ABSTRACT

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Interest group psychological sense of community (PSOC) is understudied. As a result the extant literature on this phenomenon ranges from incomplete to unfounded. Therefore, the goal of this research is to investigate two assumptions posited by previous research. The first of which is the assumption that the Sense of Community Index (SCI) is measurement tool that best fits interest group PSOC data, and the second is the presumption that disparate interest groups conceptualize the PSOC construct similarly. To test the aforementioned assumptions of interest group PSOC, North American community gardens (N=110) and Australian Rules Football teams (N=107) completed an online survey assessing community perceptions. Through exploratory factor analysis newly designed PSOC items were allowed to freely compete with SCI items to create groups of observable measures best defined by PSOC's four theoretical factors: membership, mutual influence, needs attainment and shared emotional connection. Confirmatory factor analysis was used showing a better fit of the new PSOC scale (*AIC*=274.51) than the SCI (*AIC*=281.51) test fit of model to PSOC data. An independent sample *t* test showed that community gardeners (*M*=5.32, *SD*=.82) experienced a less robust PSOC than USAFL players (*M*=5.63, *SD*=.91), $t(216)= -2.66$, $p<.05$, $r^2=.03$). Then CFA was used once more to inspect factorial invariance between interest communities and the 'generic interest community'. The results showed the change between configural and constrained models were non-significant for garden communities [$\Delta[\chi^2(6)=12.50$, p>.05] and Australian Rules football communities[$\Delta[\chi^2(6)=7.90$, p>.05].  The results of this study offer empirical support for a new interest group PSOC scale, the Interest Group Sense of

Community Scale (IGPSOC), and offers insight on assumptions of conceptual plurality

across distinctive interest groups.

Interest Group Psychological Sense of Community: Measurement and the Monolithic Fallacy

by
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BIOGRAPHY

Seb Prohn received his undergraduate degree in sociology from North Carolina State University. He then taught fourth grade in Baton Rouge, Louisiana as a Teach For America corps member. While living New Zealand, Seb's Kiwi mentor, Dr. Dai Gilbertson, suggested combining academic rigor with social justice and equity by joining a doctoral program that focused on community, research and action. As a result of this advice, Seb is currently working towards his doctoral degree through North Carolina State University's Psychology in the Public Interest program.

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Finally, my parents Ken & Dianne Prohn, have been endlessly supportive for my entire life, thesis or not. Their generosity to ALL people and their struggles for social justice has always inspired me, and still does! Thank you all!

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CHAPTER 1

INTRODUCTION

In 2003, vice president for Europe of the World Bank, Jean-Francois Richard, spoke

of a 'crisis of complexity' (Scully, 2002 as cited in Minnich, 2005). This speech argued

for a pluralistic and relational approach to the world's difficulties. In particular he warned

that "nation-states, committed to the idea of territorial sovereignty, will struggle because

most of the pressing problems…have no geographical boundaries" (ibid.,2005). The

profundity of this advice directly translates to Psychological Sense of Community

(PSOC).

*Purpose*

There exists a need to further investigate PSOC as a relational, non-geographic

phenomenon.  Increased mobilization and the empowering nature of choice extend PSOC

in arenas beyond non-ambulant neighborhoods, schools and workplaces. As a

consequence PSOC measures need to also adapt and extend beyond these traditional

regions. Without such adaptations to relational communities, faulty generalizations about

the nature of PSOC will be perpetuated in research conducted in community psychology.

Furthermore, as deeper investigations of relational community PSOC are pursued,

other issues of importance arise. Primarily, potentially erroneous conclusions about

PSOC's inter-interest group homogeneity need further investigation. Treating all interest

groups' conceptualization of PSOC similarly leads to assumptions of false plurality. Such

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a false plurality argues that a narrowly relevant sense of community is the only model for all communities. This research's purpose is to transcend oversimplified, monolithic claims of interest group PSOC's structure.

This purpose is not unfounded; rather it is necessary based on gaps in PSOC literature. First, there is a dearth of interest group PSOC research. This lack of research reflects a perceived lack of importance and broad misunderstanding of the topic. When research does include interest group PSOC, all groups are aggregated which reinforces a mono-group understanding of the construct. Extant literature, research design and available tools for measuring interest group PSOC maintain this conceptual status quo, hindering the advancement of the PSOC construct. Therefore, in order to make fundamental changes in interest group PSOC's conceptualization, the present research challenges previous literature, utilizes an interest group specific design, and creates a better fitting measure.

The purpose of such an undertaking is also important for community psychology. For individuals perceiving a lack of fit with unhealthy or unsafe geographical environments, research on interest group PSOC provides the opportunity for choice and empowerment within a community. No one should have a PSOC entirely predetermined by their residential area and each individual should have the power and choice to pursue a PSOC with groups that transcend physical location. What is more, PSOC is often positively

correlated with other indicators of wellness (Pretty, 1990; Chavis & Wandersman, 1990; Farrell, Aubry, & Coulombe, 2004; Long & Perkins, 2007). Thus, both recognizing and better understanding grassroots-built interest groups and program-devised interest groups as interventions for increased wellness is an important pursuit for community psychologists. However, if interventions are created on the basis of false assumptions of interest group PSOC, then such interventions will overlook groups' distinctive identities, strengths, and capabilities. Similarly, inadequate measures can falsely diagnose levels of PSOC or provide invalid assessments of interest groups. While no measure devised will fit perfectly each groups' PSOC, it is necessary to develop a measure that captures elements of PSOC that transcend groups and it will be the researchers' responsibility to acknowledge the unique aspects of interests group PSOC not assessed by the measure. High quality interest group PSOC measures can also function as an assessment to inform group leaders and participants alike about which elements are robust contributors to the groups' overall PSOC perceptions and which elements should be targeted to improve PSOC and, subsequently, wellness. Regardless of specific function, valid measures and apt researchers are indispensable for community psychology to accurately assess interest group PSOC.

As a discipline structured around change and reform, community psychology must beware of stagnation. When invalid instruments are used out of convenience, research outcomes suffer. Such path dependency leads to a lack of innovation, and antiquated

structures continue to dominate. The present research acknowledges the strengths of PSOC theory but also recognizes a need for growth, change, and improvement in the areas of interest group PSOC conceptualization and measurement. Acting on these needs opens suggestions for new vision and potential innovation that will further refine PSOC theory and community psychology practice.

To both summarize and preview, this research, through investigating two specific interest group communities, aims to debunk monolithic assumptions of interest group PSOC. In pursuing this aim it is necessary to define specific gaps in the literature, create a measure that is interest group specific, analyze results and compare those results to previous findings. Through this process the researcher intends to challenge community psychology's understanding of interest group PSOC and provide opportunities for people, regardless of the state of their geographical community, to pursue interest group PSOC.

CHAPTER 2

REVIEW OF LITERATURE

*Defining community*

Each community is distinct. Around these distinctions community boundaries,

tangible and intangible, are constructed. Because each individual devises an idiosyncratic

definition of community, a useful foundational definition for community is a set of

people sharing similar elements such as place, belief, or interest (Obst & White, 2007).

According to Gusfield (1975), communities are categorized by two defining criterion:

geography and relation. In geographical communities people feel a sense of belonging to

a certain area such as a campus, neighborhood or city. Relational communities, on the

other hand, do not reference a specific location. Instead, human association is the crux of

relational communities. These two community types are not mutually exclusive and thus

it will be helpful, for the purposes of this study, to consider community as a spectrum

with geographical communities at one pole and relational communities at the other pole.

Therefore at one end of the spectrum one would find neighborhood communities where

similarities, membership, and relationships are created within the context of a physically

bounded area of shared residence. Virtual communities would be the other extreme,

where a physical meeting area or physical contact between members is not a necessity to

maintain a degree of similarity, identity and membership (Blanchard, 2007).

A psychological sense of community, in theory, references all types of communities regardless of where they fall on the community spectrum. PSOC, simply put, is a network of relationships from which each individual, as well as the group of individuals, perceives shared common values. However, there is incongruency in PSOC's theoretical potential to be present in all types of communities and the types of communities in which the phenomenon is usually studied. PSOC research has primarily investigated geographically based communities. As a result, current PSOC knowledge lies between unbalanced and incomplete.

*Psychological Sense of Community Background*

Often in scientific studies a phenomenon or concept begins as an unformulated idea that is gradually refined through subsequent systematic research until a more filtered and clear understanding emerges. Psychological Sense of Community is not one of these concepts. Rather, Sarason (1977) first described the concept as a fascinating and necessary chaos, something which is not easy to define but that creates havoc in its absence. As research progressed, nearly thirty PSOC measures were created and multiple definitions were rendered. Nevertheless, PSOC theory gained only marginal clarity and stability in the field. Yet, Sarason regarded the construct as "the overarching value giving justification and direction to community psychology." (1977).

Assessing PSOC is made more difficult by requesting participants' self-perception within a community while they simultaneously judge their communities. Furthermore,

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each point of the community spectrum is in constant flux. Once a community is defined by a certain criteria that definition does not prevent that community from changing. As Sarason stated, "community has changed, is changing, and will change again." (1977).

Despite the difficulties associated with individual perceptions and a community's dynamic qualities, McMillan and Chavis (1986) established a widely accepted theoretical conceptualization of PSOC. This conceptualization of PSOC, theoretically applicable to all communities along the community spectrum, is composed of four elements working in concert: membership, influence, fulfillment of needs and shared emotional connection. The sum of these elements is an emergent construct greater than the sum of its parts.

The first element, membership, the feeling that one is part of an important, larger network of relationships, is constructed of five sub-elements: the construction of boundaries, emotional safety, personal investment, a sense of belonging and identification, and a common symbol system. The salience of each sub-element influences all the other membership sub-elements. For example, the more one is personally invested in their community, the more robust their sense of identification, which affects other elements of membership. A mutually dependent ecology of sub-elements functions within the greater concept of membership.

