ARTICLE

A REVIEW OF THE SENSE OF COMMUNITY INDEX: CURRENT USES, FACTOR STRUCTURE, RELIABILITY, AND FURTHER DEVELOPMENT

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The short form of the Sense of Community Index (SCI) (Chavis, Hogge, McMillan, & Wandersman, 1986) was assessed in terms of the four dimensions of psychological sense of community (PSC) proposed by McMillan and Chavis (1986). Four sets of data were used. They measured PSC in the neighborhood for adults and adolescents, and workplace PSC for adults, using true/false and three-point response formats. Reliabilities for the total SCI scores ranged from .64 to .69. Most subscale reliabilities were below acceptable levels, ranging from a low of .16 to a high of .72. Factor analyses showed some support for the existence of the four dimensions of the McMillan and Chavis PSC model in the SCI. However, they were not consistent across data sets. Further work to develop the SCI as a measure representative of the PSC model is outlined, with implications for adult and adolescent populations. © 1999 John Wiley & Sons, Inc.

Across a decade of research, the methods used to investigate psychological sense of community (PSC) exemplify a central principle of community psychology—diversity and

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flexibility in conceptualizing and investigating community phenomena. The collection of articles from the 1986 and 1996 *Journal of Community Psychology* special issues demonstrates how this diversity has resulted in a rich PSC literature. However, it also illustrates an overall lack of consistency in theoretical and methodological development.

In this article, we propose that some coherence might be brought to PSC research if we work toward integrating our ongoing investigations within an overall PSC framework. We suggest the McMillan and Chavis model of PSC (McMillan & Chavis, 1986), and its related Sense of Community Index (SCI) (Chavis, Hogge, McMillan, & Wandersman, 1986), is one orientation that can facilitate such integration. This model and scale has emerged as one of the few grounded in psychological theory.

Furthermore, various researchers have demonstrated that the SCI can accommodate investigations in different settings (McCarthy, Pretty, & Catano, 1990; Pretty & McCarthy, 1991), can be used with adolescents (Pretty, Conroy, Dugay, Fowler, & Williams, 1996), is convenient to administer in survey studies (Perkins, Florin, Rich, Wandersman, & Chavis, 1990), and is not difficult to integrate with qualitative methods (Sonn & Fisher, 1996).

The purpose of this article is to contribute to PSC work using the SCI. We evaluate the SCI in terms of its factor structure and internal reliability across different settings and age groups. We consider its utility in addressing ongoing PSC research questions.

ESTABLISHING A COMMON SENSE OF "SENSE OF COMMUNITY"

Several investigators have begun to theorize psychologically about sense of community (Buckner, 1988; Davidson & Cotter, 1986; Doolittle & MacDonald, 1978; Glynn, 1981; McMillan & Chavis, 1986; Nasar & Julian, 1995; Riger & Lavrakas, 1981). However, there is still little consensus on the psychological dimensions that underlie PSC. More recently a PSC seminar at the 1997 SCRA Conference (Society for Community Research and Action) resulted in a very lively debate as to how we can understand community from a psychological perspective. Participants considered whether PSC is best conceptualized as a cognition, a behavior, an individual affective state, an environmental characteristic, or a spiritual dimension. No consensus was reached.

The ongoing search for a definitive "psychological" construction of sense of community, and for links between it and well-being, has generated several different scales. Significant associations have been found between constructs of PSC and well-being that supported our intuitive notions about the importance of sense of community in our everyday lives (Chavis & Wandersman, 1990; Davidson & Cotter, 1991; Pretty, McCarthy, & Catano, 1992; Unger & Wandersman, 1985). Unfortunately, while many of these efforts looked quite promising in building a core model of PSC, there has been little follow through in either theoretical cultivation or scale validation.

Reading the PSC literature for evidence of theoretical advancement reminds us of concerns expressed a decade ago by Rappaport (1987) regarding the need for substance in community-theory building. Usually, investigators in the PSC domain review a number of scales and methods. They then conclude there is a need to develop a new scale because the existing scales do not have good psychometric credentials and either do or do not contain items that reflect the characteristics of the particular environment they want to assess (Royal & Rossi, 1996; Skjaeveland, Garling, & Maeland, 1996).

