to attain housing placements. Findings are consistent with other

research demonstrating the utility of homelessness typologies in predicting housing outcomes

(Aubry et al., 2012; Brown et al., 2017a). The research on self-sufficiency as a meaningful

indicator of pathways of homelessness shows promise. For example, one study found that

individuals who endorse higher levels of self-sufficiency are more likely to engage in exploration

of potential educational and/or job opportunities (Piotrowski & Brzezinska, 2011). Taken

together, future research should continue investigating the relationship between self-sufficiency

and homeless interventions.

The concept of self-sufficiency draws on an individual's strengths, needs, and barriers

thereby generating a more holistic and representative view of the person and their service

requirements (Fassaert et al., 2014). A comprehensive conceptualization of a person's situation

allows for better service tailoring and matching to appropriate RRH services, which may yield

long-term cost-efficiency due to less mismatch and unnecessary service implementation (Basu et

al., 2012). Further, the identification of a typology based on a strengths-based approach to self-sufficiency adds to the homeless typology literature by complementing extant typological research centering deficit-oriented variables (Mowbray et al., 1993; Roy et al., 2016). A strengths-based approach to self-sufficiency challenges traditional paternalistic views of individuals experiencing homelessness as having overall deficits in independent living skills (Torino & Sisselman-Borgia, 2017). Indeed, assessing self-sufficiency illuminates client strengths and abilities that can and should be mobilized and built upon during the service delivery process (Hodges & Clifton, 2004), while also identifying areas in need of support.

The identification of a typology based on SSM domains and its utility in predicting housing placement after RRH services suggests a more nuanced scoring method for the SSM may be superior to using the total score. For instance, a previous study found that the overall SSM score did not predict re-entry to homeless services after housing placement among RRH participants (Brown et al., 2017b). Thus, future studies on homelessness assessment measures should evaluate the use of subscores compared to total scores, as these subscores may be more useful in predicting outcomes especially within RRH interventions. The SSM may benefit from additional research and evaluation. While the current study found that race significantly influenced class membership based on SSM domains, another study found no differences in measurement invariance between Black and White racial groups for the two identified factor scores (Cummings & Brown, 2019). Taken together, additional research on the SSM as an assessment tool is necessary as well as further exploration into how it may be influenced by race.

There were several limitations in this study that should be noted. These data were derived from only Indianapolis, IN, and therefore the results may not be generalizable to non-Midwestern metropolitan municipalities. Thus, future studies should gather data from a more

nationally represented sample that contains both metropolitan and rural areas. Another limitation

was that the final sample size was small, and the demographic variable of race was not equally

split between groups which may have affected statistical power. Lastly, the administrative data

used to conduct this study may have contained errors and impaired reliability and validity due to

not being collected for research purposes.

Conclusions

The current typological study among single adult individuals who received RRH services

through HPRP identified unique subgroups of self-sufficiency based on SSM domains. These

meaningful subgroups were significantly associated with race, which often interacts larger

structural systems of power, privilege, and oppression to increase vulnerability for homelessness

(Olivet et al., 2018; Nooe & Patterson, 2010). Additionally, the identified typology based on

self-sufficiency demonstrated utility in predicting housing placement after receiving RRH

services. The SSM is a tool communities are currently using to triage housing and support

services individuals experiencing homelessness, and it may be used to tailor services and identify

groups of individuals who may have specific strengths, needs, and barriers (HUD Exchange,

2009). Future research is needed to test this strengths-based typology among various

racial/ethnic minority groups in order to further assess its utility in identifying useful subgroups

for service tailoring and delivery. Developing a more nuanced understanding of the various

abilities, needs, and challenges clients bring when accessing services may contribute to an

increase in positive service experiences and ultimately desired housing outcomes.

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Table 1

Participant Characteristics (N = 261)

Variable	
Age *M* (*SD*)	45 (10.6)
Gender *n* (%)	
Male	161 (61.7%)
Female	100 (38.3%)
Race *n* (%)	
Black	176 (67.4%)
White	85 (32.6%)
Length of Enrollment (days) *M* (*SD*)	232 (160)

Table 2

Model Fit Indices for Class Identification

Number of Classes	Log-Likelihood	AIC	AIC3	BIC	Entropy
1	-1815.68	3671.37	3691.37	3742.66	1.00
2	-1762.36	3582.73	3611.73	3686.10	0.59
3	-1739.08	3556.17	3595.17	3695.17	0.62
4	-1732.88	3556.55	3606.76	3727.30	0.59
5	-1719.82	3551.64	3607.64	3751.26	0.60

Table 3

Characteristics of the Three Identified Latent Classes

Self-Sufficiency Matrix Domain	Class 1 M (SD)	Class 2 M (SD)	Class 3 M (SD)	Wald χ2	p-value
Financial Security	2.24 (.21)[a]	1.31 (.45)[a,b]	2.13 (.13)[b]	164.98	< .001
Psychosocial Health	4.14 (.28)[a,b]	3.44 (.21)[a]	3.37 (.26)[b]	129.48	< .001
Adult Education	3.43 (.14)[a]	2.81 (.30)[a]	3.38 (.11)	8.88	.01
Legal	4.47 (.09)	4.27 (.05)	4.07 (.19)	8.51	.04
Health Care	2.88 (.06)[a]	2.93 (.03)	3.20 (.16)[a]	12.78	.01
Mobility	3.99 (.49)[a,b]	2.74 (.40)[a]	2.72 (.41)[b]	22.33	< .001

Note. Same letters across rows denote significant pairwise differences at the p < .05 level.

Table 4

Covariate Sociodemographic Predictors of Class Membership

	Class 1 (45%)			Class 2 (30%)			Class 3 (25%)			Wald χ2	p-value
	B	SE	df	B	SE	df	B	SE	df		
Intercept	-.00	.		-.55	.82		-1.99	1.26		2.70	.26
Age	-0.00	.	2	-0.01	.02	2	.02	.02	2	1.53	.47
Male Gender[1]	-.00	.	2	.60	.38	2	.16	.42	2	2.53	.28
White Race[2]	-.00[a,b]	.	2	.82[a]	.39	2	.91[b]	.46	2	5.91	.046

Note. [1]Female gender was the reference category. [2]Black race was the reference category. Same letters across rows denote significant pairwise differences at the p < .05 level.

