I|J|S|P

MEASURING SOCIAL CAPITAL OF PERSONS RESIDING IN A LONG-TERM PSYCHIATRIC INSTITUTION

LI-YU SONG, LY-YUN CHANG, CHIH-YUAN LIN, CHAIW-YI SHIH, LIEH-YUNG PING & NAI-YEN WANG

ABSTRACT

Background: Most studies support the association between social capital and health. However, none of the studies to date has focused on persons with psychiatric disability, and these past studies have drawbacks in conceptual development and the use of operational variables of social capital.

Aims: This study develops measures and examines patterns of social capital for persons with psychiatric disability.

Methods: Subjects (n = 273) were selected from a long-term psychiatric institution in Taiwan, based on their level of functioning. The measures of social capital were designed at the individual level, and included social networks, reciprocal help (engagement) and level of seeking help (trust and mobilization). Data were collected through face-to-face interviews.

Results: Factor analyses revealed a three-factor structure of social capital with 14 measures: bonding and reciprocity in the hospital, bonding and reciprocity within the ward, and network resources. Through cluster analyses, five patterns of social capital emerged among the consumers: large network and strong bonding, strong network and high bonding, ward network and bonding, ward network and low bonding, and low social capital. Based on the profile of each cluster, younger age, a history of drug abuse, shorter hospitalization and better social functioning seem to correlate with higher social capital.

Conclusion: The results support the idea that social capital is a metaconstruct, and reveal that consumers have the ability to establish social capital. The measurement and level of social capital as well as its implications for the rehabilitation of consumers into community living are discussed.

INTRODUCTION

Social capital has been a major research area in the social sciences. There is growing evidence that social capital is crucial for physical and psychological health as well as for survival (Carlson & Chamberlain, 2003; Lindstrom, 2004). It is hypothesized that the quantity and quality of a person's social networks play an important role in maintaining health and the ability to recover from various types of illnesses. The positive impact of social capital is also observed in the rehabilitation of mental health as documented by Turner (2003).

International Journal of Social Psychiatry. Copyright © 2006 Sage Publications (London, Thousand Oaks and New Delhi) www.sagepublications.com Vol 52(4): 94–109. DOI: 10.1177/0020764006065147

Turner argued that 'high social capital means that individuals are protected from episodes of mental illness, because their social investments provided a supportive social environment' (2003: 9).

Psychiatric rehabilitation has long followed the disease model that emphasizes the restoration of patients' function and coping skills. The focus of interventions is concentrated on skill training for specific function areas. However, the notorious neurocognitive deficits of schizophrenia can impede the acquisition of skills and dampen the effects of social skill training programs. It is thus crucial for us to understand how persons with severe mental illness (hereafter referred to as consumers) construct their social capital, even after they become institutionalized in mental hospitals. At this juncture, we agree with Carlson and Chamberlain (2003) and Hendersen and Whiteford (2003) that there is a pressing need for rigorous development of social capital measures so that this concept can be used in the development of psychiatric rehabilitation programs. This article attempts to respond to such a need.

The purpose of this article is to develop a measure of social capital specifically for consumers who are institutionalized in hospitals. We follow the social capital literature to construct a field-specific measure of social capital. This study collected information on social networks, reciprocal help and help seeking of consumers in a long-term psychiatric institution in Taiwan. The information collected was then used to develop measures of social capital and to investigate the patterns of consumers' social capital and the profile of such patterns.