Unfortunately, few researchers build on the strengths of existing perspectives and scales. For those who select items from other scales, the theoretical foundation for the

new scale is often not clear, and is presented as a collage of sociological, historical, and anthropological ideas, with some psychological concepts. For example, Lounsbury and DeNeui (1996) present various perspectives on PSC, use items from several other scales (not the SCI) in the development of a PSC scale for a college environment, and then discuss their findings in relation to the dimensions of the McMillan and Chavis model. This lack of integration between scale construction and conceptual framework is characteristic of much of the PSC research, and has hampered community-theory building.

The continuous development of additional PSC scales is not necessarily inappropriate. There are arguments to justify such a position. For example, we must recognize cultural and geographical influences on how people construct their notions of community and hence, how we measure their "sense" of it. In addition, research findings caution against making assumptions about similarities between geographical and relational communities (Hill, 1996). Therefore, variations in scales may be necessary to assess these different communities. Hill (1996) maintains "the reason for the lack of consistent findings regarding dimensions and correlates is that some significant percentage of these aspects of psychological sense of community differ from setting to setting" (p. 433). We maintain that this lack of consistent findings may be due also to the variety of models guiding the research and the variety of scales used to measure PSC in the different settings.

We suggest that a continuing proliferation of PSC scales, in the absence of demonstrated theoretical commonalities and differences, and consistent psychometric data, can be disadvantageous to a variety of professionals working in the area. For community consultants and developers the lack of access to reliable and well-validated assessments restricts the inclusion of PSC in investigating community issues and assessing service-delivery outcomes. Practitioners might first face the daunting task of developing their own measure to suit their specific setting. For the researchers, the use of various scales restricts the comparability of findings across settings. For the theorist, the scarcity of comparable results across studies creates conceptual confusion and hampers substantive theory building. This is evident where some constructs such as neighboring, social cohesion, community identity, and community satisfaction are *associated* with sense of community by some investigators, but used *synonymously* with it by others. Puddifoot (1995, 1996) discusses these issues and suggests that this lack of clarity and precision in investigating community constructs can be associated with the reluctance of some researchers to go beyond exploratory work to broader field studies. Consequently, he concludes, some areas of community research become stuck at the stage of construct definition and measurement. We maintain that PSC research is one such area.

We propose that some of these problems may be addressed if within our research paradigms we integrate theoretical perspectives and methods that have flexible dimensions to accommodate the characteristics of diverse settings. In this way, if differences across the settings are found, the theoretical grounding of the measures will enable us to interpret the difference. The conceptual and methodological work of McMillan and Chavis provides a promising beginning to address this issue. The short form of the SCI (Perkins et al., 1990) is one of the few PSC scales that is based on a developed model of sense of community and has items derived from the dimensions of the model. Also, it has been showing considerable sensitivity to detecting differences in various populations and contexts. We begin by reviewing the sense of community model that underlies the SCI and summarizing the investigations based on its use. We then assess the internal reliability and the factor structure of the SCI and suggest how researchers might build on this work to date. This is the first article to examine these psychometric qual-

ities of the SCI. It extends previous studies by examining the psychometrics of the SCI across geographical and relational communities, and for use with adult and adolescent participants.

A MODEL OF SENSE OF COMMUNITY

McMillan (1976) defined sense of community as "a feeling that members have of belonging and being important to each other, and a shared faith that members' needs will be met by the commitment to be together" (Chavis, Hogge, McMillan, & Wandersman, 1986, p. 11). These dynamics are incorporated in the sense of community model of McMillan and Chavis (1986). This model consists of four dimensions: Membership which creates feelings of emotional safety with a sense of belonging to, and identification with, the larger collective; Influence which characterizes the reciprocal relationship of the individual and the community in terms of their ability to affect change in each other; Fulfillment of Needs, which enables individuals to get their needs met through cooperative behavior within the community, thereby reinforcing the individuals' appropriate community behavior; and Emotional Connection which is the emotional support stemming from the struggles and successes of community living. This model accommodates "community" conceptualized as a geographical territory (neighborhood), and as a relational network (work, political, or recreational interests).