Influence is another element that contributes to PSOC. This is a bi-directional concept where individual voices and opinions impact the larger group, but the group also has control over individual actions. As community members conform to group norms and

values cohesiveness increases. Subsequently, members will be more invested and loyal to a community in which they feel ownership. Though individual contribution may not be equal, any existing amount of influence is enough to claim a vested ownership of a community.

The third PSOC element, fulfillment of needs, maintains and reinforces a coherent community structure. If community members feel as though they benefit from community involvement then they will be provided with the impetus to continue community membership. Not only do community members want to benefit from participation, they want the community's validity and success to be easily recognizable. If membership in a group is not gratifying in some way then the group will dissolve.

The final theoretical element in McMillan & Chavis's PSOC is shared emotional connection. This element is created through length and frequency of quality community interactions. Memories of such interactions are compiled into the community's collective history of which each community member is an author. The shared emotional connection and resulting co-authored community history are also iteratively related to personal investment. The degree to which one dedicates personal resources, whether time, energy or intimacy, determines the degree of emotional connection which cyclically determines investment.

Subsequent PSOC conceptualizations merely include the importance of place, such as neighborhood (Buckner, 1988; Skjaeveland et al., 1996; Barnes, 1997; Martinez et al.,

2002), population such as youth (Chipeur et al., 1999), or language (Prezza et al., 2001; Zani et al. 2001). The accumulation of such non-general elements is extraneous to a relatively precise theory. Thus, the McMillan-Chavis theory is strong in its consistent applicability to the entire spectrum of communities.

*Communities of Interest*

It is not novel to suggest that communities develop around interests rather than locality (Durkheim, 1964). Societies have always, in some sense, been constructed around communities of interest; what changed is the nature of interests around which communities are constructed. Instead of forming interest communities for survival and subsistence, modern, mobile individuals form communities by choice. People choose to participate in relational communities out of ideological or personal appeal, and this high degree of choice is associated with a more robust identification for interest community members than geographical community members (Obst & White, 2005; 2007). Even with such knowledge, PSOC studies primarily investigate geographical communities and seldom has research provided in-depth explorations of relational and quasi-relational communities.

The need to investigate interest community PSOC has not gone unnoticed, as evidenced by several authors' (Royal & Rossi, 1996; Chavis & Pretty, 1999; Brodsky, 1999; Obst et al., 2002) calls for further investigation of the phenomenon. Royal and Rossi (1996) assert a hydraulic explanation of PSOC; as PSOC declines territorially it

increases strength in relational communities that are not fully associated with a geographical propinquity. However, hydraulic hypotheses need further empirical testing. Brodsky, on the other hand, has made a more humanitarian argument for further interest community research:

> Residents in communities that offer few resources may feel a positive PSOC with non-geographic communities based on interest or identity. If so, these alternative communities may provide important protection to individuals and may also be a more meaningful intervention point than a community based on locale alone. Exploring these other community-level commitments may also show that people who appear alienated and isolated actually have rich, non-geographic, interpersonal networks. (1999)

Brodsky describes the potential for further explanation of interest group PSOC, but with the exception of Obst, no one author has thoroughly investigated PSOC in relational communities.

Most recently Obst & White (2007) investigated PSOC differences between three types of communities: interest groups, neighborhoods, and school settings. An analysis of variance revealed that neighborhood PSOC was significantly lower than student (school) PSOC, which, in turn, was significantly lower than interest group PSOC (Obst & White, 2007). Interest group research conducted by Obst and White for nearly half a decade has rarely extended beyond Australia's geo-political boundaries and often PSOC was examined exclusively in undergraduate university students.  Additionally, there exists a lack of cross-cultural replication, and a potentially fallacious utilization of PSOC

measures in generic, unspecified interest groups. Interest group classification as a homogenous entity fails to underscore within interest group differences. Certain interest groups can falsely inflate or deflate aggregated PSOC data. Thus, the current research compares each specific interest community to the 'generic' interest community, formed from aggregated comparisons, to show that all interest groups are not alike and that to make such a claim is misleading. The failure to make such comparisons previously has contributed to a considerable gap in the interest group PSOC literature.

*Measuring PSOC*

One benefit of McMillan and Chavis' theoretical outline is that it provides four factors that comprise the PSOC construct. This theory, however, mirrors interrelationships and interconnections between observable measures which is not ideal for forming a stable factor structure. The theory's flexibility, moreover, cannot be duplicated through any PSOC measure attempting to stabilize the dynamic nature of communities or perceptions of those communities. Nonetheless, it was from this theoretical model that the most widely used PSOC measurement, the Sense of Community Index (SCI; Perkins, Florin, Rich, Wandersman & Chavis,1990), was constructed.

The original PSOC measure, created through the holistic Brunswik's Lens model, used the PSOC profile ratings of 21 judges. This model reinforced the four factor PSOC theory, but lacked parsimony and acceptable response options until Perkins et al. (1990)

created a modified 12-item SCI. Instead of binary response options, the modified SCI provides five-point Likert response options where a higher score represents more PSOC while a lower score represents less PSOC. Along with response options, SCI wording has been altered as a result of various studies to better fit specific populations, such as in educational settings (Pretty et al., 1994; Pretty et al., 1996), university settings (Dockett & Loomis, 1999; Loomis et al., 2004) and communities of interest (Obst et al., 2002; Obst & White, 2004; Obst & White, 2005; Obst & White, 2007). Each of these changes were primarily made to items' referent communities. Despite changes in the SCI's response options and an adequate PSOC theory, many psychometric inadequacies still exist.

The SCI's imperfections have been repeatedly noted (Chipuer & Pretty, 1999; Long & Perkins,2003; Pretty, Obst &White, 2004; Peterson, Speer, & Hughey, 2008). Nonetheless, modified versions of the SCI are still used because the scale has been broadly validated, it used more than any other sense of community scale, and because the underlying theory behind the SCI is robust (Chipuer & Pretty, 1999). McMillan & Chavis' four factor PSOC theory, while imperfectly captured by the SCI, remains the force guiding most PSOC research. PSOC scholars have suggested building and testing novel items for inclusion in a new PSOC measure based on the McMillan and Chavis conceptual theory because doing so could result in items that "better represent the meaning of McMillan and Chavis' dimensions as well as demonstrate expected empirical

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relationship(s)," (Peterson, Speer, & McMillan, 2008). Adding items to the SCI would also provide the opportunity to included items that better measure indicators in relational communities such as interest groups. Moreover, combining SCI items with new and different items, based on the four factor theory, would assist in creating better measures for PSOC (Chavis and Pretty, 1999).

Researchers would be mistaken, however, to add new PSOC items wantonly. Findings from Peterson, Speer and Hughey (2006) provide sufficient evidence of a method bias in the SCI. This artifact of method bias was a result of combining negatively and positively worded items in the SCI. The additional cognitive complexity of negative items also contributes to the method bias (Barnette, 2000; Marsh, 1996; Raja & Stokes, 1998). Therefore, resent research has advised that PSOC items be positively worded.

After adding new PSOC items, response options and scaling must be carefully considered. Response options should be increased from both the earliest binary options and from later four or five-point Likert scale options. An increase in response options should be carefully considered to improve reliability and item variance of any revised PSOC measurement (Hodge & Gillespie, 2003; Peterson, Speer & Hughey, 2006).

*PSOC Empirical Findings*

Approximately thirty PSOC measures have been constructed. Because it is anchored in a meticulously defined theory and is applicable to the entire community spectrum, the SCI is the most widely used of all PSOC measures. The SCI, when used as a predictor

variable, is shown to have a significant negative relationship to loneliness (Pretty et al., 1994, Prezza et al., 2001; Prezza & Pacilli, 2007), and a significant positive relationship to participation, block satisfaction, neighbor relations, personal power, group power, (Chavis & Wandersman, 1990), psychological empowerment (Peterson & Reid, 2003), well-being (Farrell, Aubry, Coulombe, 2004), and voting intention (Davidson and Cotter, 1993).

Community psychologists have been more often interested in studying PSOC as a criterion variable. Such studies have shown significant, positive predictors of PSOC to be support (Pretty, 1990), neighboring behavior (Farrell, Aubry, Coulombe, 2004), collective efficacy, place attachment, informal social control, collective efficacy, communitarianism, block satisfaction and block confidence (Long & Perkins, 2007). Significant but negative predictors of PSOC, as shown through use of the SCI are alienation (Peterson & Reid, 2003); crowdedness (Sagy, Stern & Krakover, 1996) and mobility of residents (Farrell, Aubry, Coulombe, 2004). As shown, the SCI, in its various manifestations and modifications, has been consistently employed in spite of known psychometric qualms.

CHAPTER 3

RELEVANCE OF SPECIFIC INTEREST COMMUNITIES

Members from two interest groups, community gardens and the United States Australian rules Football League (USAFL), participated in this study. The researcher's previous engagement in both types of groups led to anecdotal evidence suggesting strong PSOC among group members. This section provides a brief account of each type of group observed by the researcher from 2003-2007. More importantly, this section outlines the distinct relationship between the two specific types of interest communities and the psychological sense of community phenomenon.

Community gardeners, throughout the nation, from diverse backgrounds, participate in horticulture for reasons of value and need. The primary values asserted by community gardeners are equitable food access, self-sufficiency and environmental stewardship. Gardeners satisfy needs for high-value-low-cost, culturally appropriate foods while, furthermore, obtaining necessary leisure, companionship and exercise. Community gardens also allow for transferable skills development, one of several processes that build mutual respect among community members and create a micro-chasm of society's interconnectivity.

