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Development of a Three-Factor Psychological Sense of Community Scale

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Abstract

A variety of measures of sense of community have been developed, but the identification of latent factors in developed scales to measure this construct have encountered significant psychometric problems involving reliability and validity. We present a new measure called the Psychological Sense of Community Scale, which is based on 3 distinct ecological domains involving the individual, microsystem and macrosystem. We used an exploratory factor analysis to investigate our three theoretical domains involving *Self* (identity and importance to self), *Membership* (social relationships), and *Entity* (a group's organization and purpose). Three theoretically derived factors emerged with good measurement model fit, internal reliabilities, and convergent validity. Our study also found multiplicative over additive effects, suggesting each of the 3 domains is necessary to understand the experience of sense of community. This scale can be adapted to a variety of contexts and situations in future research.

Keywords

Sense of Community; Ecological Model; Scale Development; Membership; Organization

The need to belong is considered a fundamental human need (Baumeister & Leary, 1995). It has been well-established that social support can influence emotional and physical well-being (Cohen, 2004), and as such, the study of group-related phenomena and interpersonal connections has been a key component of social science research. For example, industrial/organizational psychologists have assessed how characteristics of the interpersonal nature of a group, such as cohesion, influence group productivity (e.g., Beal, Cohen, Burke, & McLendon, 2003; Kozlowski & Ilgen, 2006), and positive psychologists have examined how group-level positive feelings, such as morale, influence individual well-being (Peterson, Park, & Sweeney, 2008). Relatedly, military psychologists have examined the well-being of individuals in the terms of the spirit of the group, or esprit de corps (e.g., Manning, 1991).

Community psychology, however, offers a unique and detailed perspective for examining the intricate layers of an individual's experience. A key concept in community psychology is the ecological model which posits individuals are part of a system (their "ecology") which influences their thoughts, behaviors, and emotions. This ecology has three layers-

individuals have their own thoughts, feelings, and behaviors (“the individual”), which are ingrained within a microsystem (an individual’s immediate network of individuals, such as family, friends, coworkers, and classmates), which in turn is embedded in a macrosystem (comprised of governments, cultures, and societies). Community psychologists are concerned with an individual’s *own* experiences within this larger system. As such, community psychology provides a thorough and detailed perspective on how an individual’s experience within a group and characteristics of that group is an integral part of his or her well-being.

Sarason (1974) initially introduced the term psychological sense of community as being “the perception of similarity to others, an acknowledged interdependence with others, a willingness to maintain this interdependence by giving to or doing for others what one expects from them, the feeling that one is part of a larger dependable and stable structure”(p. 157). This definition incorporates some of the key aspects of community psychology, such as the notion that an individual exists within a larger network and structure (“macrosystem”), and that individuals are interdependent (“microsystem”).

McMillan and Chavis (1986) operationalized psychological sense of community into the following four dimensions: membership, fulfillment of needs, shared emotional connection, and influence. McMillan and Chavis' (1986) model is traditionally believed to encapsulate Sarason's (1974) notion of psychological sense of community, however, the 15-item scale derived from 39 items from the Neighborhood Participation Project (Chavis, Hogge, McMillan, & Wandersman, 1986) was not empirically tested over time. McMillan and Chavis' (1986) model of sense of community was later operationalized through a reduced number of items in several scales, with a focus on geographic neighborhoods as community. One of the better known instruments developed to evaluate McMillan and Chavis' theory was the *Sense of Community Index* (Perkins, Florin, Rich, Wandersman, & Chavis, 1990). This measure consists of three items representing each of McMillan and Chavis' proposed four underlying factors. Yet several authors have failed to confirm the underlying 4-factor structure of the Sense of Community Index using both exploratory and confirmatory factor analyses (Chipuer & Pretty, 1999; Stevens, Jason, & Ferrari, 2011). This may suggest that an alternative conceptualization of sense of community is needed; particularly, one that better corresponds to the ecological model and the empirical findings.

Investigators have tried to improve the quality of the Sense of Community Index by adding new items to the measure, or renaming and reorganizing factors (Long & Perkins, 2003; Obst & White, 2004; Peterson, Speer, & McMillan, 2003). These reformulations, however, also have measurement problems. For example, Long and Perkins (2003) retained three factors consisting of social connections, mutual concerns, and community values. The latent measurement model, however, did not translate into acceptable reliabilities at the subscale level, and two of the factors consisted of only two items, making the instrument problematic as a multi-factor measure using observed scores. Similarly, Peterson, Speer, and McMillan (2008) created the *Brief Sense of Community Scale* with two items presenting each of the four factors (needs fulfillment, group membership, influence, and emotional connection). Reliabilities for each of these factors were found to be good to excellent. However, given that each factor only contained two items, the high reliability is likely a reflection of the

repetitive nature of the questions, rather than a true representation of an underlying construct.