DEVELOPMENT OF THE SCI

Chavis et al. (1986) developed a measure of sense of community from the responses of 1200 adults in a Neighborhood Participation Project Questionnaire. Using a Brunswick's lens methodology, a total of 23 open- and closed-ended items were identified as representing sense of community. These items were grouped into four "subscales" based on their conceptual relevance to each of the four theoretical dimensions to produce a Sense of Community Index (SCI-L). Due to the open-ended questions, the use of the SCI-L was limited because of its length. In response, Chavis and his colleagues created a short form of the SCI-L (SCI refers to the short form). This scale consists of 12 True/False items, with "block" as its referent group. Three closed-ended items were selected from each of the four "subscales" of the long form. These items were chosen to represent perceptions of neighborhoods in terms of membership, influence, fulfillment of needs, and emotional connection (D.M. Chavis, personal communication, August 18, 1987). The total scale was shown to have an internal reliability coefficient of .80. However, there is no report of internal reliabilities of subscales. This measure was used by Chavis and his colleagues in an extensive project assessing a Block Booster Project in New York City (Perkins et al., 1990).

CONSTRUCT VALIDITY OF THE MODEL AND THE SCI

Support for the dimensions of McMillan and Chavis model is found in several qualitative studies. Plas and Lewis (1996) found that residents of a planned town made references to environmental characteristics indicative of the importance of membership, shared emotional connection, and need fulfillment. Sonn and Fisher (1996) found evidence of the four PSC dimensions in immigrants' comparisons of their community ex-

periences in their country of origin and their new country. Brodsky (1996) also found evidence of the four dimensions in her interviews with single mothers' experiences in high-risk neighborhoods.

Construct validity of the SCI in representing the McMillan and Chavis model has been established in several of the studies cited above. Using telephone-survey methods, Perkins et al. (1990) demonstrated that higher SCI scores were significantly associated with longer time respondents lived in their neighborhood, higher ratings of block satisfaction, neighboring, informal social control and communitarianism, and lower ratings of fear of crime. Pretty's (1990) study showed a significant relationship between the SCI and support and demand characteristics of college students' social environment. McCarthy, Pretty, and Catano (1990) demonstrated a significant relationship between high-SCI scores and low scores on burnout and high scores on well-being variables.

ADAPTABILITY OF THE SCI TO THE WORKPLACE COMMUNITY

As noted above, the McMillan and Chavis model of PSC was developed to be broad enough to include both geographical and relational community. The "relational community" is identifiable in terms of people, possibly from different residential localities, who interact to achieve a common goal. The study of relational communities is in keeping with concerns regarding the need to advance research into communities that are not identified by specific geographical boundaries (Heller, 1989). The workplace has been identified as one such "relational community" (Klein & D'Aunno, 1986; Price, 1985). Klein and D'Aunno proposed that a worker's sense of community could be determined by employee characteristics (how long employees worked for their employer), job characteristics (autonomy, skill variety), and supervisor/management characteristics (feedback, participative decision making). They reasoned that these characteristics would affect worker's perceptions of community identity, their positive appraisal of their workgroup and hence, their motivation to become active members in the workplace community.

Pretty and McCarthy (1991) proposed that the McMillan and Chavis model was conducive to exploring Klein and D'Aunno's ideas. To test their hypotheses, Pretty and her colleagues adapted the SCI by making reference to "your workplace" and "workmates" in place of "block" and "neighbors." Results of the study showed that the 12 SCI items constituted a factor separate from items of the Moos Work Environment Scale (WES, Moos, 1986). As hypothesized, scores on the SCI were significantly related to specific aspects of the work environment. A reliability of .80 was reported for the workplace SCI. The validity of the SCI in the workplace was further demonstrated by Pretty, McCarthy, and Catano (1992) who found that lower SCI scores were significantly correlated with higher burnout scores. Also workplace PSC has been shown to moderate union participation (Catano, Pretty, Southwell, & Cole, 1993).