DEFINITION OF SOCIAL CAPITAL AND ITS MEASUREMENT

There are two approaches to defining and measuring social capital in the literature. The first views social capital as an individual asset (Bourdieu, 1993: 33; cited in Turner, 2003; Lin, 2001). Social capital is defined as *investment in social connections, namely those social relationships that are valuable*. This definition focuses on the resources that accrue for individuals' disposal as a benefit of being part of social networks. The resources include physical goods and intangible qualities such as emotional support (Baum & Ziersch, 2003; Turner, 2003). Some authors further classify social capital into two types: bonding and bridging (Baum & Ziersch, 2003; Briggs, 2004; Woolcock, 2004). The former refers to horizontal tight-knit ties between individuals or groups with similar characteristics. The bridging type refers to ties between individuals that cut across different communities. Such a distinction treats social capital as a relational resource. The second approach is to treat social capital as a community asset (Briggs, 2004). Putnam's work (1995) exemplifies such an approach. He defined social capital as 'features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit' (p. 67) (cited in Baum & Ziersch, 2003; Rohe, 2004; Woolcock, 2004). This definition focuses on three concepts: civic engagement, norms and trust, and effective collective action (Rohe, 2004).

A sociologically centered definition of social capital has been primarily focused on resources and trust embedded in the social network of individuals (Woolcock, 2004). Woolcock asserts that social capital in the context of network and trust is strongly supported by empirical evidence and thus is the most directly amenable to policy prescriptions. He further

proposes that 'a comprehensive and useful theory of social capital is not only multidimensional at the micro level but also necessarily embedded in a broader historical and political context' (2004: 186).

Recently, many researchers have called attention to the definitional and measurement issue of social capital, including Baum and Ziersch (2003), Carlson and Chamberlain (2003), Rohe (2004), Woolcock (2004) and O'Brien *et al*. (2004). While social capital is considered a holistic construct that integrates network structure, action and return, the measurement of social capital remains a challenge to researchers in the field. For instance, after a review of 19 studies, Carlson and Chamberlain (2003) concluded that most of the studies employed mean number of association memberships per capita and average number of volunteering activities during a year as measures of social capital. Those studies have been criticized for using secondary data, which, although collected primarily at the individual level, is not collected specifically to measure social capital. Social capital is constructed by aggregating individual data to indicate community-, state- or even national-level phenomena (Baum & Ziersch, 2003; O'Brien *et al*., 2004). Baum and Ziersch (2003) thus advocated a qualitative approach to understanding social capital in order to understand the contexts in which social capital operates and the multi-dimensional nature of social capital. In addition, O'Brien and his associates (2004) call for theoretically grounded instruments of social capital.

The primary concern of this study is a psychiatric rehabilitation program for consumers in which returning to the community is assumed as the optimal goal. Developing an instrument to map the social capital of the consumers appears to be an important step in the assessment of any psychiatric rehabilitation program. In accordance with the existing literature on social capital and mental health, the instrument proposed in this study has two distinct features. First, we agree with Kawachi and Berkman (1998) that 'the notion of social capital embraces the embeddedness of individual social ties within the broader social structure' (p. 458). The measure of social capital cannot be detached from the broader context of social relationship. We thus develop a field-specific measure of social capital by focusing on the social and physical contexts in which the consumers reside. Second, the newly created instrument draws upon the works of Bourdieu (1986) and Coleman (1990), followed by Putnam (2000), Burt (2001) and Lin (2001). The proposed instrument covers the size and structure of the network, reciprocity of exchange and mobilization of the resources the consumers possess.

Specifically, the level and nature of social capital an individual consumer possesses is measured by three major components: social network, reciprocal help and level of seeking help. *Social network* includes network size, contact occupation (diversity) and bonding (closeness, frequency of contact and importance of relationships) (Lin, 1986; 2001). The existence of *reciprocal help* implies the level of engagement and types of investment (e.g. emotional or instrumental), a rational calculation of social exchange (Schmid, 2002). The level of seeking help reflects *trust* among consumers and the level of *mobilization of resources*. Trust is the cornerstone of mobilization. Without trust people will not reach out to others when they are in need. This study focuses on the individual level of this population in order to examine their patterns of social capital in the context of a long-term institution. It is hoped that the findings can shed light on consumers' community living, and how they could benefit from the community's social capital.