Appendix A: Self-Sufficiency Matrix for Single Unaccompanied Adults

Domain	1	2	3	4	5
Housing	Homeless or threatened with eviction.	In transitional, temporary or substandard housing; and/or current rent/mortgage payment is unaffordable (over 30% of income).	In stable housing that is safe but only marginally adequate	Household is in safe, adequate subsidized housing.	Household is safe, adequate, Unsubsidized housing
Employment	No job.	Temporary, part time or seasonal; inadequate pay, no benefits.	Employed full time; inadequate pay; few or no benefits.	Employed full time with adequate pay and benefits	Maintains permanent employment with adequate income and benefits.
Income	No income.	Inadequate income and/or spontaneous or inappropriate spending.	Can meet basic needs with subsidy; appropriate spending.	Can meet basic needs and manage debt without assistance.	Income is sufficient, well managed; has discretionary income and is able to save.
Food	No food or means to prepare it. Relies to a significant degree on other sources of free or low-cost food	Household is on food stamps.	Can meet basic food needs, but requires occasional assistance	Can meet basic food needs without assistance.	Can choose to purchase any food household desires.
Adult Education	Literacy problems and/or no high school diploma/GED are serious barriers to employment.	Enrolled in literacy and/or GED program and/or has sufficient command of English to where language is not a barrier to employment.	Has high school diploma/GED.	Needs additional education/training to improve employment situation and/or to resolve literacy problems to where they are able to function effectively in society.	Has completed education/training needed to become employable. No literacy problems.
Health Care Coverage	No medical coverage with immediate need.	No medical coverage and great difficulty accessing medical care when needed. Some household members may be in poor health.	Some members (e.g. children) have medical coverage.	All members can get medical care when needed, but may strain budget.	All members are covered by affordable, adequate health insurance.

Life Skills	Unable to meet basic needs such as hygiene, food, activities of daily living.	Can meet a few but not all needs of daily living without assistance.	Can meet most but not all daily living needs without assistance.	Able to meet all basic needs of daily living without assistance.	Able to provide beyond basic needs of daily living for self and family.
Family/Social Relations	Lack of necessary support form family or friends; abuse (DV, child) is present or there is child neglect.	Family/friends may be supportive, but lack ability or resources to help; family members do not relate well with one another; potential for abuse or neglect.	Some support from family/friends; family members acknowledge and seek to change negative behaviors; are learning to communicate and support	Strong support from family or friends. Household members support each other's efforts.	Has healthy/expanding support network; household is stable and communication is consistently open
Mobility	No access to transportation, public or private; may have car that is inoperable	Transportation is available, but unreliable, unpredictable, unaffordable; may have care but no insurance, license, etc.	Transportation is available and reliable, but limited and/or inconvenient; drivers are licensed and minimally insured.	Transportation is generally accessible to meet basic travel needs.	Transportation is readily available and affordable; car is adequately insured.
Community Involvement	Not applicable due to crisis situation; in. "survival" mode.	Socially isolated and/or no social skills and/or lacks motivation to become involved.	Lacks knowledge of ways to become involved.	Some community involvement (advisory group, support group), but has barriers such as transportation, childcare issues.	Actively involved In community.
Legal	Current outstanding tickets or warrants.	Current charges/trial pending, noncompliance with probation/parole	Fully compliant with probation/parole terms.	Has successfully completed probation/parole within past 12 months, no new charges filed.	No active criminal justice involvement in more than 12 months and/or no felony criminal history.
Mental Health	Danger to self or others; recurring suicidal ideation; experiencing severe difficulty in day-to-day life due to psychological problems.	Recurrent mental health symptoms that may affect behavior, but not a danger to	Mild symptoms may be present but are transient; only moderate difficulty in functioning due to mental health problems.	Minimal symptoms that are expectable responses to life stressors; only slight impairment in functioning.	Symptoms are absent or rare; good or superior functioning in wide range of activities; no more than every day problems or concerns.

		self/others; persistent problems with functioning due to mental health symptoms.			
Substance Use	Meets criteria for severe abuse/dependence; resulting problems so severe that institutional living or hospitalization may be necessary.	Meets criteria for dependence; preoccupation with use and/or obtaining drugs/alcohol; withdrawal or withdrawal avoidance behaviors evident; use results in avoidance or neglect of essential life activities.	Use within last 6 months; evidence of persistent or recurrent social, occupational, emotional or physical problems related to use (such as disruptive behavior or housing problems); problems have persisted for at least one month.	Client has used during last 6 months, but no evidence of persistent or recurrent social, occupational, emotional, or physical problems related to use; no evidence of recurrent dangerous use.	No drug use/alcohol abuse in last 6 months.

Appendix B: Original Thesis Proposal

Identifying a Typology of Homelessness Based on Self-Sufficiency: Implications for Rapid

Re-Housing Interventions

Proposal for a Thesis

Presented to

The Department of Psychology

DePaul University

By

Quinmill Lei

Table of Contents

Abstract

There is considerable heterogeneity among the homeless population, which has resulted

in the creation of a range of housing interventions. One type of housing intervention, Rapid Re-

Housing, has limited research compared to other interventions. RRH is a housing intervention

that targets individuals and families experiencing homelessness who do not require long-term or

intensive support services and who are more self-sufficient than those who require more

supportive housing options. Self-sufficiency may be a key indicator of an individual's likelihood

of being placed in housing. Within homeless services, self-sufficiency is often measured by the

Self-Sufficiency Matrix (SSM). The SSM can yield a broad number of scoring patterns and

configurations reflecting individuals' unique strengths and needs. Thus, identifying a typology of

homelessness based on SSM domains may aid in the identification of subgroups of individuals

that may be more or less likely to attain housing through RRH. The present study proposes (1) to

identify a typology based on SSM domains in a sample of single homeless adults who received a

housing intervention through HPRP; (2) to examine whether the typology is predicted by race,

gender, and age; and (3) to assess the utility of the typology in predicting housing placement in

RRH.

Introduction

According to the latest available data on the prevalence of homelessness in the United States, in 2018 an estimated 370,000 single unaccompanied adults experience homelessness on a given night (U.S. Department of Housing and Urban Development, 2018). The population of single adults experiencing homelessness comprises a diverse group of individuals who represent various genders, racial/ethnic groups, ages, and neurodiversity (Cauce et al., 2000; Rog & Buckner, 2007; Rosenheck, Bassuk, & Salomon, 1999). Further, individual-level risk factors for homelessness, such as severe mental illness, adverse childhood experiences, and substance use disorders, are not universal across all individuals experiencing homelessness (Narendorf, Bowen, Santa Maria, & Thibaudeau, 2018; Sullivan, Burnam, & Koegel, 2000; Vangeest & Johnson, 2002). Due to the considerable heterogeneity within this population, a range of housing interventions are needed to address their diverse support service needs (Baggett, O'Connell, Singer, & Rigotti, 2010; Krausz, Clarkson, Strehlau, Torchalla, & Schuetz, 2013. Although there is breadth of research on the effectiveness of permanent supportive housing (PSH) interventions such as Housing First, which is considered the gold standard housing approach for individuals with serious mental illness, substance use disorders, and other chronic conditions (Corinth, 2017; Martinez & Burt, 2006; Nelson & Laurier, 2010), there is limited research on the characteristics of individuals who attain housing through a newer housing approach, rapid re-housing (RRH).

RRH is a housing intervention that was initially popularized in the United States in 2009, when $1.5 billion was allocated for the Homelessness Prevention and Rapid Re-Housing Program (HPRP) through the American Reinvestment and Recovery Act (U.S. Department of Housing and Urban Development, 2016). Over the course of three years, HPRP was intended as a stop-gap for individuals and families financially impacted by the great recession by offering

RRH services for those who were experiencing literal homelessness and homelessness

prevention services for those at-risk of homelessness. Today, RRH remains an emerging

intervention utilized by communities in their response to homelessness.