Other researchers have developed measures of workplace PSC. Lambert and Hopkins (1995) constructed a definition of workplace sense of community based on the McMillan and Chavis model. The items they used in their scale were derived from two indices of organizational commitment. Royal and Rossi (1996) developed a measure of workplace PSC using items from existing PSC measures, as well as items constructed from focus groups and other literature. What is important to note is that these studies were guided by different perspectives and used different scales. Consequently, the various find-

ings are not interpreted in terms of a common theoretical thread, making it difficult to compare the findings regarding employee and work environment factors and PSC. The discrepancies in findings may be due to different aspects of PSC being tapped by the scales used, or to bonafide differences in the nature of sense of community in these work settings. Despite these discrepancies, the application of PSC to understanding the psychological climate of the workplace is promising.

CONSIDERING ADOLESCENTS' SENSE OF COMMUNITY

As community psychologists attempt to understand developmental aspects of community experiences (Lorion, 1990; Seidman, 1991; Crockett & Crouter, 1995) the need to understand young people's notion of sense of community becomes important. Three dimensions of the McMillan and Chavis model (Membership, Fulfillment of Needs, and Emotional Connection) can be recognized as integral in developmental theories. For example, Erikson (1968) describes the importance of attachment to one's peers as a crucial part of identity development for adolescents. Therefore, it is an empirical question as to whether the neighborhood community is a source for young people negotiating the satisfaction of their developmental needs.

Pretty and her colleagues used the McMillan and Chavis model and the SCI in initial explorations with adolescents. Pretty argued that larger community contexts may provide a kind of support different from that provided by other social systems traditionally examined with respect to young people (i.e., family, friends). The findings of Chipuer (1992, 1997), Pretty, Andrews, and Collett (1994), and Pretty et al. (1996) showed that PSC is a construct relevant to young people across the 12-to-18-years age range. As with adults, high scores from adolescents on the SCI were positively correlated with the length of time the adolescents lived in their neighborhoods. A high-SCI score was significantly related to less loneliness and worry, higher self-perceptions of happiness, enjoyment of life, and coping ability; and greater scholastic competence, social acceptance, global self-worth, and sociability.

While these results were encouraging, Chipuer and Pretty (1996, 1997), expressed some concern over the content of the SCI items. Some items referring to community values and influence were found to be inappropriately worded for adolescents. Additionally, based on the feedback the researchers received from their participants, the SCI was found not to encompass all aspects of adolescents' construction of community. One aspect lacking was reference to "having fun." However, the SCI has provided a foundation for further scale development appropriate for adolescents. This work is currently in progress (Chipuer, 1997; Chipuer, Pretty, Delore, Miller, Power, & Rumstein, in press).

PURPOSE OF THIS STUDY

While the above studies indicate support for the construct validity of the SCI as a measure of PSC in general, verification of the four dimensions of PSC within the factor structure of the SCI itself has not been forthcoming. It is important to note that although the items on the SCI were chosen to conceptually correspond to McMillan and Chavis' four-component model, their existence has not been empirically demonstrated. Other than one study (McCarthy, Pretty, & Catano, 1990), researchers have not worked with these

four dimensions. The scale is usually used as a single entity, without the influence of each subscale on outcome variables being examined. However, investigators tend to discuss their findings in relation to the four dimensions. This suggests that the structure of the SCI needs to be investigated to determine the existence of the four factors. It is possible that the individual subscales do not stand on their own, but through a dynamic interaction among them create a psychological sense of community as suggested in McMillan and Chavis' model.

The present study extends current work on the SCI by examining its internal reliability and factorial structure. Multiple data sets are used in this article, some from studies described above. In addition, we include data sets which are in the process of being published. From these diverse studies we are able to assess the SCI in the contexts of geographical (neighborhood) and relational (work) communities, different age groups (adults, adolescents), and different response formats (true/false, three-point scales).