Sustainable community gardens are neither developed by one or two visionaries nor are they quickly built, easily maintained projects. Instead, joint buy-in from several stakeholders commit to the dynamic, never-finished process of garden development. Through the process of land acquisition, gardener recruitment, rules establishment, and land preparation, shared history of community members is created. This shared history is often celebrated at garden potlucks and reinforced in the process of naming the garden. Also collectively celebrated are bountiful harvests while, through obstacles like vandalism or drought, garden members collectively console and encourage one another. Gardeners identify with one another's responsibilities and goals, and individual and community goals blend as individuals emerge into 'community.' As highlighted, PSOC's elements, membership, influence, needs attainment and emotional connection, are pervasive in garden communities.

Australian rules football is the national sport of Australia. Combining the physical contact of sports like rugby and American Football with the aerobic fitness requirements of sports like soccer, 'Aussie' rules football is a unique and exciting game. Australians living in America but pining to play their national sport combined with an American intrigue created a fertile ground for the United States Australian rules Football League (USAFL).

USAFL teams are primarily located in metropolitan areas throughout America. These communities recruit their player population from universities, workplaces, bars, and

through various advertising mediums. Players are a variety of ages, nationalities, and have differing occupational backgrounds. Moreover, this traditionally male-only sport now attracts and encourages female participation. This change has been evidenced by the introduction of a USAFL women's league and a women's national team constructed of America's most talented women 'footy' players.

Usually a core group of individuals with a shared commitment and investment in the sport will organize recruitment efforts. Team members each invest time at practice, games, social events and fundraisers creating friendships and shared history. Each team and their supporters have clothing items displaying the team's name and logo; the team members each don a team uniform (top, shorts, and socks) during games. Logos and team uniforms are collective symbols which reinforce community membership. During games and practice, players show responsibility to their teammates and the importance of the team by putting forth their best athletic effort. Wins, team improvements, and social functions reinforce continued group participation. Though each PSOC element is represented differently for USAFL teams than in community gardens, both interest communities and community members meet the necessary requirements to create an overarching PSOC.

Both groups meet the requirements to be an interest based community and for members to perceive a PSOC. The degree to which each community perceives PSOC can vary widely as a consequence of the communities' vast difference in their structure and

purpose. Therefore, it is not logical to combine both communities into one aggregated interest group community without first examining within- interest community PSOC.

CHAPTER 4

AIMS & HYPOTHESES

The paucity of interest group PSOC empirical research has created literature gaps that
have yet to be filled. Two main issues have lead to this theoretical gap: previous interest
group research (Obst & White, 2004) has presupposed that a variety of interest groups
behave similarly, and researchers use scales that reinforce such beliefs about
communities of interest. Within this circular reasoning, neither a better understanding of
interest group PSOC nor a better fitting scale has emerged. Therefore, the goal of this
research is to investigate interest group differences and to construct a measurement tool
that better assesses PSOC as it relates to communities of interest.

Research questions and hypotheses relating to interest group differences and interest
group specific measurements are as follows:

*Aim 1*: To investigate if creating new theoretically relevant PSOC items will fit interest
group PSOC's latent constructs more adequately than the items used in the Sense of
Community Index. (Given an equal opportunity with data provided will an EFA
reproduce the SCI or will latent factors better describe a new combination of PSOC
items?)

*Hypothesis 1*: Compared to original SCI items, newly constructed PSOC items will better

fit with PSOC's four theoretical factors (membership, mutual influence, needs

attainment, shared emotional connection).

*Aim 2*: To investigate whether the existing Sense of Community Index or a new,

alternative instrument best fits interest group PSOC data.

*Hypothesis 2*: An alternative measure, designed specifically for relational communities,

will fit interest group PSOC data better than the SCI.

*Aim 3*: To investigate if PSOC mean differences exist between interest groups using the

new interest group PSOC measurement.

*Hypothesis 3*: There will be significant mean differences interest groups' PSOC.

$H_o$: $\mu_{gardernerpsoc} = \mu_{footballerpsoc}$

$H_1$: $\mu_{gardernerpsoc} \neq \mu_{footballerpsoc}$

*Aim 4*: To investigate if factor structures are variant between 'generic'(aggregated)

interest group data and interests groups' individual conceptualizations of PSOC.

*Hypothesis 4*: Individual groups' unique interpretation and conceptualization of interest

group PSOC will significantly differ from the 'generic' interest group PSOC; this will be

shown through measurement nonequivalence between interest group structural models

and the generic interest group PSOC structural model (see A & B below).

A.

$H_o$: $\sum_{genericIGPSOC} = \sum_{gardenerIGPSOC}$

$H_1$: $\sum_{genericIGPSOC} \neq \sum_{gardenerIGPSOC}$

B.

$H_o$: $\sum_{genericIGPSOC} = \sum_{footballerIGPSOC}$

$H_1$: $\sum_{genericIGPSOC} \neq \sum_{footballerIGPSOC}$

*Note.* $\sum$ is the variance-covariance matrix

A single, all-encompassing test will not sufficiently meet the aims of this study.

Investigating interest group psychological sense of community requires a process that

starts with creating new observable measures (items) that would be best defined by latent

factors and concludes with testing for factorial invariance. Conclusions reached through

this study intend to encourage future PSOC research that aims to increase theoretical and

practical knowledge in interest group PSOC.

CHAPTER 5

METHODS

*Participants*

Participants for this study included 217 adults (see Table 1.) who identified membership in one of two specific communities of interest: community gardens ($n = 110$) and United States Australian rules football teams ($n = 107$). Ages from both groups ranged from 18 to 74 years with a larger percentage of people over the age of 50 coming from community gardens than football teams, 49% compared to 2% respectfully. While the sample had 128 men and 86 women, the majority of women (88%) hailed from the community garden interest group.

Collecting data through internet surveys allowed for expansive geographic variability. As such, community gardeners and Australian rules football players, widely dispersed through the United States and Canada, responded to the PSOC survey. The researcher, while not collecting data on ethnicity, income or education, retrieved information relevant to one's participation in their community of interest such as interest group size, distance one travels to participate in their interest group, and the participants' years of interest group membership. None of these variables, however, were shown to have any significant relationship to either interest group PSOC measures.

Table 1.
*Basic Demographics of Research Participants*

| Demographic | Percent | Community Gardeners[a] | | Percent | USAFL Players[b] | |
| --- | --- | --- | --- | --- | --- | --- |
| | | Mean | SD | | Mean | SD |
| Women | 69% | | | 9% | | |
| Men | 28% | | | 91% | | |
| Age | | 46 | 1.43 | | 31.4 | 7.3 |
| Years in Interest Group | | 4.16 | 3.51 | | 3.6 | 2.7 |
| Miles traveled to interest group | | 2.84 | 3.15 | | 21.11 | 30.19 |
| Group size | | 50.74 | 52.18 | | 31.93 | 14.16 |

*Note* . Participants' sex may not add to 100 % due to missing data.

[a] 110 Community Gardeners completed PSOC surveys

[b] 107 USAFL Players completed PSOC surveys

*Procedure*

The data collection process was predominately mediated by the internet. Contact with the Australian Rules Football Team and community garden group leaders was the first step in gaining access to willing participants. Group leaders for Australian Rules Football teams were identified through two avenues. First, the United States Australian Rules Football League (USAFL) president was contacted. The president suggested uploading a link to the web-based survey and brief description of the study to the USAFL national website. Both recommended actions were accomplished with special attention to the research description which was created in a fashion that was neither deceptive nor overly informative so as to prevent potentially biased responses. Secondly, after uploading

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information to the USAFL site, the researcher compiled a list, from the USAFL's website, that contained United States and Canadian team sponsors and coaches for both men's and women's teams. In addition to the league president, the team sponsors and coaches were the primary research facilitators who distributed survey links. Thus, group leaders helped disseminate links to the web-based survey by forwarding an email from the researcher. Players then decided whether or not they would do the survey. 107 players, from most USAFL teams, both men and women, completed the entire survey.

Community garden leaders and organizers were similarly contacted. The American Community Gardening Association (ACGA) president suggested first using the ACFA e-mail list-serve to disseminate a link to the PSOC web-based survey and a brief study description. This advice was followed and a message was sent out to ACGA members throughout North America. Second, data bases such as Local Harvest (www.localharvest.org) and North Carolina State University's extension community garden website were searched to identify more community garden gatekeepers. A final search for American community gardens using Google (www.google.com) identified several active community gardens that were not directly associated with a larger community gardening group or database. Contact information for community garden presidents, sponsors or contacts were compiled into a spreadsheet and each were sent a personal email describing the study, providing a link to the web-based survey, and requesting garden leaders forward information to their community garden gardeners.

Through the data collection approaches described above, 110 community gardeners completed the PSOC survey.

The first page of the web survey accessed by participants was an Institutional Review Board (IRB) consent form that included, among other information, the incentives for the study. Participants were compensated with the option to enter a raffle. For completing the survey, two Australian rules footballs, valued at $75 each, were offered as raffle prizes for USAFL players. The first football was offered by the USAFL to the team that completed the most surveys and the researcher randomly selected a footy player, from all players who completed surveys *and* entered the raffle, as an individual football winner. Similarly, a community garden member, randomly selected from the group of participants who completed surveys *and* entered the raffle, was given a $100 gift certificate to a garden center of their choosing. To avoid non-disclosure all survey participants were able to submit their email address, at the end of the survey, to a page which was not, in any way, connected to individual survey responses. After winners were selected, all email addresses were cleared from all electronic files.

*Measure*

This study's measure attempted to satisfy aforementioned suggestions (see 'PSOC measurement' in 'review of literature' section). SCI modifications and additions addressed specific methodological problems while remaining honest to McMillan & Chavis' four factor theoretical PSOC construction (see Appendix 2.). In addition to the

12 SCI items, respondents answered 44 PSOC items pertaining to their specific community of interest instead of the SCI's referent-'my neighborhood.' Using a specific referent, either "my community garden/fellow community garden members" or "my

USAFL team/USAFL team members," for each item, allowed for a group specificity not offered in previous studies where the generic "interest group" was offered as a referent (Obst & White, 2007). What is more, all items were positively worded to reduce cognitive complexity and to mitigate the creation of methodological artifacts (Peterson, Speer, & Hughey, 2006). To improve reliability and response variance over dichotomous (Pretty, 1990; Long & Perkins, 2007) or four and five point response options (Davidson & Cotter, 1986; Sagy, Stern & Krakover, 1996, Farrell, Aubry & Coulombe, 2004; Loomis, Dockett & Brodsky, 2004) items were presented on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). There were approximately ten items per factor, and the order of these items was randomly organized for each participant to reduced error introduced by item order.