RRH targets individuals and families experiencing homelessness who do not require

long-term or intensive support services and who are more self-sufficient than those requiring

PSH (Cunningham, Gillespie, & Anderson, 2015). This intervention is designed to move those

experiencing homelessness into permanent housing as quickly as possible through a tailored

package of assistance that generally includes temporary housing and time-limited supportive

services ranging anywhere between six and eighteen months to help them stabilize their housing

situation (U.S. Department of Housing and Urban Development, 2014). Time-limited supportive

services include rent and move-in assistance (i.e., move-in costs, deposits, rental and/or utility

assistance) as well as case management services. As such, case managers work closely with

individuals and families to: (a) identify and select permanent housing options based on needs,

preferences, and finances; (b) address barriers to (re)acquiring and maintaining permanent

housing; (c) negotiate feasible lease agreements with landlords; and (d) monitor housing stability

and, if necessary, resolve housing-related crises should they arise (U.S. Housing and Urban

Development, 2014).

The effects of RRH show promise. Although some individuals who receive RRH have

been found to re-enter into homelessness after becoming housed through the program (Brown,

Vaclavik, & Watson, & Wilka, 2017), a systematic review of RRH interventions found that RRH

reduced the overall length of time participants were homelessness and lowered rates of returning

to homelessness within a year of program exit (Gubits et al., 2018). Further, between 71% and

84% of individuals are expected to exit an RRH program in a permanent housing placement

(Gubits et al., 2018). However, due to the limited scope of services provided through RRH, it is likely that this intervention is not suitable for all individuals. Indeed, Brown and colleagues (2018) found that individuals with disabling conditions had lower odds of attaining permanent housing in RRH compared to those without. Moreover, the authors found that although Black individuals had better odds of attaining housing than White individuals (Brown et al., 2018), they were at significantly greater risk of re-entering homeless services after housing (Brown et al., 2017). Further research is needed to identify the characteristics of individuals for whom RRH is most effective.

Self-Sufficiency

Given that RRH is intended for individuals who have the ability to meet their needs without support after temporary services, the notion of self-sufficiency may be a key indicator of an individual's likelihood of being placed in housing. The dominant culture of the United States widely values self-sufficiency as a central tenet of American ideology. The term draws from the historical American myth of bootstrap ideology–the notion that places the individual at the focal point of culpability and responsibility when faced with challenges or barriers (Xian & Reynolds, 2017). That is, an individual is solely responsible for their successes and failures. Social science research examining self-sufficiency originally conceptualized the construct as "economic self-sufficiency." That is, how well an individual or family is able to have enough resources to meet their needs without the use of public support programs and systems (Casciano & Massey, 2012). Although there is a lack of consensus on the meaning of the term "self-sufficiency," it primarily draws from the idea of being able to "get along" without help (Scott, London, & Gross, 2017). Long (2001) stated that from a welfare-to-work viewpoint, the most self-evident indicator of self-sufficiency is the combination of having employment and not being a welfare recipient.

Furthermore, this study argued the importance of recognizing degrees of self-sufficiency instead of relying on a single standard. That is, acknowledging that there are various components of self-sufficiency that work together and affect one another.

Research on youth, patients with severe mental illness, elderly populations, and persons with disabilities has defined self-sufficiency as the ability to engage in tasks that are necessary for independent living (i.e. activities of daily living; Kruzich & Berg, 1985; Nollan et al., 2000; Tabah et al., 2010; Wehmeyer, 2005). A stronger sense of self-sufficiency was found to be related to fewer issues with identity formation and a higher level of educational and vocational exploration in a sample of individuals with varying levels of dis/abilities (Piotrowski & Brzezinska, 2011). That is, individuals who endorse higher levels of self-sufficiency are more likely to engage in exploration of potential educational and/or job opportunities. Housing interventions for people experiencing homelessness with mental illness and substance use disorders, such as Housing First, have also been shown to increase self-sufficiency (Collins et al., 2019). Once housing crises have been addressed, individuals are better able to work towards developing independent living skills and long-term self-sufficiency (Collins et al., 2019; Shroder, 2002).

Of the various conceptualizations of self-sufficiency, the underlying theme is the ability to live and function autonomously. Taken together, this suggests that the construct of self-sufficiency may be better understood through a multidimensional framework. Additionally, while policymakers and researchers have used and studied the concept of self-sufficiency for many years, it is now the explicit objective of most federal and state laws that govern welfare and support programs (U.S. Department of Health & Human Services, 2019; U.S. Department of Housing and Urban Development, 2019; Long, 2001). As such, self-sufficiency has broader

implications for homeless service systems as there may be a more direct application in

identifying various types of support as different groups of individuals may require unique

tailored services. Utilizing measures of self-sufficiency may yield a unique typology of

homelessness that has not been identified previously. Additionally, the creation of a typology

based on a strengths-based approach to self-sufficiency would add to the homeless typology

literature by complementing extant typological research based in deficit-oriented variables (Roy

et al., 2016; Tsai, Edens, & Rosenheck, 2011).

      Self-Sufficiency Matrix. Within homeless service systems, self-sufficiency may be

conceptualized as an individual's attainment of an acceptable level of functioning by the person

themselves without help from organized assistance through informal or formal service providers.

In some communities, self-sufficiency is measured within homeless services by using the Self-

Sufficiency Matrix (SSM). This measure assesses self-sufficiency across multiple life domains

(i.e., adult education, life skills, mental health, etc.). As such, the SSM can be understood a

strengths-based measure of level of functioning, self-determination, and skill set that is

sometimes used as an assessment tool within local HMIS coordinating bodies (Snohomish

County Self-Sufficiency Taskforce, 2010).

      Though various versions of the SSM exist with minor variations in the number and

content of items, the measure is often composed of 18 life domains: Income, Employment,

Housing, Food, Childcare, Children's Education, Adult Education, Legal, Health Care, Life

Skills, Mental Health, Substance Abuse, Family Relations, Mobility, Community Involvement,

Safety, Parenting Skills, and Credit History; and it works to assess an individual's ability to

provide for themselves in each of these domains (Cummings & Brown, 2019; Fassaert et al.,

2014; Lauriks et al., 2012). Each life domain is measured by a single item on a 5-point Likert-

type scale ranging from 1 (*in-crisis*) to 5 (*thriving*). Notably, the qualitative descriptions for each

anchor point varies by domain. For example, the Employment domain ranges from 1 (*no job*) to

5 (*maintains permanent employment with adequate income and benefits*) and the Life Skills

domain ranges from 1 (*unable to meet basic needs such as hygiene, food, activities of daily

living*) to 5 (*able to provide beyond basic needs of daily living for self*). Additionally, there are

options for "*not applicable*" for all item responses. All items are summed to create an overall

self-sufficiency score for an individual, or the individual items may be examined to identify an

individual's service needs. Higher scores indicate higher levels of self-sufficiency whereas lower

scores indicate a greater need for supportive services (Cummings & Brown, 2019; Fassaert et al.,

2014).