METHODS

Subjects

This study was part of an experiment aimed at rebuilding the social capital of consumers. The study site is a long-term treatment facility, the Yuli Veterans Hospital (hereafter called YLVH) in Taiwan. Consumers ($n = 273$) were selected from 800 patients based on their level of functioning during the past 6 months, including psychiatric symptoms, personal hygiene, level of work completion, communication ability and frequency of physical conflicts with others. Those who met the following criteria were selected for the study and interviewed: 1) almost no problems on any of the five criteria, or 2) having some psychiatric symptoms but almost no problems on any of the other four criteria. These consumers were considered to have potential for rehabilitation.

Variables and instruments

Social capital

The social network of a consumer is embedded within the ward, YLVH hospital and Yuli Town. The consumers were specifically asked to use the residing ward as a boundary when answering a set of questions. They were asked the same set of questions using the hospital area and the town as the respective boundaries. The content of the questionnaire is presented as follows:

Network size was tapped by asking how many people a consumer was familiar with, including other consumers and medical personnel.

Contact occupation was measured by asking *what kind of work each person in their network did*. The consumers were later categorized into the following:

(1) no job,
(2) labor within the ward,
(3) attend day hospital or occupational therapy (OT),
(4) work in the shelter or supportive employment,
(5) hospital janitor, or
(6) medical professional.

Frequency of network contact was measured on an ordinal scale: '6' indicating contact almost every day, '5' once every other day, '4' once a week, '3' twice a month, '2' once a month and '1' once every several months. A mean score was computed for each consumer across the contact with persons in their network. A higher score indicates greater intensity of the consumer's relationship with others.

Importance of relationships was tapped by asking how important each person in the network was to the consumer. The answer options included: '1' not very important, '2' somewhat important, '3' important and '4' very important. Again, a mean score was computed for each consumer across his/her familiar people and used in the analyses.

We designed a 12-item scale to measure *reciprocal help* among others and the consumers, six from others to the consumer and six from the consumer to others. The two sets of giving and receiving items were identical. Consumers were asked whether they received or gave certain assistance during the past 6 months. The six items covered both instrumental and

expressive support, including work assistance, activity assistance, lending objects or money, providing information, being a companion or being a confidant. The consumers responded to each item on a four-point scale: '0' never, '1' seldom, '2' sometimes or '3' often. A mean score for each item was computed for each consumer across all of his/her familiar people and used in the factor analysis for deciding the important indicators of social capital.

Four items were designed to capture consumers' *level of seeking help*. The questions were as follows: When you needed something, did you ask for help? When you were having a problem, did you find someone to discuss it with? When you were feeling lonely or doing things, did you get someone to accompany you? When you were in a bad mood, did you confide in someone? Each item had a yes/no response. We totaled the 'yes' answers to reflect the level of seeking help, with a range of 0 to 4.

Social functioning

The variable s*ocial functioning* was measured using the Social Functioning Scale (Song, 2001), a Chinese language and shortened version of Birchwood *et al.*'s scale (1990). Song's scale is designed to be applied to consumers in the community and has been shown to be sound, with internal consistency, test-retest reliability, inter-rater reliability, discriminant validity, factorial validity and convergent construct validity. In this study, the scale items were modified to fit the institutional living situation. The revised version was composed of six dimensions: Interpersonal communication (4 items, $\alpha = 0.71$ (α here is the result based on the data in this study)), independence-competence (4 items, $\alpha = 0.76$), independence-performance (4 items, $\alpha = 0.76$), recreation (5 items, $\alpha = 0.72$), pro-prosocial (5 items, $\alpha = 0.80$), and employment/occupation (7 items). With the exception of the employment subscale, the other subscales were in Likert format; the response category ranged from 0 (never) to 3 (often), with higher scores indicating better social functioning.

Sample characteristics

Demographic variables included sex, actual age, marital status and education. Four *illness variables* were collected in this study: a diagnosis/no diagnosis of schizophrenia, absence/presence of drug abuse, number of hospitalizations, and length of current hospitalization (months).

Data analyses

Since very few consumers present social ties in Yuli town workplaces (five consumers) or Yuli town outside the workplace (22 consumers), we used only the data referring to the ward and the hospital for analysis. Demographic variables and illness variables were also collected to further explore the profile of each social capital cluster.