A different approach towards understanding a sense of community that may not be bounded by a specific place or location (such as neighborhood) resulted in the creation of the *Perceived Sense of Community Scale* (Bishop, Chertok, & Jason, 1997). In its theoretical configuration, the scale was divided into three constructs: mission, connections, and reciprocal responsibility, and individuals were asked about membership to a group not confined to a specific geographic location. Stevens, Jason, Ferrari, Olson, and Legler (2012) found that the Perceived Sense of Community Scale had excellent observed reliability. However the length of the Perceived Sense of Community Scale was problematic and factor analyses revealed that negatively worded items loaded together. This suggests that having measures that use only similarly valenced items might lead to improved measurement performance.

Stevens et al.'s (2011) factor analysis of the the Sense of Community Index found preliminary evidence for a 3-factor ecological model weakly corresponding to a “rationale for connection” (macrosystem), “social bonds” (microsystem), and “personal importance” (self). However, there were only 2 items on the “self” domain and the “rationale for connection” factor had the majority of items and some cross loading with “personal importance”.

As such, there remains a need for a measure that both theoretically represents an individual's experience of community and is empirically valid. Building on previous work suggesting that sense of community may be experienced within an ecological framework (e.g., Stevens et al., 2011), the construct of sense of community could be divided into three ecological frameworks in line with the ecological model. The broadest ecological construct, or “macrosystem”, is *Entity*, upon which the community is formulated (e.g., neighborhood, school, or organization). Within this domain, items refer to characteristics of the group, such as common goals, purpose and objectives. At a narrower ecological level, the “microsystem,” *Membership* refers to the relationship of the members of the group (e.g., neighbors on a block, students within a school). Finally, at the third and narrowest ecological level, or “the individual,” is *Self*, which assesses the meaningfulness, commitment, and emotional connection experienced by members. A measure embedded within such a theoretical framework represents a different approach for conceptualizing sense of community.

The purpose of this study was to construct a new measure designed to accurately assess sense of community from an ecological perspective. In order to obtain information that is more representative of an individual's feelings of sense of community, we had individuals select their own *Entity* and *Membership* domain. For the measurement purposes of this study, this allowed us to better assess the concept of sense of community, as individuals were asked to rate scale items on contexts that were salient to them. Furthermore, to ensure that our measure differentiated between high sense of community and low sense of community, participants were asked to complete our measure by thinking of an Entity with which they had a negative or positive past experience. In addition, we assessed whether *Entity*,

Membership, and *Self* are each necessary, but not sufficient components of sense of community. People with a strong sense of one of the domains, but not others, might not experience a strong sense of community.

The present study assessed a preliminary new measure of sense of community by having individuals freely choose which community to evaluate. Scale development included a clear definition of the theoretical model, the inclusion of only positively phrased items, and having adequate number of indicators per subscale. Our theoretical design for the construction of the new scale involved developing a set of items that reflects three domains including: *Entity*, *Membership*, and *Self*. We used an exploratory factor analysis to investigate these domains and also investigated whether our model functions in an additive (logical “or”) or multiplicative (logical “and”) fashion, as each of the three domains may be a necessity for sense of community, but by itself may not be sufficient. We also explored the effects of negative and positive sense of community, and tested the convergent validity of our model with established related measures.

Method

Participants

The study surveyed college students from a midwestern university psychology department research pool. There were 158 participants, of which 109 were female and 49 were male. The average age was 20.4 years ($SD= 3.0$). Human subjects approval was obtained from the university's institutional review board.

Procedures

Students were asked to complete a survey that included questions tapping demographics, sense of community, interpersonal support, collectivism/individualism, and stress. The survey was administered through an on-line survey system. The students were randomized to one of two conditions that differed only by the framing and sequence of the sense of community instruments. Regarding framing, 98 were negative, and 60 were positive. Those in the negative framing condition were asked to think back to an experience they had with an organization, school, church, community organization, neighborhood, etc. where they generally had an *unpleasant* or *disappointing* experience. Those in the positive framing condition were asked to think back to an experience they had with an organization, school, church, community organization, neighborhood, etc. where they generally had a *pleasant* or *rewarding* experience. In other words, a framing was introduced by having the participant utilize an experience with an organization as the initial context for their evaluation of that group or organization's sense of community.