Homeless Typologies

The SSM can yield a broad number of scoring patterns and configurations reflecting

individuals' unique strengths and needs. Thus, identifying a typology of homelessness based on

SSM domains may aid in the identification of subgroups of individuals that may be more or less

likely to attain housing through RRH. A typology is a set of categories used for classification of

a phenomenon (Collier, LaPorte, & Seawright, 2012). As such, typological methodologies may

be used to identify meaningful groupings of individuals based on shared characteristics (Collier

et al., 2012).

Typological research is commonly used in homeless services to inform services and

policies (Kuhn & Culhane, 1998). Extant research has identified typologies of homelessness

among youth and adolescents (Kort-Butler & Tyler, 2012; Milburn et al., 2009; Toro,

Lesperance, & Braciszeski, 2011), young adults (Altena, Beijersbergen, Vermun, & Wolf, 2018;

Cote, 2018; Narendorf et al., 2018), single adults (Brown et al., 2017; Kuhn & Culhane, 1998;

Tsia et al., 2011), and families (Culhane et al., 2007; Danseco & Holden, 1998). Additionally,

studies have employed various methodologies when forming typological groups, such as cluster

analysis, qualitative typological analysis, and latent class analysis (Kuhn & Culhane, 1998; Cote,

2018; Aubry & Klodawsky, & Coulombe, 2012).

To better understand the unique needs and illuminate effective intervention strategies

associated with single unaccompanied adults experiencing homelessness, researchers have

identified typologies of homelessness distinguished by patterns of background, situation, and

behavior or health characteristics. Additionally, some typologies are based on patterns of

homelessness or shelter utilization (Brown, Chodzen, Mihelicova, & Collins, 2017; Hertzberg,

1992; Kuhn & Culhane, 1998; McAllister, Kuang, & Lennon, 2010; McAllister, Lennon, &

Kuang, 2011). For instance, Kuhn and Culhane (1998) utilized shelter use data from New York

City and Philadelphia to identify three subgroups of single adults experiencing homelessness

based on their total number of days of shelter use and number of episodes of shelter use. Results

from their study found that individuals who experienced multiple episodes of shelter utilization,

or who were relatively consistently in shelters over a two- to- three-year period of time had

greater rates of mental health and substance use issues compared to individuals who only used

shelter for a brief period. This widely known typology has been used by policymakers to inform

the federal definition of chronic homelessness, which is utilized as a criterion for allocating

federally-funded supportive housing resources (U.S. Department of Housing and Urban

Development, 2003; U.S. Interagency Council on Homelessness, 2003).

Similar to Kuhn and Culhane's (1998) approach, Hertzberg (1992) conducted qualitative

interviews to create a three-group typology that identified and described common personal

characteristics and length of time experiencing homelessness. The first group identified were

labelled the "Resistors", and these individuals experienced a shorter period of homelessness ($M =$ 2.2 years) as compared to other groups, had a history of stable employment, and most reported realistic hopes for the future. The second group was identified as the "Teeterers", and they experienced longer homelessness ($M = 4.4$ years), had higher rates of mental illness and problematic alcohol use, and few indicated realistic hopes for the future. The last group entitled "Accommodators", was distinguished by the longest period of homelessness ($M = 12.7$ years), lowest rates of literacy, and none reported realistic future hopes. Based this typology, Hertzberg (1992) recommended that comprehensive short-term and long-term homeless services be provided at the local level to address the varied needs of the homeless population. Although homelessness history offers one method of identifying subgroups, it has been suggested that future research expanding the range of predictors used for typology development is necessary (Brown et al., 2017).

Extant research on homeless typologies are not limited to temporal indicators. For example, factors such as risk (e.g., adverse childhood experiences, victimization history, psychological symptoms, substance use) and resilience (e.g., level of resilience, social support) have been used as indicator variables to identify typologies of young adults experiencing homelessness (Altena, Beijersbergen, Vermunt, & Wolf, 2018; Narendorf, Bowen, Santa Maria, & Thibaudeau, 2018). Studies with older adult samples have examined profiles of criminal justice involvement and severe mental illness, patterns of service and resource utilization, patterns of mental diagnosis functioning and symptomology, quality of life profiles, adverse childhood experiences, and residential patterns (Bonin, Fournier, & Blais, 2009; Lee et al., 2016; Mowbray et al,. 1993; Roy et al., 2016; Tsai, Edens, & Rosenheck, 2011).

Homeless typologies have also utilized sociodemographic variables as indicator variables. Within a sample of individuals with mental illness who were experiencing homelessness and utilized homeless services, Bonin et al. (2009) identified a six-group typology based on gender, age, mental illness status, patterns of homeless service utilization, and alcohol and substance abuse. Results indicated that each cluster was primarily differentiated by gender (i.e., men, women). Moreover, these results highlight the necessity of distinguishing subgroups of individuals with mental illness who use homeless services when attempting to better tailor services. Additionally, Kort-Butler & Tyler (2012) identified a four-group typology based on a wide range of sociodemographic variables (i.e., sex, sexual orientation, race) within a sample of youth experiencing homelessness. These results underscore the heterogeneity of characteristics associated with risk and unmet needs in a diverse sample of youth experiencing street homelessness. Furthermore, findings indicate that one-size-fits-all approaches to meeting the needs of youth experiencing homelessness is not efficient. Thus, an individually tailored approach to services based on various life domains and their connections to structural factors is warranted.

Typologies and housing outcomes. Previous homeless typology research has examined identified typologies and their use in predicting housing trajectories and outcomes. Aubry and colleagues (2012) identified four distinct classes based on number and severity of health problems (i.e., mental health, physical health, alcohol and substance use and abuse) in a sample of adults without dependents. Among the first identified class, these individuals were higher functioning and reported no alcohol or drug use problems while participants in the second class demonstrated highest probability of having substance abuse issues. The third class was distinguished by the presence of both mental health and substance abuse issues. A fourth class

was classified as presenting with complex mental and physical health problems (i.e., mental health issues, high number of chronic health conditions, impaired physical health functioning). Utilizing two year follow-up data, researchers compared the housing trajectories of each of these classes and found that the class of individuals with substance abuse problems were the least likely to be housed and reported the least amount of days housed compared to other classes. This typology advances our understanding of the heterogeneity of the homeless population based on various health-related problems and how these problems can function as barriers to exiting homelessness and obtaining housing stability.

Brown, Chodzen, Mihelicova, and Collins (2017) applied a time-patterned typology of homelessness to a sample of individuals experiencing homelessness who also had psychiatric diagnoses and severe impairments in functioning. Rather than examining aggregate patterns of homelessness (Kuhn & Culhane, 1998), this study looked at patterns of sequencing and timing of sheltered and non-sheltered periods. Researchers grouped participants into one of four housing categories based on McAllister et al.'s (2011) typology and examined residential pathways (i.e., permanent housing, temporary housing, health care facilities, or jail) after homelessness. At the four-year follow-up period, participants who experienced a single long-term episode of homelessness demonstrated the highest rates of residing in permanent housing compared to individuals who had multiple episodes of homelessness and had the lowest rates of achieving residential stability. Additionally, this study found that women had significantly greater odds of permanently exiting homelessness compared to men. These findings highlight gender differences in residential outcome trajectories. Additionally, these results underscore the utility of examining patterns of sheltered and non-sheltered periods and their association with residential pathways after homelessness.