*Analyses*

*Exploratory Factor Analysis*

This study utilized an exploratory factor analysis (EFA) to define a PSOC measure that would be used in the subsequent analyses. This process identifies latent factors by observing the way measureable items covary; where high correlations among variables

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occur in the data, factors may exist. When items do not correlate with any group of variables or if they highly correlate with more than one group of variables, they are generally removed from the factor solution model. Such efforts to reduce the number of items allow for the creation of a parsimonious group of variables that are best described by unobservable factors. Using EFA, rather than a principal component analysis (PCA), this study was able to differentiate between common and unique variance when producing latent factors. PCAs, as used in PSOC studies by Chipeur et al., (1999) and Obst et al., (2002), analyze the total variance, reliable and unreliable, shared and unique, that are submitted to the factor analysis. While PCA is useful for quickly grouping similar variables, it is generally not used to identify latent factors. For these reasons, this study found it appropriate to proceed with an EFA.

EFA's also generally adhere to the Kaiser-Guttman rule which states that eigenvalues greater than one are acceptable for keeping factors because such factors produce properties that cannot be reproduced by individual items alone (Guttman, 1954; Kaiser, 1960, 1970 as cited in Nunnally & Bernstein, 1994). However, because this study was seeking information on four specific theoretically relevant factors (membership, mutual influence, attainment of needs and shared emotional connection), flexibility to the Kaiser-Guttman rule was permitted for one factor with an original eigenvalue less than one.

Factor rotation allows a researcher to more evenly distribute variability among factors. While all types of rotation aim to maximize high item loadings for each factor

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while minimizing low item loadings for each factor, this study chose to use an oblique rotation. Oblique rotations assume latent factors are correlated and, consequently, allow factors the freedom to correlate. McMillan & Chavis' (1986) theoretical description of PSOC's factors explains the interconnected nature of factors; therefore, it was logical to utilize an oblique rotation in the study. The specific type of oblique rotation used to interpret interest group PSOC factors was the Procrustean maximization (promax) rotation, which is typically the most effective technique to create a clear delineation between reproduced factors.

The goal here was to test if the SCI items would align together exclusively, or if new PSOC item would emerge to best described by latent PSOC factors. Combinations of original SCI items with new items were considered acceptable. While Obst & White (2007) removed original SCI items deemed unfit for interest group research, no SCI items were removed in the current research. Instead, this study followed the suggestions of Peterson, Speer, and Hughey (2006) and added more items to strengthen PSOC factors. The 'newly' added items were taken directly from the original McMillan and Chavis (1986) theoretical text on PSOC elements.

*Confirmatory Factor Analysis: Model Selection*

After removing several PSOC items that were not best described by PSOC's theoretical factors a new model was distilled. This model, which I will refer to as the Interest Group Sense of Community Scale (IGSCS), needed to be confirmed using

confirmatory factor analysis (CFA). Because there is an existing PSOC measure, the SCI, CFA was also useful in analyzing the existing model. While the SCI is a more parsimonious measure with two fewer items, the researcher hypothesized that the IGSCS would better fit the specific interest group data.

Competing empirical evidence for the PSOC construct made CFA (using AMOS 16.0 structural equation modeling program) the best analysis to test for fit of models to data. In both models, latent factors were allowed to correlate as would be expected from theoretical descriptions of the factors. Moreover, in the SCI and IGSCS baseline models, item-to-factor loadings were not constrained but they were standardized by forcing the variance of the first item-to-factor loading to equal one. Neither in the SCI model nor in the IGSCS model were errors allowed to correlate. After structuring baseline models according to PSOC theory and to the results of the EFA, then matching these models to the interest community empirical data, indices of fit analyses were conducted.

To determine the goodness of fit, several analyses, each examining how well the model reproduces correlations among items, were used. To be more specific chi-square, chi-square/ degrees of freedom (*df* ) ratio, incremental index of fit (*IFI),* Tucker-Lewis index *(TLI),* comparative fit index *(CFI),* root mean square error of approximation (*RMSEA*), and Akaike's information criterion (*AIC*) were used. The chi-square test examines how similar the original correlation matrix was compared to the reproduced correlation matrix. However, the chi-square goodness of fit test is sensitive to larger

sample sizes and high correlations in the model (Joreskog & Sorbom, 1993). As an alternative the use of the discrepancy/*df* ratio is suggested (Arbuckle & Wothke, 1999; Byrne, 2001). When comparing the chi-square to *df* a ratio of two or less is considered most acceptable (Long & Perkins, 2003). The *CFI* is equal to or falls between zero and one. It measures the fit between hypothesized and reproduced models and a value of greater than .90 is considered to be present in a good fitting model. The *IFI* and the *TLI* are fit indices that address parsimony while being relatively unaffected by sample size. Like the *CFI* both the *IFA* and the *TLI* are measured on a scale from zero to one and a value greater than .90 is considered acceptable for good fitness. The *RMSEA*, another measure of fit used in this study, takes into account the error of approximation in the population (Byrne, 2001). Because the *RMSEA* uses the degrees of freedom, it is a measure which is sensitive to the number of parameters in the model. Values of .05 or less are considered a good fit while values between .05 and .08 are considered reasonable fit and values ranging from .08 to .10 are considered mediocre fit (MacCallum et al., 1996). However, others have suggested that *RMSEA* values less than .06 show good fit and that smaller populations, like the one in the present study, tend to have over-rejected true models (Hu & Bentler, 1999). While there is no perfect judgment of the absolute best range for good *RMSEA* models, this study, because of its sample of 217 participants, will accept values of .06 or less as values of good fit. Finally, to compare fitness between models the *AIC* was used. When comparing two models, such as the SCI to the IGSCS,

the smaller *AIC* value represents a better fit to the hypothesized model (Hu & Bentler,

1995).

*Independent sample t-test*

Using ANOVA, Obst & White (2007) examined PSOC mean differences within the

same participants across three different types of communities: school, neighborhood and

interest group. The means between Obst & White's groups were significantly different, a

result the researchers suggested was associated with degree of choice to belong in various

groups. At no point did the researchers examine whether interest groups varied in their

views of PSOC. This information would be useful in that significant mean differences

could indicate that greater group distinctions may exist. Therefore, in the likelihood that a

new PSOC measurement model is constructed, the measurement's mean differences,

through an independent *t*-test analysis, should be tested across interest groups. Significant

mean differences between community gardeners' PSOC and football players' PSOC

could signify a need to test groups' PSOC structural difference.

*Confirmatory Factor Analysis: Measurement Invariance*

If the goal of EFA was to find a theoretically relevant and parsimonious group of

items to best measure PSOC, then one assumes that there were several items removed

that were distinctive to one interest group or the other. As items were removed for not

significantly loading on a factor, loading onto many factors, or for loading on a

theoretically inappropriate factor, then, ideally, the items left would be invariant across

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both interest group and align with the baseline model that was constructed from the data combined from both groups. It is necessary to test for invariance because each type of interest community may perceive PSOC differently. If PSOC's four factors are invariant, then the IGSCS will be a more universal measure for community gardeners and American Australian Rules Football players.

Measurement invariance investigations require creating a baseline or hypothesized pattern of factor loadings for each observed variable. Then the researcher must test if the hypothesized model is equivalent across all groups. The goal of the present study was to see if the two distinct interest groups match a hypothesized model created through the aggregation of both groups' PSOC data. This approach was taken, rather than comparing the interest groups to one another, because the study's goal was to test whether it is fallacious to presume all interest groups conceptualized PSOC similarly.

Prior to any invariance testing it is customary to test the freely estimated loadings of baseline models separately for each group. If the baseline model is identically specified for football players, community gardeners and the combination of both groups then the research can proceed to test if similar models will yield similar factor loadings across groups. To test factor loadings, the researcher must create a configural model where the baseline model is compared to the identical model using data from a specific interest group. The configural model uses freely estimated or unconstrained parameters and the two models are tested for goodness of fit. Chi-square and the degrees of freedom from the

configural model provide a baseline value from which all subsequent metric models will be compared. Chi-square difference tests explain if the models are variant or invariant. Should a metric model be variant, the researcher must identify which factors and items are variant and remove them from the model. In the case that the chi-square change is non-significant, the group model will be deemed invariant with the baseline model and it will not be necessary to make further alterations to the models.

CHAPTER 6

RESULTS

*Exploratory Factor Analysis*

All 44 items measuring PSOC were entered into an exploratory factor analysis.

Because the EFA was theoretically guided, the Kaiser-Guttman rule was not used to

select the number of factors. As McMillan & Chavis' (1986) theory states, the PSOC

construct is comprised of four factors: membership, mutual influence, attainment of

needs and shared emotional connection. Thus, before any analyses were run, four factors

were selected for the output. Additionally, the researcher chose listwise deletion and an

oblique (promax) rotation. The 44 items were run once and those that did not load at .40

or higher on the pattern matrix were removed; items that loaded above .40 on a factor but

were not congruent with the PSOC theory were also removed. For example, if an item

that was written to theoretically align with the shared 'emotional connection' factor

instead loaded on the 'membership' factor, then the adequately loading shared emotional

connection item would be removed. In this way, theory guided item selection. Finally,

two cross-loading factors were kept in the analysis to see if they would align with one

item after all of the non-loading and non-theoretical items were removed. One of the

cross-loading items remained a cross-loader and was removed from the analysis. The

other cross-loading item (influence 2) loaded above .40 on only the influence factor after other 'garbage' items were removed. A total of fourteen items remained.