METHOD

Participants

The data comes from four independent studies. There are 246 adults (123 females, 123 males) responding to the neighborhood SCI. On average they are 36.40 years of age (SD = 5.83 years). There are 433 adults (284 females, 149 males) responding to the workplace SCI. Their average age is 42 years (no SD available). There are 488 adolescents (270 females, 218 males) responding to the neighborhood SCI. On average, they are 13.48 years of age (SD = 4.48 years).

Adult responses to the neighborhood SCI come from a data set (Adult) consisting of married couples who were involved in a longitudinal study on sibling and family relationships (Chipuer, 1992). Adults responding to the workplace SCI (Work) were employees of a telecommunications company; their sense of community was investigated as part of a larger study of worker burnout (Pretty et al., 1992). Adolescents are participants from two studies investigating the relevance of sense of community in a younger population (Pretty et al., 1994, 1996) and one longitudinal study on sibling and family relationships (Chipuer, 1992).

Measures and Procedures

Sense of community was measured using the short form of the Sense of Community Index (SCI; Perkins, Florin, Rich, Wandersman, & Chavis, 1990). The SCI consists of 12 true/false items measuring psychological sense of community in the neighborhood (Table 1). The measure consists of four subscales: *Reinforcement of Needs* (items 1, 2, 3), *Membership* (items 4, 5, 6), *Influence* (items 7, 8, 9), and *Emotional Connection* (items 10, 11, 12). The internal consistency of the total scale has been reported to range from 0.71 (D.M. Chavis, personal communication, August 18, 1997) to 0.80 (Perkins et al., 1990).

The scale was adapted to measure sense of community in the workplace. For example, the item "I think my *block* is a good place for me to *live*" was reworded to "I think my *workplace* is a good place for me to *work*." The true/false response format was maintained in two of the three data sets. The Adult data for neighborhood used a three-point Likert scale (1: "Not at all true" to 3: "Always true"). All items were scored so high scores reflect high sense of community.

Table 1. Neighborhood SCI Rotated Factor Structure and Eigenvalues for Adults (N = 246) and Adolescents (N = 488)[a]

	Adults				Adolescents			
	Factor				Factor			
Items	*I*	*II*	*III*	*IV*	*I*	*II*	*III*	*IV*
1. I think my block is a good place for me to live.	46			34	30			
2. People on this block do not share the same values.		37	65	−30	80			30
3. My neighbors and I want the same thing from this block.			76			74		
4. I can recognize most of the people who live on my block.	84							62
5. I feel at home on this block.	63			32	71			
6. Very few of my neighbors know me.	84							85
7. I care about what my neighbors think of my actions.				85				57
8. I have no influence over what this block is like.				48			34	
9. If there is a problem on this block, people who live here get it solved.		86				75		
10. It is very important to me to live on this block.			43	31			78	
11. People on this block generally don't get along with one another.		87				78		
12. I expect to live on this block for a long time.			68				81	
Eigenvalues	3.04	1.97	1.41	1.01	2.47	1.72	1.15	1.03

[a]Only loadings > = .30 are presented; decimal points are omitted.

Analyses

Analyses were conducted in two parts. First, the internal consistencies of the total score and of each of the four subscales were examined. The reliability indices (Kuder-Richardson or Cronbach alpha) of the total SCI scale and the four subscales of each data set are presented in Table 2. An alpha of .70 is considered the lower acceptable bound (Nunnally & Bernstein, 1994), with values below .60 unacceptable, values between .70 and .80 respectable, and values between .80 and .90 very good (DeVellis, 1991).

Second, exploratory factor analyses were conducted to examine the factor structure of the various sense of community indices. We sought to determine if the data would replicate the four factors implicated in the McMillan and Chavis (1986) model. According to Gorsuch (1983) the number of participants per variable should range between 5 and 10 with no less than 100 individuals per analysis. The SCI consists of 12 variables. Therefore, using the upper range of 10 individuals per variable, a minimum sample size of 120 is required for each factor analysis. In the current study, we have 246 adults responding to the neighborhood SCI, 433 adults responding to the workplace SCI, and 488 adolescents responding to the neighborhood SCI. Thus, we have met the minimum requirements necessary to conduct a factor analysis on the SCI using each of our data sets.