Toro, Lesperance, & Braciszewski (2011) identified a typology based on resilience factors (e.g., self-efficacy, family cohesion) and negative outcomes (e.g., risky sexual behaviors, frequent homelessness) among a sample of adolescents experiencing homelessness. A three-class solution emerged from their results: (1) transient but connected, (2) high-risk, and (3) low-risk. Youth identified in the first class were described by high family cohesion, instability in housing and school connections, and the most extensive histories of homelessness. Among the second class, these youth endorsed the highest rates of school attrition, sexual abuse, and mental health and substance abuse problems. The third class was distinguished by demonstrating the lowest levels of all aforementioned problem behaviors when compared to one or both classes. Furthermore, these individuals had the least extensive history of homelessness and housing instability. After identifying these classes, researchers used class membership to predict long-term housing trajectories over a 6.5 year time period. Findings revealed that low-risk youth experienced the least homelessness over time and would most often end up in secure living environments. Notably across all three groups, most youth eventually obtained stable housing during the final two follow-up time periods (5.5 and 6.5 years). These findings further our understanding of how assessments of current circumstances may be used to develop useful typologies that predict distal housing outcomes.

Taken together, these studies demonstrate the utility of using homeless typologies to predict and examine housing outcomes and residential pathways. While previous studies have used a wide range of indicator variables to identify homeless typologies, none have examined a typology based on self-sufficiency and its use in predicting housing placement.

Typological Associations with Demographic Factors

Previous homeless typology research has found that typological groups are often associated with sociodemographic variables (Bonin, Fournier, & Blais, 2009; Narendorf, Bowen, Santa Maria, & Thibaudeau, 2018; Toro, Lesperance, & Braciszewski, 2011). This is consistent with patterns of vulnerability and prevalence rates within the homeless population. A review on current conceptualizations of racial identity and homelessness emphasized how race, gender, and other sociodemographic factors influence entry to and exit from homelessness (Jones, 2016). In other words, different subgroups based on social identities (i.e., race/ethnicity, gender, age) demonstrate unique profiles of vulnerability for homelessness.

Race/Ethnicity. Within the United States, Black/African Americans have a unique history regarding the compounding effects of systematic and institutional racism on increased risk of experiencing homelessness. While Black/African Americans represent approximately 13.4% of the general population, this racial minority group is overrepresented, comprising more than 40% of the homeless population (United States Census Bureau, 2018; U.S. Department of Housing and Urban Development, 2018). Additionally, even within analyses that have controlled for the effects of poverty, Black/African Americans living in poverty are still at a higher risk for experiencing homelessness compared to white individuals living in poverty (Carter, 2011). Thus, within the literature there appears to be unique variance that contributes to the relationship between Black/African American individuals and an increased risk of experiencing homelessness.

Age. There also appears to be a relationship between older age and increased risk of experiencing homelessness. Over the past 20 years, there have been diverging trends in aging patterns for single unaccompanied adults compared to adults with dependents/families (Culhane,

Metraux, Byrne, Stino, & Bainbridge, 2013). Specifically, the single unaccompanied adult

homeless population continues to age even after accounting for the aging of the overall U.S.

population (Hahn, Kushel, Bangsberg, Riley, & Moss, 2006). An ecological analysis of

homelessness argued that individual risk factors, such as race and age, are integrated and interact

with one another in a manner that often increases vulnerability for homelessness (Nooe &

Patterson, 2010). Younger adults report fewer episodes and shorter duration of homelessness

compared to older adults (Caton et al., 2005; Cohen, 1999; Tompsett, Fowler, & Toro, 2009). As

such, older age is significantly associated with higher risk of experiencing prolonged

homelessness (Goering, Tolomiczenko, Sheldon, Boydell, & Wasylenki, 2002). Further,

programs that specifically target chronic homelessness report average participant age as 45 years

old (Barrow, Soto, & Cordova, 2004; Mares & Rosenheck, 2007). A large study on veteran

prevalence and risk of homelessness found that older men (e.g., 45-54 age range) and younger

women (e.g., 18-29 age range) were at an increased risk for experiencing homelessness

compared to other age groups (Fargo et al., 2012). Thus, there appears to be an association

between age, gender, and increased risk of experiencing homelessness.

   Gender. Gender is another crucial aspect that must be considered when examining

factors contributing to homelessness. Within the United States, among adult individuals

experiencing homelessness, men are overrepresented, constituting approximately 70% of this

population (U.S. Department of Housing and Urban Development, 2018). Additionally,

compared to women, men are more likely to experience unsheltered homelessness, to have

experienced violent assault (e.g., being shot or stabbed, beaten badly, mugged or threatened with

a weapon), to have a criminal justice history, to have problematic substance use, to have been

hospitalized for problematic substance use, to have experienced isolation from family social

support networks, and die prematurely (Montgomery, Szymkowiak, & Culhane, 2017; Jainchill, Hawke, & Yagelka, 2000; Roll, Toro, & Orrola, 1999; Morrell-Bellai et al., 2000; Kim, Ford, Howard, & Bradford, 2010; U.S. Department of Housing and Urban Development, 2018). Furthermore, men are more likely than women to experience homelessness for longer than 6 months (Burt, 2001). Gender and other sociodemographic variables may affect one another and increase risk of experiencing homelessness for certain individuals. Through identifying seven distinct clusters of individuals experiencing homelessness who had severe mental illness and criminal justice system involvement, Roy et al. (2016) found that young age and male gender were significantly associated with criminal justice involvement. Additionally, Folsom et al. (2005) found that among a large population of patients with severe mental illness, African American ethnicity and male gender was significantly associated with increased risk of experiencing homelessness.

Taken together, evidence suggests that sociodemographic variables, their relationships to greater hegemonic systems of power, privilege, and oppression, and their unique interactions with one another influence and shape the ways in which persons experience homelessness and homeless services. Understanding the specific factors associated with increased risk of experiencing homelessness is needed to more effectively reduce homelessness and address this population's health needs. Moreover, sociodemographic variables interact with social and structural factors (e.g., discrimination) to create unique vulnerabilities for homelessness (Jones, 2016; Olivet, Dones, & Richard, 2018). Thus, further examination of these sociodemographic factors and their interactions with homeless typological groups is merited. Although previous literature has yet to explore the relationship between a typology of homelessness based on self-sufficiency and sociodemographic factors, it is possible that this class of typology may also

interact with these factors in ways that highlight unique vulnerabilities for increased risk of homelessness.

Rationale

The concept of self-sufficiency assesses the extent to which a person requires various support services (Fassaert et al., 2014). Therefore, to better tailor supportive services it is important to consider various aspects of self-sufficiency when matching individuals to the RRH intervention. As such, the present study aims to examine how different aspects of self-sufficiency relate to one another and how these identified groups may be used to predict favorable housing placement outcomes in a sample of single adults who received RRH intervention through the HPRP program in Indianapolis, IN.