Factor analysis

Factor analysis was conducted for data reduction on the reciprocal help measures and to explore the important measures of social capital. The principal component method of extraction and varimax rotation were used. The number of factors was determined using Eigenvalue $\geqslant 1$ and factor loading $\geqslant 0.4$.

Cluster formation

Two steps of cluster analyses were performed. First, initial cluster analysis, using Ward's method, was conducted on half of the entire sample through a random procedure to derive the initial cluster solutions. Cluster centers (means for each measure) were examined for each cluster solution alternative. In addition, discriminant function analyses were performed to help decide the best solution according to the following considerations: 1) if there are significant differences among clusters on measures of social capital, 2) number of consumers in each cluster, and 3) rate of accurate classification (hit ratio). The cluster solution that maximized differences among clusters was determined to be the best solution.

Second, the cluster solution derived from the previous stage was internally validated on the entire sample using K-means cluster analysis. In this procedure, a priori cluster solution and cluster centers were specified. This procedure involved two separate K-means cluster analyses, a constrained solution (not allowing updating to the cluster centers) and an unconstrained solution (allowing updating to the cluster centers). The coefficient of agreement, kappa, was computed for the constrained and unconstrained solutions. A high kappa value indicates high validity of the cluster solution derived from the previous step.

Profile of cluster membership

Chi-square and one-way ANOVA tests were performed to examine the correlations between cluster membership and other variables. Scheffe's procedure was used to detect significant group differences. The profile for each cluster was further established based on the significant variables.

RESULTS

Sample characteristics

The mean age of the consumers was 38.13 (SD = 7.11). The sample consisted predominantly of males (62.5%). Most of the consumers (80.8%) had never married, 9.8% were married and 9.4% had other marital status. Consumers with an educational level of junior high school or less comprised 42.4%, while there were 44.1% with high school education and 13.5% with college or above. More than 90% (92.7%) of the consumers had a diagnosis of schizophrenia. The other diagnoses included mood disorder, organic mental disorder and so on. About a quarter (24.3%) of the consumers had a history of drug abuse. The mean number of hospitalizations was 4.15 (SD = 3.14). Most of the consumers were hospitalized long term, with a mean of 78.1 months (SD = 71.1). The length of current hospitalization ranged between 2 and 339 months.

Factor analysis

Reciprocal help

Three factors emerged among the 12 items of reciprocal help *within the ward*, with 71.2% of the variance explained (see Table 1). Give and receive items of the same kind were all loaded in the same factor. The first factor, *confide and provide information,* reflects that information was given while consumers were confiding with each other. The second factor revealed that consumers tended to lend things to someone who provided companionship to him/her.

Table 1
Factor structure of reciprocity within the ward ($N = 273$)

	Factor 1	Factor 2	Factor 3
F1: Confide & provide information			
I confided in others	0.84		
Others confided in me	0.80		
Others provided me information	0.77		
I provided information to others	0.70		
F2: Lend things & accompany,			
I lent things to others		0.85	
Others lent me things		0.84	
I accompanied others		0.74	
Others accompanied me		0.65	
F3: Work & activity assistance,			
Others provided me work assistance			0.87
I provided work assistance to others			0.83
I provided activity assistance to others			0.73
Others provided me activity assistance			0.72
Overall Variance Explained = 71.20%			

Note:
F1: Eigenvalue = 3.10, Variance Explained = 25.85%, $\alpha = .86$;
F2: Eigenvalue = 2.75, Variance Explained = 22.92%, $\alpha = .86$;
F3: Eigenvalue = 2.69, Variance Explained = 22.44%, $\alpha = .84$.