The extracted sum of squares loadings for the PSOC four-factors solution accounted for 64.73% of variance in the data. All fourteen items loaded .53 or higher on the four PSOC factors; these loadings were robust as the generally accepted cut-off for factor loadings is .40. Next, all factors were interpreted using the pattern matrix (see Table 2). The pattern matrix shows regression weights for how well factors predict individual items using unique associations and controlling for all other factors. Finally, as shown in Table 3, the latent factors were allowed to correlate. The moderate to strong-moderate correlations between factors justifies the use of an oblique rotation and suggests that factors should be allowed to correlate in constructed confirmatory factor analysis (CFA) models.

Table 2.

*Factor loadings and communalities based on an exploratory factor analysis for 14 items from the Interest Group Sense of Community Scale (IGSCS) (N = 217)*

| Item | Mutual influence | Needs attainment | Emotional connection | Membership | Communalities |
|------|------|------|------|------|------|
| infl10 | 0.83 | | | | 0.84 |
| infl9 | 0.81 | | | | 0.55 |
| infl2 | 0.73 | | | | 0.72 |
| infl4 | 0.69 | | | | 0.58 |
| needs8 | | 0.97 | | | 0.84 |
| needs2 | | 0.75 | | | 0.55 |
| needs13 | | 0.57 | | | 0.41 |
| needs7 | | 0.53 | | | 0.66 |
| sec8 | | | 0.82 | | 0.69 |
| sec10 | | | 0.79 | | 0.73 |
| sec2 | | | 0.74 | | 0.59 |
| memb8 | | | | 0.75 | 0.7 |
| memb9 | | | | 0.69 | 0.56 |
| memb6 | | | | 0.62 | 0.63 |

*Note* . infl=mutual influence, needs=need attainment, sec=shared emotional connection, memb=membership

Extraction method: Principal axis factoring

rotation method: Promax

Table 3.

*Factor Correlation Matrix for the Interest Group Sense of Community  Scale (IGSCS) (N = 217)*

| Item | Mutual influence | Needs attainment | Emotional connection | Membership |
|---|---|---|---|---|
| Mutual influence | 1 | | | |
| Needs attainment | 0.36 | 1 | | |
| Emotional connection | 0.47 | 0.65 | 1 | |
| Membership | 0.69 | 0.52 | 0.63 | 1 |

*Note* . Extraction method: principal axis factoring; rotation method: promax

*Confirmatory Factor Analysis: Model Selection*

While the EFA suggested that there was a group of fourteen items that represented PSOC better than the SCI, a confirmatory factor analysis (CFA) was used to evaluate the factor structure in the SCI (see Appendix 1.) and the interest group sense of community scale (IGSCS; see Appendix 2.). Hypothesized models were created and tested for both scales. For the SCI, the hypothesized model had four factors with three items per factor. All factors were allowed to correlate and each path from the factors to the items were standardized. As is the standard format for CFA structure equation models, each item had an associated error term. The results (Table 4.) show that the SCI had a series of mediocre to poor fit indices with a significant Chi-square estimate: $\chi^2$ (52, N=217) = 205.5, *p*<.001, (*IFI* = .88, *TLI*=.82, *CFI*=.88, *RMSEA*=1.17, *AIC*=281.51).  On the other hand, results from the IGSCS  show acceptable to good fit indices with a significant chi-

square ($\chi^2$ (75, N=217) = 186.5, *p*<.001, (*IFI* = .94, *TLI*=.91, *CFI*=.94, *RMSEA*=.80,

*AIC*=274.51). The standardized factor solutions for the IGSCS are provided in Table 5.

Table 4.
*Model fit statistics for confirmatory factor*
*analyses comparing the Sense of Community Index and*
*the Interest Group Sense of Community Scale (N = 217)*

| | Models | |
|---|---|---|
| Measures of Fit | SCI | IGSCS |
| $\chi^2$ | 205.5 | 186.5 |
| *df* | 52 | 75 |
| *p*-value | < .001 | < .001 |
| χ2/*df* | 3.95 | 2.5 |
| *IFI* | 0.88 | 0.94 |
| *TLI* | 0.82 | 0.91 |
| *CFI* | 0.88 | 0.94 |
| *RMSEA* | 0.12 | 0.08 |
| *AIC* | 281.51 | 274.51 |

*Note*. Extraction method: principal axis factoring; rotation method: promax

Table 5.

*Standardized factor solutions for the Interest Group Sense of Community Scale (IGSCS) (N = 217)*

| Item | Mutual influence | Needs attainment | Emotional connection | Membership | Unique variance |
|---|---|---|---|---|---|
| Infl10 | 0.82 | | | | 0.84 |
| Infl9 | 0.6 | | | | 0.55 |
| Infl2 | 0.86 | | | | 0.72 |
| Infl4 | 0.74 | | | | 0.58 |
| Needs8 | | 0.83 | | | 0.84 |
| Needs2 | | 0.7 | | | 0.55 |
| Needs13 | | 0.59 | | | 0.41 |
| Needs7 | | 0.81 | | | 0.66 |
| Sec8 | | | 0.82 | | 0.69 |
| Sec10 | | | 0.79 | | 0.73 |
| Sec2 | | | 0.74 | | 0.59 |
| Memb8 | | | | 0.85 | 0.7 |
| Memb9 | | | | 0.73 | 0.56 |
| Memb6 | | | | 0.82 | 0.63 |

*Note* . Infl=mutual influence, Needs=need attainment, Sec=shared emotional connection, Memb=membership

Extraction method: Principal axis factoring

Rotation method: Promax

Table 6.

*Interfactor Correlations from the confirmatory factor analysis of the four-factor*
*Interest Group Sense of Community  Scale (IGSCS) (N = 217)*

| Item | Mutual influence | Needs attainment | Emotional connection | Membership |
|---|---|---|---|---|
| Mutual influence | 1 | | | |
| Needs attainment | 0.43 | 1 | | |
| Emotional connection | 0.53 | 0.74 | 1 | |
| Membership | 0.79 | 0.5 | 0.65 | 1 |

*Note.*  All correlations significant p <.05.

To determine with which scale to proceed for further analysis of the data, the Akaike

information criteria (*AIC*) was the most informative measure. The *AIC*, as previously

mentioned, is a measure for comparing two or more nested-models to discover which

model best fits its hypothesized model. The smaller value always represents the best fit

with the hypothesized model (Byrne, 2001). To interpret the data, the IGSCS  model's

smaller *AIC* was subtracted from the SCI model's larger *AIC*. If the model difference is 2

or less, the larger model is considered as good a fit as the smaller model. If the difference

value is between 3 and 7, as in the present research (*AIC* =7), then there is very little

support for the larger model being as good a fit to the data as the smaller model

(Burnham & Anderson, 2002). Therefore, the IGSCS model was a considerably better

model than the traditionally used SCI which does not seem to assess interest group PSOC as accurately.

*Independent sample t-test*

The goal of this study was to show that differences between interest groups' sense of community are so great that it is not logical to aggregate data from several interest groups into one generic interest group. This study has shown that the IGSCS is a better measure of PSOC in relational communities. To get an understanding of some of the first PSOC differences between interest groups using a new scale, the researcher used an independent sample *t*-test. The outcomes show that community gardeners (*M*=5.32, *SD*=.82) experienced a less robust PSOC than USAFL players (*M*=5.63, *SD*=.91), $t(216)= -2.66$, $p<.05$, $r^2=.03$).

Depending on one's objectives, the mean differences between these interest groups' PSOC could have disparate meanings. First, one could state that the population of football players perceives a more robust sense of community than the population of community gardeners. To aggregate mean scores then would offer an inaccurate portrayal of each groups' perceived levels of PSOC. But, in addition to such a claim, one could argue, despite the small effect size, that differences between the groups are greater than just that found between means. In such a case, the significant mean differences between interest groups' PSOC could be representative of differences in the ways that group members interpret and apply the PSOC construct. In order to further investigate

potential larger differences, for example, differences in the way interest groups interpret PSOC, a factorial invariance analysis was conducted.

*Confirmatory Factor Analysis: Measurement Invariance*

In order to examine larger group differences, it is necessary to examine whether the IGSCS would measure invariantly between the specific communities of interest and the aggregated, generic 'community of interest.' By using CFA invariance procedures, it was possible to also investigate if the theoretical four-factor PSOC model is equivalent across distinctive communities.

The first step in the invariance process was to establish a baseline model for each group in the study. This research sought to show that distinctive interest groups would be different from a pooled group model. Consequently, the researcher chose the aggregated data from which to sculpt a baseline model (see Appendix 2). This is the same baseline model of the IGSCS that was compared against the SCI and showed better fit to the data. The baseline model's use was to assist in measuring the extent to which each individual interest group strayed from the baseline model. All individual interest group models had an identical path diagram structure as the baseline model.

The first set of models, called configural models, compared the generic IGSCS factor structure with one of the interest groups' factor structures. This step was performed separately for each of the interest groups. Also, in this step all parameters, or estimation paths, were freely estimated. None of these paths was constrained to be equal across the

sets of two groups. In the first configural model measuring between community garden PSOC and the generic PSOC produced adequate fit to the data [$\chi^2$(150, N=217)=314.4, $p$<.05, *CFI*=.94, *RMSEA*=.06]. The next part of the first set of configural models measured between USAFL teams' players' PSOC and the generic PSOC and also produced adequate fit to the data [$\chi^2$(150, N=217)=340.8, $p$<.05, *CFI*=.94, *RMSEA*=.06].

In the second part of the analysis all parameters leading from the factors to the items were constrained across groups. For both sets of groups constraining parameters to equality did not significantly decrease the fit of the model. The change between the configural and constrained models measuring between the community garden and the generic interest community was not significant [$\Delta[\chi^2$(6)=12.50, p>.05]. Similarly, the change between the configural model and the constrained models measuring between Australian Rules football players' and the generic interest community was not significant [$\Delta[\chi^2$(6)=7.90, p>.05]. Both of the results indicated that factor loading were invariant across the two sets of groups (see Table 7). This means the theoretical four factor structure as displayed through the IGSCS was invariant from both distinct groups to the generic community of interest. No additional constraints were added.