In order to assess the *Entity* domain, students were asked this question: “To assist in completing the survey, please type in a word that is descriptive of the organization you are reflecting on (e.g. school, program, etc.)” This *Entity* word was then used in the questionnaire. Next, to assess the *Membership* domain, students were asked: “In addition, please enter a word or phrase that describes the people involved in the organization (e.g.

members, students, etc.).” The word they typed was then inserted in each question representing the *Membership* domain (See Appendix A).

Measures

Sense of Community—The Psychological Sense of Community Scale (PSC) consists of 24 items that tap three domains including: *Entity*, *Membership*, and *Self*. The *Entity* domain represents organization and purpose, and it refers to the boundary condition of membership, common goals, purpose and objectives, safety and security, comparative evaluation, outside influence, performs to expectations, and effectiveness. Examples of items include: “I think this group was a good group,” “This group was effective at solving problems,” and “This group was viewed favorably by others.” The *Membership* domain reflects social relationships and taps the following qualities: mutual responsibility, support, reliance, cooperation, help, voice, attitudes toward other members. For the *Membership* domain, typical items include: “Members could depend on each other in this group,” “Members could get help from other members if they needed it,” and “Members were secure in sharing opinions or asking for advice.” The *Self* domain involves identity and importance to self, and taps concepts such as emotional commitment, emotional connection, emotional compensation, commitment, engagement, influence, and meaningfulness. Examples of items in the *Self* domain include: “This group was important to me,” “I made friends in this group,” and “I felt good helping the group and the members.”

Brief Sense of Community—The Brief Sense of Community Scale (BSCS) was included as an existing sense of community instrument. The BSCS is designed to measure the four domains of sense of community including needs fulfillment, group membership, influence, and emotional connection (Peterson, Speer, & McMillan, 2008). This scale utilizes six-point Likert-type scoring. There are a total of eight items that reflect the four factors.

Perceived Stress—The Perceived Stress Scale (PSS) was included in order to demonstrate convergent validity (through a significant inverse relationship) with the Psychological Sense of Community Scale. The PSS is a four-item revised version of a previous 14-item measure of global perceived stress. The authors report a coefficient alpha reliability of .72 for the four-item short version (Cohen, Kamarck, & Mermelstein, 1983). The Total Stress score, which ranges from 0 to 16, was used in the present study and higher scores reflected greater stress.

Individualism/Collectivism—Given that sense of community should be related to both collective characteristics as well as individual empowerment (e.g. membership and influence; Peterson, Speer, & McMillan, 2008), we assessed individualism and collectivism. The Horizontal Individualism/Collectivism Scale (Chirkov, Ryan, Kim & Kaplan, 2003) consists of 12 items that are scored on a five-point scale from “Not at all Important” to “Very Important”. These items represent cultural orientations for horizontal individualism and horizontal collectivism that are measured on the individual level. HC_1 measures individualism whereas HC_C measures collectivism

Interpersonal Support—Participants completed a 12-item version of Cohen et al.'s (1985) Interpersonal Support Evaluation List (ISEL), that assesses three distinct types of actual or perceived social support (Cohen, Doyle, Turner, Alper, & Skoner, 2003). Tangible support refers to instrumental aid (e.g., monetary assistance) one might receive. Appraisal support refers to the availability of someone to talk to about one's problems. Belonging support refers to the availability of others with whom to interact. The 12-item version of the ISEL is designed to measure three separate functions of social support as well as to provide an overall functional support measure. Considerable research has been conducted with the ISEL and good internal reliability (.87) has been reported with the 12-item version of the ISEL (Cohen et al., 2003).

Statistics

An exploratory factor analysis utilized maximum likelihood estimation with oblique rotation (Geomin). When assessing the extent to which various factor models fit the data, good fit was indicated by a discrepancy χ^2 that is not statistically significant (i.e., $p > .01$). Other indicators of good fit include the Goodness of Fit Index (GFI) and similar indicators (e.g., TLI and CFI) above .90 and root mean square error approximation (RMSEA) below .08.