There is currently limited research related to homeless typologies that use self-sufficiency as indicator variables–much less consider the multiple dimensions of self-sufficiency–within their typological models. Although previous typological studies have examined similar indicator variables, it is important to distinguish the novel constructs that the SSM taps into. For example, rather than health status or health care utilization (Altena et al., 2018; Aubry et al., 2012), the SSM measures access to healthcare. Additionally, instead of assessing level of desire for education (Hertzberg, 1992), the SSM assesses level of education attainment. As such, typologies can be distinguished based on similar indicator variables and administrative data (Kuhn & Culhane, 1998; McAllister et al., 2010; McAllister et al., 2011). The present study seeks to expand current conceptualizations of single adult homeless typologies and highlight related factors that have limited research.

Previous studies that have generated meaningful typological groups have also used these groups to predict housing outcomes (Aubry et al., 2012; Brown et al., 2017; Tsai, Edens, &

Rosenheck, 2011). As such, there is a paucity of research examining multiple dimensions of self-sufficiency and their relation to housing outcomes. Thus, the present study seeks to add to the current single adult homeless literature by examining the efficacy of using typological groups generated from multiple dimensions of self-sufficiency to predict housing placement outcomes.

Although cluster analysis has traditionally been used to identify typologies in homelessness research (Bonin, Fournier, & Blais, 2009; Gentil et al., 2019; Mowbray, Bybee, & Cohen, 1993), this type of analysis has varied drawbacks. For instance, clusters are based on subjective distances between variables (i.e., within-cluster differences are minimized and between cluster differences are maximized). As such, this technique is subject to "eyeballing the data," (Blashfield & Aldenderfer, 1988, p. 458) which may result in bias due to lack of objective criteria used to determine number and nature of clusters (i.e., ad hoc definitions of distance to form clusters). A more robust method for establishing typologies is Latent class analysis (LCA; Hagenaars & Halman, 1989). LCA aims to increase interpretability of data while also uncovering latent groups from observed data. Additionally, LCA captures complex contextual effects that are more difficult to assess using traditional techniques (i.e., regression) because LCA is able to identify patterns of many variables rather than the relationship between two variables (Oberski, 2016). Classes formed using LCA are probability based which use more objective and rigorous fit indices and other criteria to identify the number and nature of the classes. Taken together, it appears that LCA possesses various advantages over traditional clustering methods. A few homeless typology studies have used LCA to identify and test the efficacy of their subgroups (Altena et al., 2018; Aubry et al., 2012; Narendorf et al., 2018; Toro, Lesperance, & Braciszewski, 2011). Thus, the present study seeks to expand the homeless typology literature by identifying a typology of self-sufficiency using LCA.

Typologies are often associated with demographic variables (Narendorf, Bowen, Santa Maria, & Thibaudeau, 2018; Roy et al., 2016; Toro, Lesperance, & Braciszewski, 2011). The present study proposes to build on previous studies and examine the association between demographic variables and typological groups within a single model. The advantage to testing these associations within a single model, as opposed to separate analyses, is due to LCA's ability to control for the covariance between the dependent variables when estimating the structural relations between the predictors and dependent variables (Porcu & Giambona, 2017; Vermunt & Magidson, 2002). Moreover, when conducting separate analyses (e.g., logistic regressions) the covariance between the dependent variables is not controlled.

This study seeks to build upon previous homeless typology research and expand it to include a typology based upon explicit constructs of self-sufficiency. Additionally, this study intends to use more robust statistical methods to identify and assess the aforementioned typology. The purpose of this study is to (a) identify a typology based on SSM domains in a sample of single homeless adults who received a housing intervention through HPRP; (b) examine whether the typology is predicted by race, gender, and age; and (c) assess the utility of the typology in predicting housing placement in RRH.

Research Questions

Research Question I: Which subgroups, based on 13 Self-Sufficiency Matrix domains, can be identified in a of single adults experiencing homelessness upon their enrollment to the Homelessness Prevention and Rapid Re-housing Program?

Research Question II: Is group membership predicted by race, gender, and/or age?

Research Question III: After controlling for race, gender, and age, does group membership predict housing placement through the Homelessness Prevention and Rapid Re-housing Program?

Method

The proposed longitudinal study will use Homeless Management Information System (HMIS) administrative data from the Homeless Prevention and Rapid Rehousing Program (HPRP) implemented in Indianapolis, IN from 2009 to 2012. Broadly, HMIS collects and tracks client-level data, including demographics and homeless service utilization, for individuals and families currently experiencing or at-risk of homelessness within a metropolitan area. The proposed study will exclusively utilize HMIS data from all single unaccompanied adults who participated in HPRP.

Sample

Through the HPRP program, the Indianapolis area served a total 2,477 adults and children. Of total households served, 515 were single unaccompanied adults. Of the 515 single adults, 296 were currently homeless receiving RRH services and 219 were at-risk of homelessness receiving HP assistance. Inclusion criteria for the present study will consist of single adult households who: (a) enrolled in the HPRP program between 2009 and 2012 and (b) were currently homeless receiving RRH services. Thus, a total of 296 RRH participants meeting the inclusion criteria will be included in the present study.

Of the 296 participants, 60 will be excluded due to missing Self-Sufficiency Matrix data. Further, only 11 participants were of a racial/ethnic background other than Black/African American and White/European American. As a result, these participants will be excluded and examination of the predictor of race/ethnicity will be limited to two groups. Finally, gender

information was missing for one participant, who will be omitted from the current study. Thus, the final sample will include 224 participants.

Sample demographics. Participants in the current study ($N = 224$) were an average age of 45.4 ($SD = 10.6$) years old, and more than half (62.5%) identified as male. The majority (66.1%) identified as Black/African American and 33.9% identified as White/European American.

Materials

Demographic variables. The following demographic variables will be included in the study: age in years, gender (male, female), and race/ethnicity (Black/African American, White/European American).

The Self-Sufficiency Matrix. The Self-Sufficiency Matrix (SSM) is a measure of self-sufficiency across multiple dimensions that has been psychometrically tested among individuals with serious mental illness and homelessness (Culhane, Parker, Poppe, Gross, & Sykes, 2007; Cummings & Brown, 2019; Fassaert et al., 2014). A review of evaluation tools commonly used by homeless service providers found that the SSM demonstrated far superior reliability and validity compared to other instruments (Culhane, Parker, Poppe, Gross, & Sykes, 2007). Additionally, when examining the SSM's factor structure, Cummings and Brown (2019) identified a two-factor solution with acceptable Cronbach's alpha values (i.e., Financial Security $\alpha = .63$, Psychosocial Health $\alpha = .66$). Taken together, the SSM has documented psychometric evidence for being a useful case management tool when identifying and assessing a client's strengths and needs across multiple life domains. Please see Appendix A for the SSM version that will be used for the proposed study.

The present study aims to generate and assess a typology of homelessness from the SSM based on 13 domains: Income, Employment, Food, Adult Education, Legal, Health Care, Life Skills, Mental Health, Substance Abuse, Family Relations, Mobility, Community Involvement, and Safety. A total of four domains (i.e. Housing, Childcare, Child Education, and Parenting Skills) will be excluded due to their lack of relevance and applicability to the sample, as all participants in this study will be persons experiencing homelessness and will be single adults navigating the homeless service system without dependents. One item (i.e., Credit History) will be excluded due to a significant amount of missing data on this item.