PCA were conducted with unities as commonality estimates. Because correlations among the factors were expected, the factors were rotated to an oblique solution. A minimum eigenvalue of 1.00 was used to define the number of factors retained. The Kaiser-Meyer-Olkin (KMO), which is a measure of sampling adequacy, indicates the appropriateness of conducting a factor analysis on the items. The range of acceptable values are in the 0.90's (optimal) to 0.60's (acceptable) (Kaiser, 1974).

RESULTS

The SCI was initially designed for an adult population in a neighborhood setting. Therefore, results are presented first for adults' sense of community in the neighborhood, followed by the adult version of sense of community in the workplace. Next, results of the adolescents' responses to their neighborhood are presented.

Adult Sense of Community: Reliabilities

The reliability estimate is .66 for the total neighborhood SCI scale, ranging from .07 for Emotional Connection to .72 for Membership (Table 2). For the workplace SCI, the reliability estimate for the total scale is .69, ranging from .38 for Emotional Connection to .51 for Fulfillment of Needs.

Factor Analysis

For the neighborhood data the KMO index is .70, indicating that it was okay to proceed with the factor analysis. Analysis extracted four factors, accounting for 62% of the common variance (Table 1). Correlations among the factors ranged from .05 to .27. Factor one accounted for 25% of the common variance and included all three items from the Membership dimension. The second factor accounted for 16% of the common variance including single items from three of the dimensions. Factor three accounted for 12% of the common variance and contained two items from the Needs Fulfillment dimension and two items from the Emotional Connection dimension. Factor four consisted of six items accounting for 8% of the common variance. Two items from the Needs Fulfillment dimension and two items from the Influence dimension loaded on factor four.

A KMO index of .83 emerged for the workplace data. Analysis extracted three factors, accounting for 54% of the common variance (Table 3). correlations among the factors ranged from .05 to .21. Two of the items from the Needs Fulfillment dimension

Table 2. Cronbach Alphas for Total and Subscale SCI Scores by Setting and Age Group

		Subscales			
	Total	*Needs*	*Membership*	*Influence*	*Emotional Connection*
Neighborhood					
Adults	.66	.35	.72	.38	.07
Adolescents	.64	.24	.51	.16	.29
Work					
Adults	.69	.51	.40	.43	.38

Table 3. Workplace SCI Rotated Factor Structure and Eigenvalues (N = 433)[a]

Items	*Factor I*	*II*	*III*
1. I think my workplace is a good place for me to work.	87		
2. People in this workplace do not share the same values.	70		
3. My workmates and I want the same thing from this workplace.		46	
4. I can recognize most of the people in my workplace.		60	-33
5. I feel at home in this workplace.		66	
6. Very few of my workmates know me.		62	
7. I care about what my workmates think of my actions.			85
8. I have no influence over what this workplace is like.		55	35
9. If there is a problem in this workplace, people who work here can get it solved.	70		
10. It is very important to me to work in this workplace.	73		
11. People in this workplace generally don't get along with one another.	82		
12. I explect to work in this workplace for a long time.	79		
Eigenvalues	3.82	1.64	1.04

[a]Only loadings > = .30 are presented; decimal points are omitted.

grouped with the three items from the Emotional Connection dimension, and one item from the Influence dimension to form the first factor, accounting for 32% of the common variance. The second factor accounted for 14% of the common variance and consisted of all three items from the Membership dimension, the remaining item from the Needs Fulfillment dimension, and one item from the Influence dimension. The final factor which accounted for 9% of the common variance, loaded most heavily with one item from the Influence dimension and two items that also loaded on factor two.

Adolescent Sense of Community: Neighborhood Reliabilities

The reliability estimates from the analyses of the adolescent neighborhood SCI data resulted in an acceptable Kuder-Richardson alpha for the total scale ($r = .64$). Again, however, the reliability estimates of each of the subscales are unacceptable ranging from .16 for Influence to .51 for Membership (Table 2).