Table 2
Factor structure of reciprocal help in hospital ($N = 273$)

	Factor 1	Factor 2
F1: Expressive support,		
Others confided in me	0.90	
I lent things to others	0.89	
Others accompanied me	0.85	
I accompanied others	0.80	
Others provided me information	0.79	
I provided information to others	0.77	
Others lent things to me	0.76	
I confided in others	0.75	
F2: Work & activity assistance		
Others provided me activity assistance		0.93
I provided activity assistance to others		0.82
Others provided me work assistance		0.78
I provided work assistance to others		0.58
Overall Variance Explained = 68.89%		

Note:
F1: Eigenvalue = 5.32, Variance Explained = 44.34%, $\alpha = .93$;
F2: Eigenvalue = 2.95, Variance Explained = 24.55%, $\alpha = .83$.

Conceptually, the first and second factors refer to expressive support in accord with Lin (1986). The third factor represents the instrumental support items, i.e. work and activity assistance. As for reciprocal help *in the hospital*, work and activity assistance still formed a factor; however, the rest of the items were merged into one factor, expressive support (see Table 2). The internal consistency of the factors of this concept are all satisfactory ($\alpha = 0.83$-0.93).

Social capital

During the factor analysis occupational items of 'labor within the ward' and 'day hospital and OT' were excluded from the factor analysis because of a low Measure of Sampling Adequacy (MSA < 0.60). The item 'shelter and supportive employment' was also excluded because of factor loading less than 0.40. The final factor structure of social capital included 14 measures (entire MSA $= 0.82$). Three factors emerged: bonding and reciprocity in the hospital, bonding and reciprocity within the ward and network resources (see Table 3). The four items within factor 3 covered network size and contact occupation. Factors 1 and 2 indicated that demonstrations of bonding and reciprocity are field specific. 'Level of seeking help' was loaded on factor 2, indicating that such motivation and actions linked more with reciprocal help within the ward, a field with distal proximity. The first two factors explained a greater amount of the variance; therefore bonding and reciprocity are more important

Table 3
Factor structure of the indicators of social capital ($N = 273$)

	Factor 1	Factor 2	Factor 3
F1: Bonding & reciprocity *in hospital*,			
Frequency of network contact	0.89		
Expressive support	0.87		
Importance of relationships	0.81		
Work & activity assistance	0.74		
F2: Bonding & reciprocity *within ward*,			
Lend things & accompany		0.80	
Confide & provide information		0.76	
Importance of relationships		0.73	
Frequency of network contact		0.70	
Level of seeking help		0.65	
Work & activity assistance		0.58	
F3: Network Resources,			
Number of medical professionals in network			0.80
Number of familiar people within ward			0.78
Number of hospital janitors in network			0.77
Number of familiar people in hospital			0.63
Overall Variance Explained = 71.20%			

Note:
F1: Eigenvalue = 3.31, Variance Explained = 23.61%, $\alpha = .88$;
F2: Eigenvalue = 3.16, Variance Explained = 22.57%, $\alpha = .81$;
F3: Eigenvalue = 2.42, Variance Explained = 17.29%, $\alpha = .80$.

components of social capital than network resources. All three of the factors had very good internal consistency (0.80–0.81).

Patterns of social capital

The first step of cluster analysis based on half of the sample yielded two potential cluster solutions – six-cluster or five-cluster. Further examination using discriminant function analyses revealed that the five-cluster solution was best, considering the rate of accurate classification. The six-cluster solution misclassified seven cases, whereas the five-cluster misclassified five cases. The five clusters were as follows:

(1) large network and strong bonding ($n = 28$),
(2) ward network and low bonding ($n = 55$),
(3) low social capital ($n = 10$),
(4) strong network and high bonding ($n = 6$), and
(5) ward network and bonding ($n = 50$).

The initial cluster solution was further verified using K-means cluster analysis on the *entire sample*. Both the constrained and unconstrained solutions indicated that the five-cluster solution fit the data. In addition, there was high consistency between constrained and unconstrained solutions ($\kappa = 0.932$). The hit ratio was 97.1% based on the five-cluster solution.