Housing outcome. This study's outcome variable will be housing placement at any point during participants' enrollment in HPRP. The housing placement outcome variable will be operationalized dichotomously as either (a) residence in either permanent housing (i.e., living in a house or apartment and paying rent or mortgage, living in subsided housing including PSH) or (b) living in a non-permanent situation (i.e., street or shelter homelessness, hospital, incarceration, or other institutional setting) upon exit from HPRP. A total of 60 participants exited RRH into a non-permanent situation and 164 participants exited the program in permanent housing.

Procedure

All study procedures were approved by the DePaul University Institutional Review Board (IRB). HMIS data were given in an SPSS file to the research team for analysis by the local Indianapolis HMIS coordinating entity. As part of their required procedures, all HMIS data for HPRP participants were entered by case management staff (Officer & Sauer, 2011). Additionally, as mandated by the HPRP program, there were monthly meetings and trainings to enforce program eligibility standards and data collection with additional monitoring strategies

for compliance, accuracy documentation (Officer & Sauer, 2011). Altogether, these

programmatic procedures likely enhanced the quality of the administrative data that will be used

in the current study. Furthermore, case management staff in HPRP conducted assessments with

clients to ascertain their needs. The SSM was included as an assessment tool for case

management staff in Indianapolis, IN (HUD Exchange, 2009).

Results and Analyses

This study will use the statistical software package R version 3.6.1, specifically the

poLCA package, to fit all latent class analysis models and to run all latent class regressions

(Linzer & Lewis, 2011). The psych package from R will be used to analyze participant summary

statistics.

Research Question I. Latent Class Analysis (LCA) will be used to identify potential

typological groups (Oberski, 2016). LCA is a model-based cluster analysis method for

identifying homogeneous subgroups that differ on the input variables used in the clustering

method. LCA is a non-parametric analysis, thus it does not assume any assumptions related to

linearity, normal distribution, or homogeneity (Magidson & Vermunt, 2002). However, the LCA

model assumes the local independence assumption of observed variables (i.e., SSM domains are

independent from one another within each latent class; Collins & Lanza, 2010; Magidson &

Vermunt, 2002). To assess for assumption of local independence, the Cochran-Mantel-Haenszel

Test will be used via the mantelhaen.test function in R (Linzer & Lewis, 2011; Mangiafico,

2015). Essentially, this test compares weighted odds ratios of several generated 2x2 tables. First

it calculates conditional odds ratios via the partial tables and then compares it to the null

hypothesis. The null hypothesis specifies that the odds ratios within each repetition are equal to

1. If there are consistent differences in proportions in the 2x2 tables (i.e., the odds ratios do not

equal 1), then we can reject the null hypothesis and assume local independence of observed

variables (McDonald, 2014).

The primary input variables for this statistical analysis will be the 13 SSM domains.

Maximum likelihood (ML) will be used to estimate model parameters by determining the

necessary parameter values for which the data are most likely to be observed (Collins & Lanza,

2010, p. 78-79). Unrestricted models with 1–10 clusters will be examined in order to determine

an optimal number of classes that most accurately represent the data. Criteria for model-fit will

include the Akaike information criterion (AIC), the Bayesian information criterion (BIC), and

the modified AIC (AIC3). Regarding interpretation of these fit indices' values, lower values will

indicate better data representation from the model (Magidson & Vermunt, 2004). Lastly, the

most parsimonious cluster solution that reflects meaningful patterns relevant for interpretation

will be selected. Once the number of clusters is decided, the final model generates each

participant's probability of belonging to a cluster (Magidson & Vermunt, 2004). Each model will

be run 200 times to search for a global solution and avoid multiple solutions in LCA parameter

estimates (Linzer & Lewis, 2011). The proposed LCA will utilized 13 indicator variables (SSM

domains) based on the responses of 224 participants. Regarding sample size to item ratio, Wurpts

& Geiser (2014) argued that using more or higher qualitative indicators can compensate for small

sample size. High quality indicators are those with strong relationships to the latent class

variables (i.e., showing conditional response probabilities close to one or zero). Please see Figure
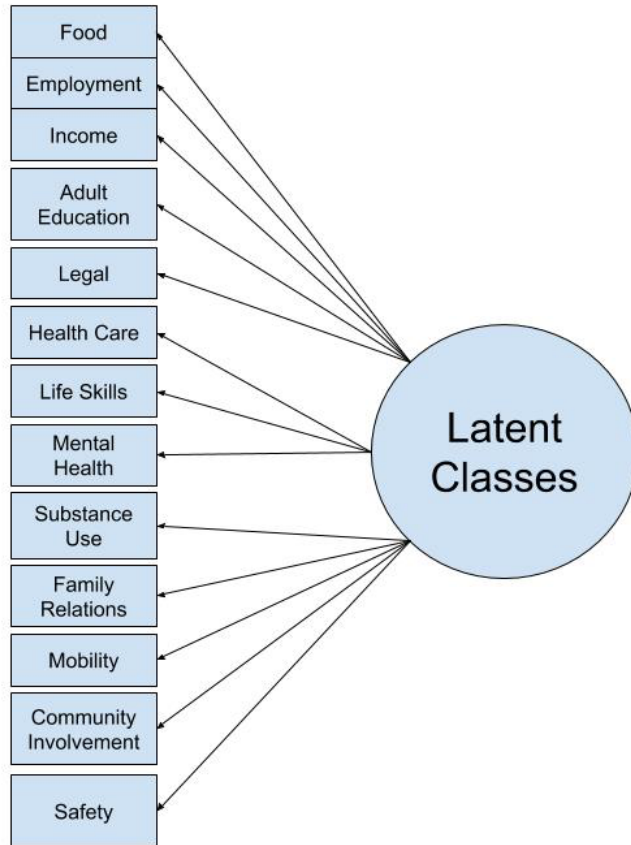
1 for a model depiction of the proposed LCA.

Figure 1. LCA model based on 13 SSM domains

Research Question II. Latent class regression analysis (Harel, Chung, & Miglioretti, 2013) will be used to examine whether group membership in the final LCA model is predicted by sociodemographic variables. The predictor variables for the latent class regression will include race/ethnicity, gender, and age. The outcome variable will be latent class membership. Latent class regression is used to predict a dependent variable (latent class membership) as a function of predictors (race/ethnicity, gender, and/or age). This analysis consists of four simultaneous steps: identifying latent classes, using demographic and other covariates to predict class membership, classifying cases into the appropriate classes, and estimating regression models for each class (Oberski, 2016). To determine whether sociodemographic variables are

predictive, the number of latent classes derived from the LCA will be fixed and changes in

model fit will be examined. As such, a predicted curve will be plotted and will be superimposed

with an observed item response curve to compare observed pattern frequencies to predicted

pattern frequencies.