Factor Analysis

The KMO index of .68 is acceptable. Four factors were extracted, accounting for 53% of the common variance (Table 1). Correlations among the factors ranged from .01 to .31. Three of the four factors contained couplings of items matching the dimensions underlying the SCI. Factor one accounted for 21% of the common variance, and contained two items from the Needs Fulfillment dimension and one item from the Membership dimension. The second factor accounted for 14% of the common variance and contained single items from three of the dimensions. Factor three, accounting for 10% of the common variance, contained two items from the Emotional Connection dimension and one item from the Influence dimension. The final factor accounted for 9% of the common

variance and contained two items from the Membership dimension, one item from the Influence dimension, and one item from the Needs Fulfillment dimension. This last item loaded on both the fourth and the first factor.

DISCUSSION

The present study explored the internal reliability and the factor structure of the short form of the Sense of Community Index. The SCI was initially developed to measure adult's sense of community in a residential setting. The current study extends work on the SCI in three ways. First, using factor analytic techniques, we examine whether the four dimensions assumed to be present in the neighborhood SCI actually exist. Second, we examine the factor structure of the SCI in a relational community of workplace for adults. Third, we examine whether the four dimensions of the neighborhood SCI holds for adolescents. Overall, the findings indicate that across communities and across populations, items on the SCI can provide a foundation for scale development that is couched within the McMillan and Chavis model.

As noted earlier, the SCI was created for use with an adult population in a residential setting. Thus, if the four conceptual dimensions of McMillan and Chavis' PSC model are contained in the items that make up the SCI, we would expect the factor structure of the adult neighborhood data to mimic these dimensions. Our findings showed some items loading on factors interpretable in terms of each of the four dimensions. In general, results from the neighborhood factor analyses indicate couplings of items from each subscale hanging together for both the adults' and adolescents' responses to the SCI. The exception is the three items from the Membership subscale loading together for the adults' responses to the SCI. This latter finding is not surprizing given that these three items showed the greatest internal consistency of any of the subscales. Items from the Fulfillment of Needs joined with items from the Influence subscale to create a factor, and with items from the Emotional Connection subscale to form another factor. This suggests that, for adults, having their needs met is tied in with feeling like you have some influence over your environment AND connecting you to your environment.

The results from the adolescents' factor analysis indicated that each of the three items from the Influence subscale loaded on separate factors. This may reflect the lack of influence that adolescents feel with respect to their neighborhood, which was identified by the authors in their earlier work with adolescents. Unlike adults, adolescents have little choice in selecting the neighborhoods where they live, with these decisions usually made by their parents. Furthermore, adolescents may have less opportunity to affect their neighborhood environments to create a place that is more friendly for them. Thus, unless neighbors are receptive to young people and listen to their needs, society may be creating an ethos of apathy for community engagement among youth. The findings from the current study point to the need for longitudinal research to understand how sense of community develops during adolescence, and in particular to examine the extent to which adolescents feel they can influence their environments.

The current study also examined the feasibility of using the "workplace" as the reference point with the SCI. Three factors emerged. In one factor two items from the Fulfillment of Needs and all three items from the Emotional Connection dimensions group together. This suggests that as individuals try to create a work environment to meet their needs for community, these workers may be simultaneously reinforced through an emotional connection to their colleagues who also endeavor to do the same. Another factor

consisted of all three items from the Membership dimension. The recurring identification of the significance of this dimension in earlier work, such as Pretty and McCarthy (1991) and Pretty et al. (1992), suggests the importance of workers' sense of belonging and identification with the workplace community in relation to their well-being and their willingness to participate in organizational issues. Overall, these findings suggest that items on the SCI can be adapted to provide a starting place from which to examine PSC in relational communities such as the workplace.