Table 7.

*Invariance test model comparisons from the confirmatory factor analysis of the
four-factor Interest Group Sense of Community Scale (IGSCS) (N = 217)*

| Invariance condition | χ2 | *df* | *p* | Δχ2 | Δ*df* | *p* |
|---|---|---|---|---|---|---|
| Model 1a: configural total & gardens | 314.4 | 150 | >.001 | | | |
| Model 2a: Loadings total & gardens | 301.9 | 156 | >.001 | 12.5 | 6 | n.s. |
| Model 1b: configural total & football | 340.8 | 150 | >.001 | | | |
| Model 2b: Loadings total & football | 332.9 | 156 | >.001 | 7.9 | 6 | n.s. |

CHAPTER 7

DISCUSSION

Based on the researcher's interpretation of the results, the current section provides the following: a summary of hypotheses investigated, theoretical implications, the study's limitations and suggestions for future PSOC research.

*Hypothesis 1 & 2: PSOC Item & Measure Fit*

The present research created new theoretically based items and allowed exploratory factor analysis to select correlated groups of items best defined by latent factors. This means that given a chance to compete against alternative items, SCI items did not assert their strength as a measurement of PSOC. This does not mean that SCI items were not 'chosen' by latent factors because four original SCI items were retained. Only one original SCI item per factor was retained, meaning that 75 percent of original SCI items did not best fit latent factors.

The CFA fit indices of the SCI versus the fit of the IGSCS further showed that the SCI was not a better fit to the data than the newly created IGSCS which was comprised of ten new, theoretically congruent items. As the name suggests, the IGSCS (Interest Group Sense of Community Scale) was also created for the specific intent of measuring interest group PSOC, the SCI was not created with the same intent.

*Hypothesis 3: Mean Differences*

As originally hypothesized, the results of a two-tailed, independent sample *t*-test showed the presence of significant mean differences in PSOC between disparate interest communities. What was not predicted, however, was which group would have more robust interest group PSOC. Australian rules football players, according to the *t*-test, displayed significantly stronger interest group PSOC than community gardeners. An unclear understanding of each group's conceptualization of interest group PSOC caused the researcher to originally be hesitant in the interpretation of these results. After factor structures were shown to be approximately similar based on their invariant relationships to the 'generic' interest group PSOC, the results were slightly more intriguing. These results warrant future examinations of the contexts under which certain interest groups perceive higher PSOC, especially when some contextual variables such as group size, distance on travels to participate in their interest group and the number of years one has participated in their interest group were shown to be non-significant predictors of interest group PSOC.

*Hypothesis 4: Model invariance*

At first glance, the invariance between specific interest groups and the generic interest group seems to undermine the present research's main aims: to show that the use of a monolithic interest group is a fallacy. However, while the null was retained, so was the concept of unique interest group differences. The null simply stated that there would

be structural model differences between the generic interest group and a specific interest groups and this was the case. But the reason behind the model invariance speaks more about the IGSCS than it does about the nature and conceptualization of PSOC in communities of interest. What the IGSCS has done is capture the aspects of interest group PSOC that are common across the specific and general. The universal nature of the IGSCS occurred as an externality of searching for between group, theory-based differences. By eliminating thirty items through an exploratory factor analysis, most of which were related the PSOC construct in some fashion and many of which had more cross-group variance, only a distilled set of common items endured. Therefore, while an argument for using the IGSCS for aggregated interest group data is supported, this research fully acknowledges the aspects of PSOC that are unique to each interest group. Research using the IGSCS to understand groups' perceived strength of PSOC in concert with qualitative methods that best describe each groups' unique manifestations of PSOC would provide a superior design and understanding of the interest group PSOC phenomenon.

*Theoretical Implications*

Previous CFA research on psychological sense of community (Obst & White, 2004; Long & Perkins, 2003) has often suggested superficial resolutions to a poor fit between the Sense of Community Index  and PSOC data. Some of these solutions include rearranging or removing SCI items, using a one factor solution instead of a four factor

solution, or straying from theory and just renaming factors to better fit data. Rather than retest the benefits of short-term fixes to the SCI, this study followed the suggestion of Peterson, Speer, & McMillan (2008) and Chavis & Pretty (1999), and created and tested new PSOC items could greatly benefit data fit and PSOC theory.

PSOC researchers have divided into two camps. One group aims to approximately retain McMillan and Chavis' four-factor PSOC theory, but as a consequence assumes that it is necessary to also retain a poorly fitting SCI. The other group focuses on creating new scales that measure varying elements of PSOC, but in doing so diminishes the theoretical value of the measure. This research hopes to create a third group that is driven by solid PSOC theory but is not restrained by the limitations of the SCI. By combining the strengths of the two PSOC parties, the present research attempted to address key gaps in previous research and aims to influence future PSOC research to follow a similar trajectory.

Obst & White's (2007) interest group PSOC research, which was influential in guiding the theory and methodology for the current study, supplied the foundational achievement of showing mean differences between interest group PSOC and more geographically based incarnations of PSOC. In doing so, however, Obst & White assumed that disparate interest groups conceptualize PSOC similarly. Moreover, Obst & White assume that by just dropping two place-based items from the SCI, that the geographically based scale would accurately capture PSOC from communities of interest.

The present research allowed interest groups the opportunity to construct a PSOC unique to their group and, instead of dropping items, the current research created several theoretically driven items to increase construct validity.

Program designers should be able to create the most practical applications from the present research results. As shown in this research, an interest group PSOC was perceived by participants. Interest groups created by and for interested community members can create the hope of community. When weak or negative PSOC is perceived in geographically based settings, each individual should have the choice to participate in a healthy interest community (Brodsky, 1999). Therefore, programmers, working with and for community participants, should seek ways to increase access and availability of interest groups created by empowered community members.

*Limitations*

There are several limitations to this study. This section aims to describe these limitations as a means of informing future research on interest group PSOC or research choosing to use the IGSCS. The most obvious limitations to this study were sampling biases and lack of sex variability. Sampling biases occurred through self selection and computer access. Leaders at the individual garden or USAFL team level recruited participants to take the survey. However, respondents were self-selected and those choosing to participate in the survey felt strongly about their community. In general, self selectors were those who were very satisfied with their interest community and seemed

eager to share feelings on the topic. Few participants, alternatively, felt strongly about perceptions of weak or unsatisfactory PSOC. In either case, the 'average' voice from these communities may have been slightly altered due to the effects of self selection.

While all USAFL women's teams and the United States Australian Rules Football women's national team were contacted to participate in the study, women footballers overwhelmingly opted out of participating (see Table 1). As such, USAFL player PSOC more accurately reflects *male* USAFL player PSOC. In reality though, the proportion of women in the sample reflects about the percentage of women who play organized Australian Rules Football in North America. Conversely, the community gardener sample had more than twice as many women as men choose to participate in the study.

Lastly, psychometric guidelines were violated in this study. It is common to use a randomly selected half of a sample when doing an exploratory factor analysis and then use the other randomly selected half sample for the confirmatory factor analysis. The researcher was unable to do this because it would have required using approximately 50 subjects for each specific group CFA which is not an adequate sample size for that type of analysis. What is more, because the goal was to compare the assessment of a specific interest group to the general interest group, three, instead of one, factor analyses would have been run all with inadequate sample sizes. This overly complex and confusing method would have obfuscated data to the point of non-interpretability.

*Suggestions for Future Research*

For future research investigating interest group PSOC, the researcher offers brief suggestions that would mitigate this study's limitations. Three additional cautions emerged from this study and will also be noted.

In order to mitigate sample bias and a lack of statistical power, the study's design should be altered. Such alterations would include collecting data with paper surveys in addition to internet based surveys. The annual USAFL national tournament would have been an ideal time and place to directly connect with USAFL players and to collect paper based surveys. These tournaments also include each women's team, and therefore greater access to women players would be provided which could address the lack of sex variability. While USAFL tournaments bring the majority of players from each team despite their economic circumstances, national community garden conference tend to be oriented towards those either in a garden leadership position or those with enough financial capital to make the trip to the conference. Therefore, with community gardens, as with several other communities of interest, national gatherings would not necessarily be an ideal place, because of range limitations, to collect data.

With more time and access to greater funds, any social scientist serious about studying IGPSOC in community gardens should make the effort to visit and tour several community gardens. This would be an opportunity to record observable differences between community garden's physical environment and to collect data from several

community garden members that, for one reason or another did not participate in the internet data collection phase of this study. By increasing personal, face-to-face interactions with members of both communities in this study, the potential to mitigate responder bias and increase statistical power, mainly through increased sample sizes, would result.

Beyond simply recommending increased direct contact between researchers and participants to mitigate this studies limitations, the more tacit lessons learned from this study has lead the researcher to generate three specific cautions for future pursuits of IGPSOC research. Firstly, when investigating communities of interest, researchers should seek alternatives to the SCI. More than likely this scale will not adequately fit with participants inter-interest group conceptualizations of PSOC. Moreover, the IGSCS is not a flawless alternative. Therefore, secondly, researchers should always couple qualitative designs, procedures and analyses to symbiotically function with any perceived PSOC scale. Without qualitative data, participant's perceptions will be perpetually decontextualized. Thirdly, to further understand the complexities of PSOC, researchers should consider pursuing multilevel modeling. Illuminating whether PSOC varies more within or between interest groups would help further uncover the elements whose presence contributes to stronger PSOC. While such suggestions for future research will contribute to superior research, community psychology is also a value driven discipline. Thus, for communities that are socially and economically marginalized or where weak or

negative PSOC is a necessity for resilience (see Brodsky, 1996), interest group PSOC

studies and interventions should be pursued. Moreover, community members should be

provided decision and choice making power as to which interest groups are steadfastly

pursued, be they sports and recreation groups, faith based groups or self-help groups. The

community psychologist should facilitate the growth of such communities of choice and

help capture the effects of their creation.