Results

Factor Structure

Table 1 shows the exploratory factor analysis measures of fit by number of factors. The best fit was for a three factor model ($CFI = 1.00$, $RMSEA = .00$). Our hypothesis of a three factor model involving *Entity*, *Membership*, and *Self* was confirmed. Table 2 shows the Geomin rotated factor loadings. For the subscales in Table 2, there was high observed reliability. For Factor 1, called *Entity*, three questions were identified ($M=4.15$, $SD= 1.33$) including: “I think this group was a good group” (S1), “I did not leave this group because I wanted to” (S22), and “For me, this group was a good fit” (S23). For this subscale, the $ICC = .624$, and Cronbach's $\alpha = .833$. For Factor 2, the *Membership* domain, there also were three items ($M=4.29$, $SD= 1.18$), including: “Members could depend on each other in this group” (S10), “Members could get help from other members if they needed it” (S12), and “Members were secure in sharing opinions or asking for advice” (S13). For this factor, the $ICC = .758$, and Cronbach's $\alpha = .904$. Finally, for Factor 3, labeled *Self*, there were three items ($M=4.49$, $SD= 1.1.24$), including: “This group was important to me” (S18), “I made friends in this group” (S20), and “I felt good helping the group and the members” (S21). For this factor, the $ICC = .679$, and Cronbach's $\alpha = .865$. For the full scale ($M=4.31$, $SD=1.11$), the $ICC = .571$, and Cronbach's $\alpha = .923$. *Entity* was positively correlated with *Membership* [$r(156) = .634$; $p < .01$] and with *Self* [$r(156) = .548$; $p < .01$], *Membership* was positively correlated with *Self* [$r(156) = .669$; $p < .01$]. The relationship of sex and overall sense of community was not significant, with a $p = .813$.

Figure 1 shows the use of the measurement model as the predictor of the framing group (i.e., whether the participant was asked to recall a positive or negative experience). The odds ratio equals 2.46, $p < .01$. Prior to using the measurement model for prediction, the probability of being in the positive framing condition was 38%. The increase in the odds ratio would

improve the probability of predicting the positive framing condition to 60%. This means that given no other information, framing would be thought to occur 38% of the time, but in effect, with this predictive model, it would be possible to more accurately predict the framing condition. In other words, we found that framing demonstrates an effect on sense of community levels, and that our measurement model was stable given this grouping.

We next examined whether each of the three domains (*Entity*, *Membership*, and *Self*) may be necessary but not sufficient for sense of community. In other words, is it critical to have all three domains to experience sense of community, or is it possible to have the experience of sense of community with only one or two of these domains. To do this comparison, we used 4 possible models (i.e., single factor, multiple factor, interaction, and multiple factor plus interaction) of the Psychological Sense of Community Scale to predict the framing manipulation. We had initially implemented the framing to create variance in the sample and then utilized the resulting factor model to investigate the structure of the sense of community scale. We then wanted to evaluate the model that best represents the relationship between sense of community and framing. We tested the following models: a) a three factor model (*Entity*, *Membership*, and *Self*), b) an overall factor model representing the total Psychological Sense of Community Scale score, c) the 3-way interaction (*Entity* × *Membership* × *Self*), and d) the 3-factor model plus the 3-way interaction. General estimating methodology using a logit link was used to evaluate the models, and AIC was used as the basis for evaluation. Table 3 indicates that three distinct models were significant: one involving 3 factors (*Entity*, *Membership*, and *Self*), another involving one overall Psychological Sense of Community Scale factor score, and another involving the 3-way interaction (*Entity* × *Membership* × *Self*). The model involving the 3-factors plus the 3-way interaction was the only model that was not significant. In other words, the 3-way interaction model alone performed the best, whereas the 3-factor model plus 3-way interaction performed the worst. What this suggests is that the 3-way interaction captured all the significant predictive variance and thus the addition of the 3-factor model was not significant. This suggests that all three components of sense of community are necessary in order for an individual to feel a high sense of community.

Table 4 provides indicators of validity. As negative framing could attenuate correlations, we controlled for framing by using it as a covariate. This resulted in the loss of one degree of freedom, but if the groups were split into positive and negative framing, sample sizes would have been appreciably diminished. The overall Psychological Sense of Community Scale score was significantly and positively correlated with the BSCS, suggesting convergent validity. In addition, the Psychological Sense of Community Scale was inversely related with measures of stress (PSS) but positively related with a measure of interpersonal support (ISEL). The Psychological Sense of Community Scale was also significantly related to both individual and collective self-competency, which refers to the ability to deal with problems in the world.

Discussion

The reported work in this article represents the initial steps necessary to pursue the sequence of studies necessary to argue for a new measure of sense of community, based on Sarason's

(1974) original model. This line of research emerged from several prior studies our group had conducted with sense of community (Stevens et al., 2011), and it was through this work that we recognized some of the limitations in our scales (Bishop et al., 1997; Stevens et al., 2012) as well as others (Perkins, Florin, Rich, Wandersman, & Chavis, 1990). This led us to begin working on a new measure to correct the methodological and theoretical flaws of past studies.