Given the findings from the factor analyses, it is not surprising that the magnitude of the reliability estimates for each of the four subscales of the SCI is low across all data sets. These low estimates may indicate that the current items on the SCI do not clearly reflect the four theoretical dimensions underlying the SCI. It is also possible that these low reliability estimates are due to only three items making up each of the original four subscales. When the items on the SCI are used as a unidimensional measure, the magnitude of the reliability estimates across the data sets are comparable to others who have reported alphas ranging from .70 to .80 (Perkins et al., 1990). This variability may be a reflection of the item response format (true/false vs. 3-point), the age groupings of the respondents, or factors that are particular to the data sets. The model of psychological sense of community on which the SCI is based contains rich descriptions of the four dimensions of Membership. Influence, Fulfillment of Needs, and Emotional Connection. However, this richness is not reflected in the 12 items of the SCI. Taken together, these findings suggest that the use of the SCI as a unidimensional measure may be the most appropriate until the items making up the SCI are reformulated to reflect the four underlying dimensions as conceptualized. While the brevity of the SCI is of value for survey research, expansion of its content to comprehensively, yet concisely, depict the many facets of the PSC model should be considered.

Further SCI Development and Research Directions

The findings of this study indicate the SCI provides a good foundation on which to further build a measure of PSC. Returning to the original long form of the SCI and reassessing items to be included in the short form may be one direction to take (D.M. Chavis, personal communication, May 28, 1997). Also worthy of consideration is an examination of how items from other scales may combine with the items on the SCI to represent the four dimensions of PSC. An important aspect of further SCI-scale development is adherence to one underlying theoretical model to guide the addition and modification of items. Such guidance has been absent from many of the recent scale developments as reviewed above.

The SCI has been shown to adequately assess both the psychological sense of the geographical community and of the relational community. However, the importance of specifying, or allowing the participant to identify the geographical local of interest when using the SCI, has not been appreciated. It is possible that some of the differences in findings between studies of correlates of PSC may be associated with participants orienting their responses to different localities of communities. Cuba and Hummon (1993) found that reference to locales such as neighborhood (identified by them as "dwelling place"), community, and region can provoke different meanings and associations for people. Brown's (1993) comparisons of the relationship between people and their residential community compared to their economic community (where they work and shop) also implicated differences in factors affecting the relationship. Hence, responses to

questions regarding community may differ depending on whether it is identified as neighborhood, the town or city (including residential and economic community), or region (consisting of neighborhood and surrounding locale).

Our final concern regarding further development of the SCI is for the inclusion of physical environmental items on the SCI. Our position is supported by research indicating the significance of physical environment to people's relationship with their community. It is a popular idea that, with increasing geographical mobility and erosion of natural familiar landscapes, personal identity with the attachment to the neighborhood might be diminished. However, there is evidence that the environment, its natural and built landmarks, can contribute to neighborhood identity (Guest & Lee, 1983). Other measures of sense of community have included items regarding physical place and quality of environment (Doolittle & MacDonald, 1978; Glynn, 1981; Riger and Lavracas, 1981). Examination of their possible integration into the SCI may prove fruitful.

Considering Other PSC Perspectives and Measures

This article has promoted the use of the SCI as a measure of PSC primarily because of its theoretical basis. The broad scope of the McMillan and Chavis model enables substantive community theory building and the establishment of conceptual linkages with concepts from other disciplines of community research. We are not suggesting here that the SCI is the only measure with promising features. Recent work of Nasar and Julian (1995) with the Glynn PSC measure (Glynn, 1981, 1986) and the program of research pursued Davidson and Cotter (1986, 1989, 1993) with their measure, make a valuable contribution to the area. We propose the field would benefit considerably with theory driven, integrative study using these measures and perspectives.

Limitations of the Study

The present study is not without limitations. The participants in the various samples consisted primarily of whites from middle- to upper-middle class socioeconomic backgrounds. Thus, the generalizability of these findings to other races and from other socioeconomic backgrounds is limited. Finally, the employee sample was chosen from one workplace. Therefore, it may be difficult to generalize these results beyond that one setting. However, despite these limitations, the heterogeneity of the various samples do provide a strong basis from which to examine the psychometric properties of the SCI. While the differences in the findings across the various factor analyses suggest the need to exert more energy into developing a more robust measure of psychological sense of community, the similarities across the analyses provide hope that such a measure, once developed, will be useful across a wide variety of populations and settings.

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