Latent class regression is a robust analysis that can accommodate both categorical and

continuous dependent variables as well as not requiring the population to be homogeneous

(Magidson & Vermunt, 2004). Furthermore, this analysis does not assume any assumptions

related to normal distribution, linearity, homogeneity, or distributional form of the random

effects (Vermunt & van Dijk, 2001). Latent class regression assumes the assumption of local

independence (Collins & Lanza, 2010). Thus, prior to running theses analyses, the

sociodemographic predictor variables (i.e., race, gender, age) will be examined to ensure they

meet the assumption of local independence. The Cochran-Mantel-Haenszel Test will be used

assess for the assumption of local independence (Linzer & Lewis, 2011; Mangiafico, 2015).

Additionally, these predictor variables will be modified as needed based on the results of the

Cochran-Mantel Haenszel Test. This model builds on the previous LC model. Please see Figure
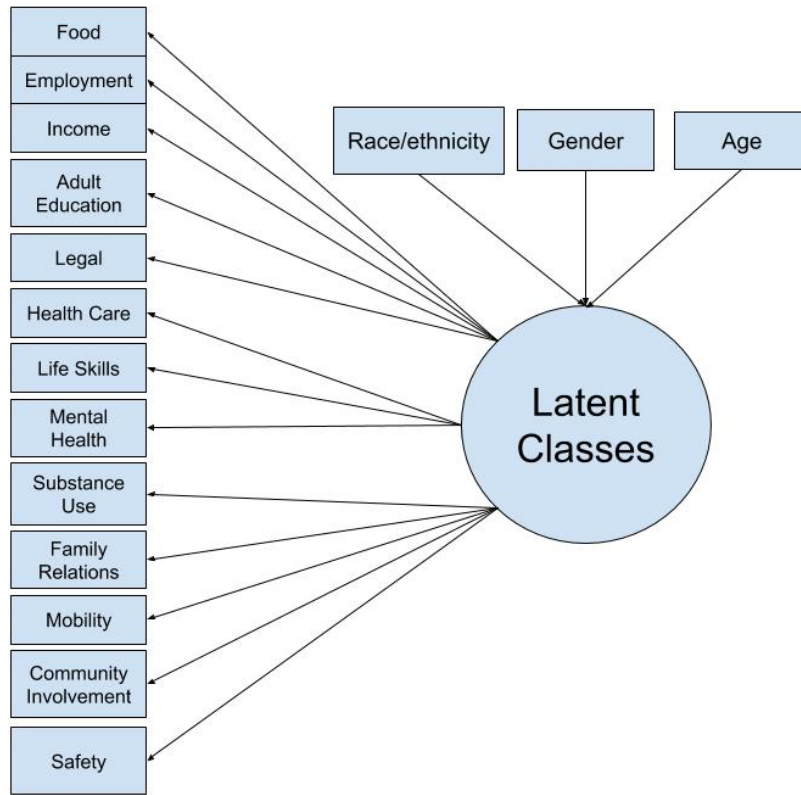
2 for the corresponding LC model.

Figure 2. Latent class regression with sociodemographic factors as predictor variables

Research Question III. Latent class regression analysis (Harel, Chung, & Miglioretti, 2013) will be used to examine whether group membership, after controlling for sociodemographic variables (i.e., race/ethnicity, gender, and age), will predict the distal outcome of housing placement. The predictor variables for the latent class regression will be identified latent classes from the LCA. The distal outcome variable will be housing placement outcome (i.e., permanent housing or a non-permanent situation). The control variables will be race/ethnicity, gender, and age. Latent class regression is used to predict a dependent variable (i.e., housing placement outcome) as a function of latent construct predictors (i.e., group membership). This analysis consists of five simultaneous steps: identifying latent classes, controlling for the effects of the sociodemographic variables, using class membership to predict

housing outcomes, classifying cases into the appropriate classes, and estimating regression

models for each class (Oberski, 2016). To determine whether group membership is predictive of

housing outcomes, changes in model fit will be examined. As such, a predicted curve will be

plotted and will be superimposed with an observed item response curve to compare observed

pattern frequencies to predicted pattern frequencies.

Latent class regression assumes the assumption of local independence (Collins & Lanza,

2010). Thus, prior to running theses analyses, the latent classes will be examined to ensure they

meet the assumption of local independence. This model builds on the previous LC model. Please

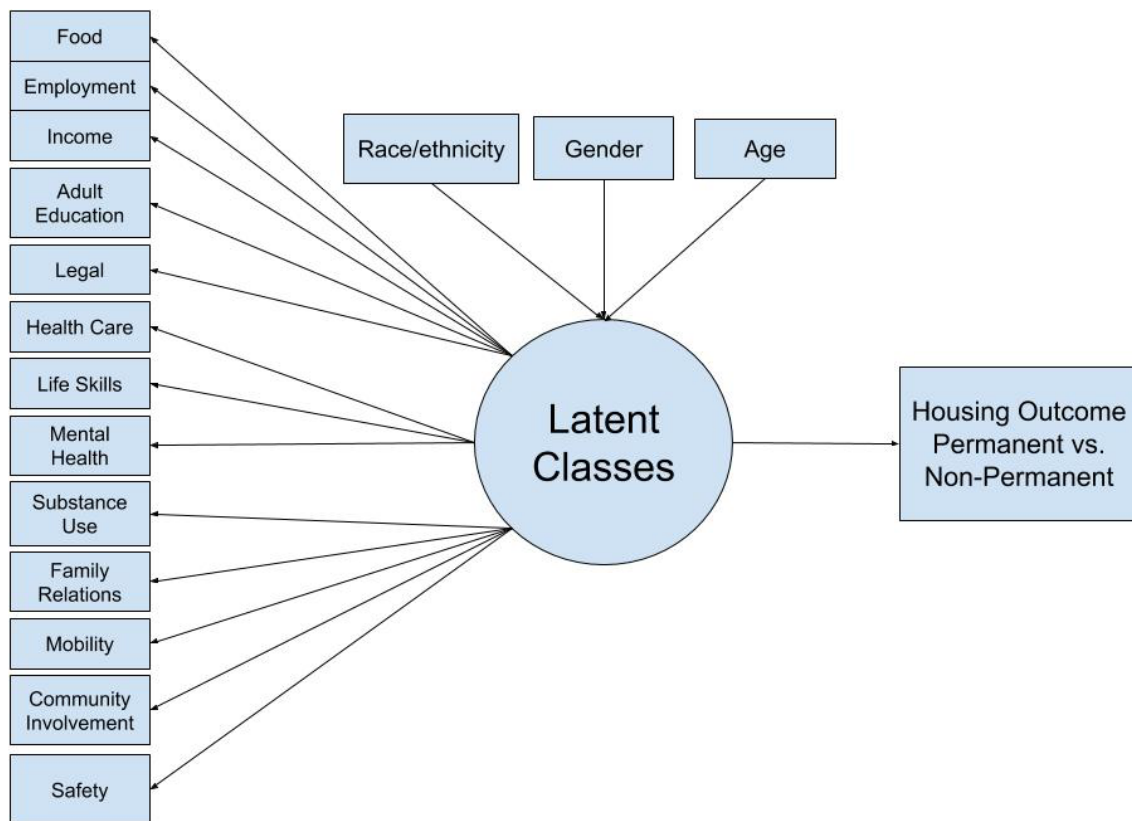see Figure 3 for the final Latent Class model.

Figure 3. Final Latent Class Model