In the current study, we found three ecologically and theoretically relevant domains (*Entity*, *Membership*, and *Self*) for sense of community in our new measure. Our model had good measurement fit with factors having good internal reliabilities. Our measure also had good convergent validity with both a measure based on the McMillan and Chavis' (1986) conceptualization (BSCS; Peterson, Speer, & McMillan, 2008) and with a measure of social support (ISEL; Cohen, Doyle, Turner, Alper, & Skoner, 2003). This provides support for our new way of assessing and conceptualizing sense of community. The Psychological Sense of Community Scale thus appears to be a generalizable, three-factor measure that can be adapted to a variety of contexts and situations in future research.

Unlike previous measures of sense of community, our scale examined sense of community within three ecological layers: the individual, the microsystem, and the macrosystem. Our view is that when thinking about sense of community, the reference point is crucial, as a person might have a different sense of community for different *Entities*, such as at work versus within one's neighborhood. There may also be different senses of community within one *Entity* depending on which members are being considered. Therefore we designed our measure to have sufficient indicators per factor to be reliable, to be flexible so that researchers could obtain accurate depictions of sense of community for various entities, and to be sensitive enough differentiate between high and low feelings of sense of community.

Rather than assume that all aspects of sense of community were equally representative of an individual's experience, we examined whether some domains could be substituted for others. We found multiplicative over additive effects, indicating that each of the domains is of importance; in other words, *Entity* and the other domains are a necessary but not sufficient component of sense of community. A person might experience a strong sense of *Entity*, but not of *Membership* or *Self*, and in such a situation, he or she may not have a strong sense of community. This finding suggests that each domain of sense of community contributes uniquely to an individual's experience, and that identifying multiplicative scores might be more predictive in investigations.

We also investigated whether the relative stability of the models would replicate under conditions intended to change an individual's underlying feelings of sense of community by asking participants to think of a past positive or negative experience within a setting. We found that whether a person has a negative or positive past experience with an *Entity* did indeed affect the ratings of sense of community. In addition, the correlations between items and factors were stable across conditions (positive versus negative experience), but levels were significantly different. In other words, the scale was stable across a variety of conditions, indicating that it is a step toward an accurate depiction of sense of community.

The final factor structure of our measure had theoretically relevant and distinct factors. Three items from the hypothesized *Membership* domain as well as three items on the hypothesized *Self* domain did emerge, but only one of the three hypothesized items within the *Entity* factor was found. Two items that emerged for the *Entity* factor were among the original hypothesized *Self* domain (“I did not leave this group because I wanted to,” and “For me, this group was a good fit”). Both of these items represent commitment and concordance with the *Entity*, and thus can be seen as reasonable items within an *Entity* domain. Regardless of the overlap, the present scale provides an empirically supported and theoretically and ecologically grounded examination of sense of community.

Moderately correlating our new instrument with one brief measure of existing sense of community is limited evidence of our measure's validity. While the justification for our measure is in part based on the deficiencies of prior scales, our approach relies heavily on the theoretically derived ecology of sense of community. While the summary scales of a number of existing measures do tap the overall construct of sense of community, there is little empirical support for the latent factors, and the latent factors of our scale has sound theoretical and psychometric properties. In future studies, investigators might contrast our measure with other scales of sense of community.

A possible limitation in this study was the use of undergraduates in a psychology subject pool. Depending on their exposure to issues related to community psychology, it could be argued that their responses may be biased in directions that are consistent with the direction on hopes to pursue in the proposed measure. However, undergraduates are not inexperienced with feelings associated with belonging to entities identified as having a greater mission or purpose. Thus while students represent a limited proportion of the general population, they are not inexperienced with feelings regarding sense of community, and thus are appropriate samples for investigating this construct, particularly as a first step in developing a measure.

Though this study was an important first step in developing and validating a new sense of community scale, there are several limitations. Our study only involved college students, so the generalizability to other populations might be limited. Furthermore, we did not collect information about the participants' foundational communities, and whether they were from urban, rural or suburban areas. As such, there is clearly a need to replicate these findings with additional community samples. In addition, future studies might relate the factors of this instrument to a number of important clinical outcomes such as mental health, criminal justice, or addiction indicators, as well as collect more longitudinal data to assess change over time.

As an important first step in scale development we wanted individuals to reflect on an easily accessible and remembered experience in order to understand feelings of sense of community at an individual level. It is possible that some participants chose groups from their past as their reference group, and we assessed the relationship of feelings of sense of community from this experience to current measures of stress and social support. Even though the measures were filled out with possible different time frames, the results of our study are consistent with the convergent validity results of the BSCS (Peterson, Speer, & McMillan, 2008). In future studies, providing a similar timeframe regarding this reference

group would permit a clearer picture of the convergent validity of sense of community. Other future studies could evaluate how influential a group is to self-sacrifice for a group, or how willing a person is to act for group goals. In addition, further work could be devoted to studying how likely is an individual to adopt the norms of a group and what implications this might have for civic and/or attitudes and behavior.