CHAPTER 8

CONCLUSION


PSOC research seemed to, over the years, limit permeability in scope and theory. Doing so has created much internally driven, high quality research but it also created a closed system in which the same knowledge has been recycled and reused. The current study and similar studies will hopefully place cracks in PSOC's closed system and allow new perspectives to enter. In a world fixated on solving geographical problems, the time is now for better understanding relational communities and their potential effects on the future.

REFERENCES

Arbuckle, J., and Wothke, W. (1999). *AMOS 4.0 user's guide*. Chicago: Smallwaters.

Brodsky, A. E., O'Campo, P. J., & Aronson, R. E. (1999) PSOC in community context: Multi-level correlates of a measure of psychological sense of community in low-income, urban neighborhoods. *Journal of Community Psychology*, 27:6, 569-579.

Brodsky, A. (1996). Resilient single mothers in risky neighborhoods: Negative psychological sense of community. *Journal of Community Psychology*, 24:4, 347-363.

Burnham, K.P. & Anderson, D. R. (2002). *Model Selection and Inference: A Practical Information-Theoretical Approach*. New York: Springer Publishing Company.

Byrne, B. M. (2001). *Structural Equation Modeling with AMOS: Basic concepts, applications and programming*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Chavis, D., Hogge, J., McMillan, D., & Wandersman, A. (1986). Sense of Community through Brunswick's Lens: A first look. *Journal of Community Psychology*, 14:1, 24-40.

Chavis, D. M.,Wandersman, A. (1990). Sense of community in the urban environment: A catalyst for

    participation and community development. *American Journal of Community Psychology*, 18:1,

    p55-81.

Chavis, D.M., Pretty, G.H. (1999). Sense of Community: Advances in measurement and application.

    *Journal of Community Psychology*, 27:6, 635-642.

Chipuer, H.M., Pretty, G.H., & Delorey, E. (1999). The neighborhood youth inventory: development

    and validation. *Journal of Community & Applied Social Psychology*, 9:5, 355-368.

Cox, E. (1980). The optimal number of response alternatives for a scale: A review. *Journal*

    *of Marketing Research*, 17, 407-422.

Davidson, W. B.; Cotter, P.R. (1989). Sense of Community and Political Participation. *Journal of*

    *Community Psychology*, 17:2, p119-125

Durkheim, F., (1964). *The division of labor in society*. Glencoe, IL: Free Press of Glencoe.

Farrell, S. J., Aubry, T., & Coulombe, D. (2004). Neighborhoods and neighbors: Do they

    contribute to personal well-being?. *Journal of community psychology*, 32(1), 9-25.

Gusfield, J. (1975). *The community: A critical response*. New York: Harper Colophon.

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Hu, L.T., and Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structures with missing data using complete data routines. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1.

Joreskog, K.G., and Sorbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLES command language*. Chicago: Scientific Software International.

Long, D. A., & Perkins, D.D. (2007). Community social and place predictors of sense of community: A multilevel and longitudinal analysis. *Journal of Community Psychology*. 35. 563-581.

MacCallum, R.C., Browne, M.W., and Sugawara, H.M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1, 130.

McMillan, D., & Chavis, D. (1986). Sense of Community: A definition and theory. Journal of Community. *Journal of Community Psychology*, 14, 6-23.

Minnich, E. (2005). *Transforming knowledge*. Philadelphia: Temple University Press.

Nunnally, J.C., and Bernstein, I.H. (1994). *Psychometric Theory*. New York: McGraw-Hill, Inc.

Obst, P., Smith, S. G., & Zinkiewicz, L. (2002). An exploration of sense of community, part 1: Understanding sense of community in an international community of interest. *Journal of community psychology*, 30(1), 87-103.

Obst, P., Smith, S. G., & Zinkiewicz, L. (2002). An exploration of sense of community, part 2: Comparing neighborhood and interest group sense of community. *Journal of community psychology*, 30(1), 105-117.

Obst, P., Smith, S. G., & Zinkiewicz, L. (2002). An exploration of sense of community, part 3: Dimensions and predictors of psychological sense of community in geographical communities. *Journal of community psychology*, 30(1), 119-133.

Obst,P. L. & White, K.M. (2004). Revising the sense of community index: A confirmatory factor analysis. *Journal of Community Psychology*, 32, 691-705.

Obst, P., & White, K.M. (2005). Three-dimensional strength of identification across group membership: A confirmatory factor analysis. *Self and Identity*, 4, 69-80.

Obst, P. L., & White, K. M. (2007). Choosing to belong: The influence of choice on social identification and psychological sense of community. *Journal of community psychology*, 35(1), 77-90.

Peterson, N. Andrew; Reid, Robert J..(2003). Paths to psychological empowerment in an

urban community: Sense of community and citizen participation in substance abuse

prevention activities. *Journal of Community Psychology*, 31:1, p25-38.

Peterson, N. Andrew., Speer, Paul W., & Hughey, Joseph. (2006). Measuring sense of

community: A methodological interpretation of the factor structure debate. *Journal of

Community Psychology*, 34:4, 453-469.

Peterson, N. Andrew., Speer, Paul W., & McMillan, David W. (2008). Validation of a Brief

Sense of Community Scale: Confirmation of the principal theory of sense of community.

*Journal of Community Psychology*, 36:1, 61-73.

Pretty, G.M. (1990). Relating Psychological Sense of Community to Social Climate Characteristics.

*Journal of Community Psychology*, 18:1, 60-65

Pretty, G. M. H., Andrewes, L., & Collett, C. (1994). Exploring adolescents' sense of

community and its relationship to loneliness. *Journal of community psychology*, 22(4),

346-358.

Prezza, M., Amici, M, Roberti, T., Tedeschi, G. (2001). Sense of community referred to the whole town: Its relations with neighboring, loneliness, life satisfaction, and area of residence. Journal of Community Psychology, 29:1, p29-52.

Prezza, M., & Pacilli, M. G. (2007). Current fear of crime, sense of community, and loneliness in italian adolescents: The role of autonomous mobility and play during childhood. *Journal of community psychology*, 35(2), 151-170.

Royal, M. A., & Rossi, R. J. (1996) Individual-level correlates of sense of community: Findings from workplace and school. *Journal of Community Psychology*, 24:4, 395-416.

Sagy, S., Stern, E., & Krakover, S. (1996). Macro- and microlevel factors related to sense of community: The case of temporary neighborhoods in israel. *American Journal of Community Psychology, 24*(5), 657-676.

Sarason, S.B. (1974). *The psychological sense of community: Prospects for a community psychology*. Cambridge, MA: Brookline Books.