Understanding interpersonal phenomena has been a central focus of many fields (e.g., Baumeister & Leary, 1995; Peter, Park, & Sweeney, 2008). Within community psychology, the concept of sense of community is believed to encapsulate an individual's experience within a group from a variety of ecological levels: the self (the "individual"), the interactions with others ("microsystem"), and the organization ("macrosystem"). When the theory of psychological sense of community was initially proposed to the field by Sarason (1974), there was considerable enthusiasm and it was soon considered to be one of the foundational constructs of the developing field of community psychology. However, efforts to construct a measure to tap into this construct encountered considerable difficulties, including failure to find support for theoretical domains. The Psychological Sense of Community Scale instrument was developed based on an ecological theoretical framework involving *Entity*, *Membership*, and *Self*. Good model fit statistics were found and the instrument avoids problems that have been previously identified with negatively termed items as well as low number of items per factor. In addition to high internal reliability, there are only nine items to this measure, which makes it easy to administer to a variety of community groups. In addition, the instrument has considerable flexibility to be focused on particular types of *Entity* and *Membership*, so that investigators can adapt this instrument for a variety of contexts and situations.

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Appendix A

Psychological Sense of Community Scale

Using this measure, researchers select the *Entity* and *Membership for which they would like participants to answer*. In other words, the researchers indicate an "E" = *Entity* (e.g. the group being referred to, or the neighborhood, school, organization). Participants are asked to write a word for the *Entity* that is descriptive of the organization he or she is being asked to reflect on (e.g. school, program, etc.). Next, participants indicate a an "M" = *Members* (e.g. members or the neighbors or students within the social network). The participant is asked to write a word or phrase that describes the *Members* involved in the organization (e.g. members, students, etc.). In the questions below, replace the letter "E" with the *Entity* that the researcher selected, and the "M" with the *Membership* that was researcher designated.

Respondents answer whether they Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, or Strongly Agree with the questions below.

S refers to the items from Table 2.

S1 I think this E was a good E

S22 I did not leave this E because I wanted to

S23 For me, this E was a good fit

S10 M could depend on each other in this E

S12 M could get help from other M if they needed it

S13 M were secure in sharing opinions or asking for advice

S18 This E was important to me

S20 I made friends in this E

S21 I felt good helping the E and the M

The questions above are in the past tense, so if an investigator decides to use this scale for a person's current sense of community, we suggest using the slight variation of wording below that puts things in the present tense.

S1 I think this E is a good E

S22 I am not planning on leaving this E

S23 For me, this E is a good fit

S10 M can depend on each other in this E

S12 M can get help from other M if they need it

S13 M are secure in sharing opinions or asking for advice

S18 This E is important to me

S20 I have friends in this E

S21 I feel good helping the E and the M

References

- Alvarez J, Adebajo AM, Davidson MK, Jason LA, Davis MI. Oxford house: Deaf-affirmative support for substance abuse recovery. *American Annals of the Deaf*. 2006; 151(4):418–422. [PubMed: 17225636]
- Baumeister RF, Leary MR. The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological bulletin*. 1995; 117:497. [PubMed: 7777651]
- Beal DJ, Cohen RR, Burke MJ, McLendon CL. Cohesion and performance in groups: a meta-analytic clarification of construct relations. *Journal of Applied Psychology*. 2003; 88:989. [PubMed: 14640811]

- Bishop PD, Chertok F, Jason LA. Measuring sense of community: Beyond local boundaries. *Journal of Primary Prevention*. 1997; 18(2):193–212.
- Bishop PD, Jason LA, Ferrari JR, Huang C. A survival analysis of communal-living, self-help, addiction recovery participants. *American Journal of Community Psychology*. 1998; 26:803–821. [PubMed: 10085534]
- Chavis DM, Hogge JH, McMillan DW, Wandersman A. Sense of community through Brunswik's lens: A first look. *Journal of Community Psychology*. 1986; 14(1):24–40.
- Chavis D, Pretty G. Sense of Community: Advances in measurement and application. *Journal of Community Psychology*. 1999; 27(6):635–642.
- Chipuer HM, Pretty GMH. A review of the sense of community index: Current uses, factor structure, reliability, and further development. *Journal of Community Psychology*. 1999; 27(6):643–658.
- Chirkov VI, Ryan RM, Kim Y, Kaplan U. Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*. 2003; 84(1):97–110. [PubMed: 12518973]
- Cohen S. Social relationships and health. *American psychologist*. 2004; 59:676. [PubMed: 15554821]
- Cohen S, Kamark T, Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior*. 1983; 37(2):147–153.
- Cohen S, Doyle WJ, Turner R, Alper CM, Skoner DP. Sociability and susceptibility to the common cold. *Psychological Science*. 2003; 14:389–395. [PubMed: 12930466]
- Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. *Psychological Bulletin*. 1985; 98:310–357. [PubMed: 3901065]
- D'Arlach L, Olson BD, Jason LA, Ferrari JR. Children, women, and substance abuse: A look at recovery in a communal setting. *Journal of Prevention & Intervention in the Community*. 2006; 31:121–132. [PubMed: 16595392]
- Ferrari, JR.; Jason, LA.; Olson, BD.; Davis, MI.; Alvarez, J. Psychological sense of community: Research, applications, and implications. New York, NY, US: Kluwer Academic/Plenum Publishers; 2002. Sense of community among Oxford House residents recovering from substance abuse: Making a house a home; p. 109-122.
- Ferrari JR, Jason LA, Davis MI, Olson BD, Alvarez J. Similarities and differences in governance among residents in drug and/or alcohol misuse: Self vs. staff rules and regulations. *Therapeutic Communities: The International Journal for Therapeutic and Supportive Organizations*. 2004; 25:179–192.
- Ferrari JR, Jason LA, Sasser K, Davis MI, Olson BD. Creating a home to promote recovery: The physical environment of Oxford House. *Journal of Prevention & Intervention in the Community*. 2006; 31:27–40. [PubMed: 16595384]
- Glynn TJ. Psychological sense of community: Measurement and application. *Human Relations*. 1981; 34(9):789–818.
- Graham BC, Jason LA, Ferrari JF, Davis MI. Sense of community within recovery housing: Impact of resident age and income. *Journal of Groups in Addiction & Recovery*. 2009; 4:62–70. [PubMed: 20657670]
- Halamova J. Psychological sense of community: Examining McMillian Chavis' and Peck's concepts. *Studia Psychologica*. 2001; 43(2):137–148.
- Jason LA, Davis MI, Ferrari JR, Anderson E. The need for substance abuse after-care: Longitudinal analysis of Oxford House. *Addictive Behaviors*. 2007; 32:803–818. [PubMed: 16843612]
- Jason, LA.; Glenwick, DS., editors. *Methodological Approaches to Community-Based Research*. Washington, DC: American Psychological Association; 2012.
- Jason LA, Olson BD, Ferrari JR, Lo Sasso AT. Communal housing settings enhance substance abuse recovery. *American Journal of Public Health*. 2006; 96(10):1727–1729. [PubMed: 17008561]
- Kapoor M, Ferrari JR. Psychological sense of community among eldercare volunteers: Understanding caregivers in Tasmania. *Australian Journal on Volunteering*. 2005; 10:7–13.
- Kozlowski SW, Ilgen DR. Enhancing the effectiveness of work groups and teams. *Psychological science in the public interest*. 2006; 7(3):77–124. [PubMed: 26158912]

- Long DA, Perkins DD. Confirmatory factor analysis of the sense of community index and development of a brief SCI. *Journal of Community Psychology*. 2003; 31(3):279–296.
- McMillan DW, Chavis DM. Sense of community: A definition and theory. *Journal of community psychology*. 1986; 14:6–23.
- Obst PL, White KM. Revisiting the sense of community index: A confirmatory factor analysis. *Journal of Community Psychology*. 2004; 32:691–705.
- Olson BD, Curtis CE, Jason LA, Ferrari JR, Horin EV, Davis MI, Flynn AM, Alvarez J. Physical and sexual trauma, psychiatric symptoms, and sense of community among women in recovery: Toward a new model of shelter aftercare. *Journal of Prevention & Intervention in the Community*. 2003; 26(1):67–80.
- Perkins DD, Florin P, Rich RC, Wandersman A. Participation and the social and physical environment of residential blocks: Crime and community contexts. *American Journal of Community Psychology*. 1990; 18(1):83–115.
- Peterson NA, Speer P, Hughey J. Measuring sense of community: A methodological interpretation of the factor structure debate. *Journal of Community Psychology*. 2006; 34(4):453–469.
- Peterson NA, Speer P, McMillan D. Validation of a brief sense of community scale: Confirmation of the principal theory of sense of community. *Journal of Community Psychology*. 2008; 36(1):61–73.
- Sarason, SB. *The psychological sense of community; prospects for a community psychology*. Jossey-Bass; San Francisco: 1974.
- Stevens EB, Jason LA, Ferrari JR, Olson B, Legler R. Sense of community among individuals in substance abuse recovery. *Journal of Groups in Addiction and Recovery*. 2012; 7:15–28. [PubMed: 25374483]
- Stevens EB, Jason LA, Ferrari JR. Measurement performance of the Sense of Community Index in substance abuse recovery communal housing. *Australian Community Psychologist*. 2011; 23:135–147. [PubMed: 25083166]
- Vandenberg RJ, Lance CE. A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*. 2000; 3(1):4–69.