APPENDICES

Appendix 1: Confirmatory Factor Analysis Figures

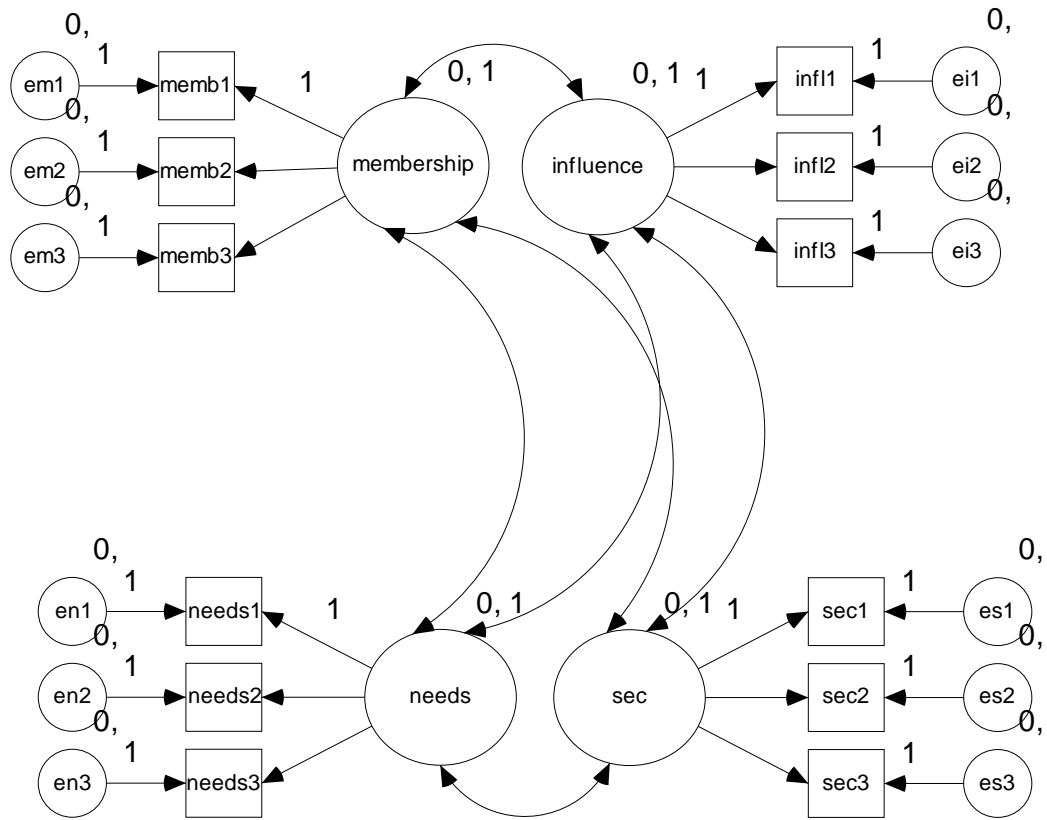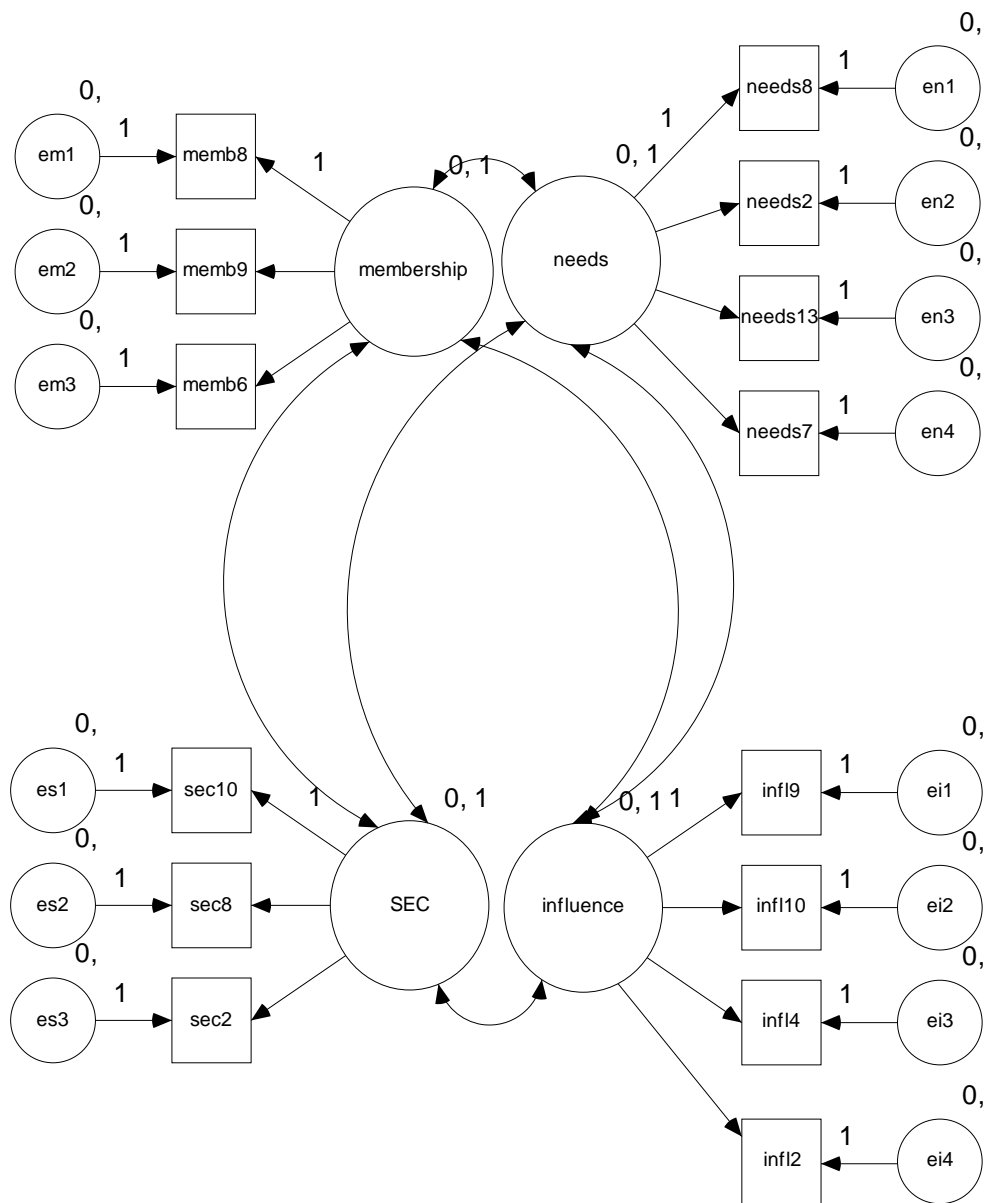Figure 1. Four Factor Sense of Community Index (SCI) Model

Figure 2. Four Factor Interest Group Sense of Community Scale (IGSCS) Model

Appendix 2: Measures

IGSCS

**Membership**
Many of my fellow gardeners know me (memb2)
I am personally invested in my community (garden) (memb8).
I proudly wear my community's logo (TFA or Footy team). I proudly tell others which community garden I belong to (memb9)

**Influence**
I have influence over what my community (garden) is like (infl2)
If I wanted something to change in my community (garden) I have the ability to change it. (infl4)
I have an influence on my community members (garden) (infl10)
I am a leader in my community(garden). (infl9)

**Needs**
My fellow gardeners share the same values as me (needs2)
My community members (fellow gardeners) share common values. (needs8)
My community members(fellow gardeners) share common goals. (needs7)
Me and my community members (fellow gardeners) are very similar to one another. (needs13)

**Emotional Connection**
The people who garden in my community garden get along with each other (sec2)
My community members enjoy spending time with one another. Participants in my community garden enjoy spending time with one another (sec8)
There is a sense of unity among my community members (fellow gardeners). (sec10)

David M. Chavis, Ph.D.
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### SENSE OF COMMUNITY INDEX

QI.    I think my [block] is a good place for me to live.

Q2.    People on this [block] do not share the same values.

Q3.    My [neighbors] and I want the same things from the [block].

Q4.    I can recognize most of the people who live on my [block].

Q5.    I feel at home on this [block].

Q6.    Very few of my [neighbors] know me.

Q7.    I care about what my [neighbors] think of my actions.

Q8.    I have no influence over what this [block] is like.

Q9.    If there is a problem on this [block] people who live her can get it solved.

Q10.   It is very important to me to live on this particular [block].

Q11.   People on this [block] generally don't get along with each other.

Q12.   I expect to live on this [block] for a long time.

Total Sense of Community Index = Total Q1 through Q12
Subscales:                     Membership = Q4 + Q5 + Q6
                               Influence = Q7 + Q8 + Q9
                               Reinforcement of Needs = Q1 + Q2 + Q3
                               Shared Emotional Connection = Ql0 + Q11 + Q12
*Scores for Q2, Q6, QS, Q11 need to be reversed before scoring.

Total Survey Items
SCI items- Community Gardens

My community garden is a good group for me to garden with (needs1)
My fellow gardeners share the same values as me (needs2)
My fellow gardeners and I want the same things from my community garden (needs3)
I feel comfortable with my garden community (memb1)
Many of my fellow gardeners know me (memb2)
I can recognize most of the people who participate in my community garden (memb3)
I care about what my fellow gardeners think of my actions (infl1)
I have influence over what my community garden is like (infl2)
If there is a problem in my community garden, the gardeners can get it solved (infl3)
It is important to me to garden in my particular community garden (sec1)
The people who garden in my community garden get along with each other (sec2)
I expect to participate in my community garden for a long time (sec3)

SCI items Footy

My Australian Rules Football team is a good team for me to play on (needs1)
My teammates share the same values as me (needs2)
My teammates and I want the same things from this USAFL team (needs3)
I feel comfortable with my team (memb1)
Many of my teammates know me (memb2)
I care about what my teammates think of my actions (infl1)
I have influence over what my USAFL team is like (infl2)
If there is a problem in my USAFL team, team members can get it solved (infl3)
It is important to me to play on my particular USAFL team (sec1)
The people play on my USAFL team get along with each other (sec2)
I expect to play Aussie rules football on this team for a long time (sec3)

All other PSOC items included in survey:

*Membership* (memb)
o I can recognize community members outside of the community context- I can recognize my fellow gardeners outside of the community garden context (memb4)
o Anyone can join my community (garden). (memb5) (reverse code)
o I am willing to make sacrifices (time, money, other opportunities, etc) for my community (garden) (memb6).
o I earned my place in my community (garden) (memb7).
o I am personally invested in my community (garden) (memb8).
o I proudly wear my community's logo (TFA or Footy team). I proudly tell others which community garden I belong to (memb9)
o There is no question that I belong in my community (garden). (memb10)
o My community members want me to continue participating in the community. Other gardeners want me to continue participating with my community garden (memb11)

*Influence* (infl)
o If I wanted something to change in my community (garden) I have the ability to change it. (infl4)
o Everyone in my neighborhood is expected to perform the same neighborhood responsibilities. The requirements for participating in my community garden are the same for all gardeners (infl5)
o My community makes me a better community member (footy player/teacher). My fellow gardeners make me a better gardener (infl6)
o All of my community members (fellow gardeners) recognize when our community (garden) has problems. (infl7) remove
o All of my community members (fellow gardeners)  celebrate (our) community (garden's) accomplishes. (infl8)
o I am a leader in my community(garden). (infl9)
o I have influence on my community (garden) members (infl10)
o All community members have ownership over the community. Every participant in my community garden has ownership over our community garden (infl12)

*Integration and fulfillment of needs (needs attainment)* (needs)
o It is rewarding to be part of my community (garden). (needs4)
o I am close with my community members (fellow gardeners) (needs5)
o When given the opportunity, I like to spend my time with my community members. When given the opportunity, I like to spend non-gardening time with my fellow community gardeners (needs6)

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- My community members(fellow gardeners) share common goals. (needs7)
- My community members (fellow gardeners) share common values. (needs8)
- When other members of my community (fellow gardeners) need help I am able to help them. (needs9)
- When I need help with something my community members (fellow gardeners) help me. (needs10)
- My community (garden) is successful at accomplishing our goals. (needs11)
- Me and my community members (fellow gardeners) are very similar to one another. (needs13)


*Shared emotional connection* (sec)
- My community (garden) stays in contact even when we do not see one another. (sec4)
- My community (garden) learns from past events to make us better in the future. (sec5)
- There is a website that explains how my community was started. There is public information (website, books, pamphlets, etc.) that explains how my community garden was started (sec6)
- All of my community members (gardeners) know the history of the community (garden). (sec7)
- My community members enjoy spending time with one another. My participants in my community garden enjoy spending time with one another (sec8)
- My community (garden) participates in important events annually. (sec9)
- There is a sense of unity among my community members (fellow gardeners). (sec10)