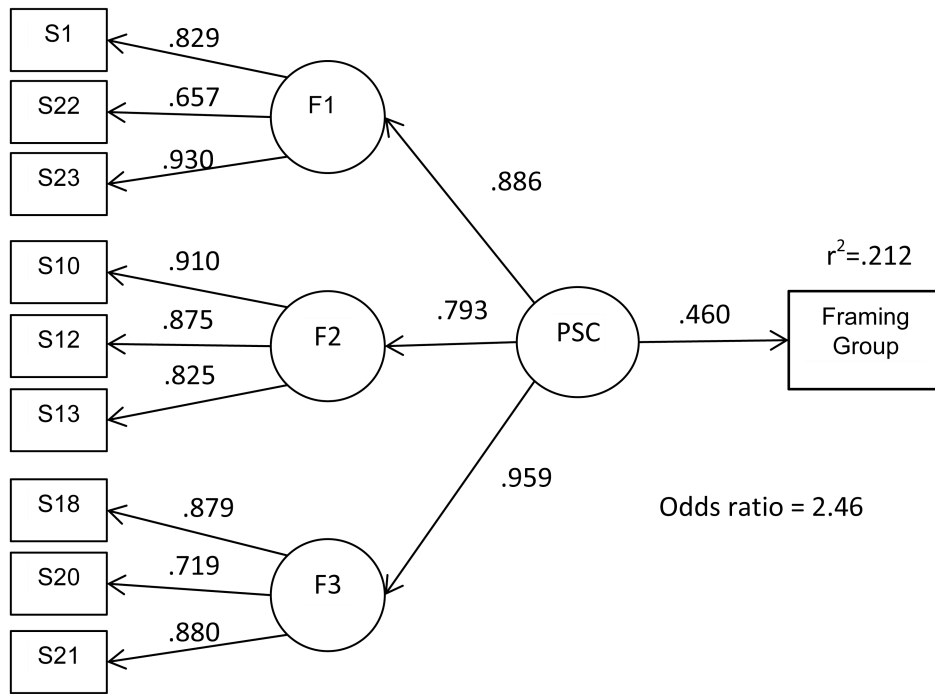


Figure 1. Measurement Model with Logistic Regression of Framing Group

Table 1
Exploratory Factor Analysis Measures of Fit by Number of Factors

Measure	One Factor	Two Factor	Three Factor
Chi-Square P-value	.000	.000	.666
CFI	.828	.941	1.000
TLI	.771	.888	1.007
RMSEA	.210	.147	.000
SRMR	.066	.033	.012

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Table 2
Geomin Rotated Factor Loadings (λ .40)

Item	Factor 1	Factor 2	Factor 3
S1	.496		
S10		.707	
S12		.711	
S13		.776	
S18			.584
S20			.739
S21			.991
S22	.498		
S23	1.000		

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Table 3
Relationship of Additive and Multiplicative Models on Framing Condition

Model	Form	χ^2/df	Wald	P-value	AIC	BIC	CAIC
1	Intercept Only	---	---	---	181.703	184.765	185.765
2	Three Factors	.989	7.594	.006	162.606	174.856	178.856
3	One Factor	.948	17.135	.000	162.217	168.343	170.343
4	Interaction	.890	18.856	.000	161.899	168.024	170.024
5	Interaction + Three Factors	.940	<3.842	>.050	164.385	179.698	184.698

Table 4

Indicators of Validity

	PSC	ISEL	PSS	HC_I	HC_C
PSC					
ISEL	.242**				
PSS	-.200*	-.277**			
HC_I	.282**	.068	.011		
HC_C	.359**	.482**	-.110	.389**	
BSCS	.378**	.417**	-.219**	.259**	.391**

Note. Partial correlations controlling for framing group of PSC.

* $p < .05$,

** $p < .01$