The cluster mean score on each measure of social capital and Scheffe's tests revealed the uniqueness of each cluster (see Table 4). Cluster 4 had the strongest network size and a far wider range of contact occupation, with contacts including both professionals and hospital janitors. Cluster 1 had the second-largest network resources. However, interestingly, Cluster 1 revealed much more bonding and reciprocity in both the ward and the hospital than Cluster 4 and the other clusters. Based on Scheffe's tests, Cluster 1 presented much greater reciprocal help than Cluster 4 on two measures: 'expressive support' in the hospital and 'lend things and accompany within the ward'.

Both Cluster 2 and Cluster 5 had mainly ward-embedded networks and very small networks in the hospital. These two clusters did not show significant differences on any measure of network resources. Their bonding and reciprocity was primarily within the ward as well; however, Cluster 5 showed much stronger bonding within the ward than Cluster 2 (see Table 4). Cluster 3 (Low Capital) had very small network resources in all of the measures. They also demonstrated very weak bonding and reciprocity in both the ward and the hospital. The major differences between Clusters 2 and 3 were in the measures of bonding and reciprocity within the ward.

Profiles of clusters

We examined the difference among the clusters in their social functioning, demographic characteristics and illness variables (see Tables 5 and 6). The three contact occupation variables, which were not part of the important measures of social capital, were also tested. The five clusters reached significant differences on age, drug abuse, length of hospitalization, and all of the social functioning subscales and contact occupation variables ($p < 0.05$). The profile for each cluster was as follows:

Table 4
Tests for mean equivalence of social capital among clusters (N =273)

Clusters / Mean (SD) / Social Capital	Large Net.[a] Strong Bond (1)	Ward Net. Low Bond (2)	Low Capital (3)	Strong Net. High Bond (4)	Ward Net. Bonding (5)	Post-hoc Comparison
Bonding & reciprocity *in hospital*						
Frequency of network contact	4.19	0.55	0.35	3.31	0.34	1 > 2,3,5
	(1.73)	(1.35)	(1.45)	(1.56)	(1.10)	4 > 2,3,5
Expressive support	12.01	0.45	0.29	4.36	0.17	1 > 4 > 2,3,5
	(4.03)	(1.34)	(1.21)	(2.91)	(0.66)	
Importance of relationships	2.58	0.45	0.06	2.67	0.36	1 > 2,3,5
	(0.84)	(0.99)	(0.24)	(0.75)	(0.95)	4 > 2,3,5
Work & activity assistance	2.26	0.08	0.17	1.77	0.06	1 > 2,3,5
	(2.56)	(0.71)	(0.73)	(1.83)	(0.45)	4 > 2,3,5
Bonding & reciprocity *within ward*						
Lend things & accompany	7.13	4.22	0.12	4.99	7.89	5,1 > 4,2 > 3
	(1.82)	(2.40)	(0.49)	(2.63)	(2.08)	
Confide & provide information	6.89	2.12	0.35	5.60	6.57	1,5,4 > 2 > 3
	(2.51)	(1.63)	(1.22)	(2.32)	(2.19)	
Importance of relationships	2.75	2.25	0.18	2.80	2.69	1,5 > 2 > 3
	(0.62)	(0.83)	(0.39)	(0.66)	(0.82)	4 > 3
Frequency of network contact	5.84	5.85	0.71	5.56	5.89	1,2,4,5 > 3
	(0.21)	(0.23)	(1.89)	(0.72)	(0.33)	
Level of seeking help	2.85	1.67	0.47	3.07	2.84	4,1,5 > 2 > 3
	(1.20)	(1.12)	(0.72)	(1.00)	(1.10)	
Work & activity assistance	4.09	1.55	0.06	3.67	3.52	1,5 > 2,3
	(2.64)	(1.69)	(0.24)	(3.68)	(2.91)	4 > 3
Network Resources						
Number of familiar people within ward	4.68	4.02	0.18	11.36	3.82	4 > 1,2,5 > 3
	(2.71)	(2.48)	(0.39)	(7.19)	(2.45)	
Number of familiar people in hospital	1.85	0.31	0.06	4.79	0.19	4 > 1 > 2,5,3
	(1.26)	(0.69)	(0.24)	(1.93)	(0.55)	
Number of medical professionals in network	0.78	0.42	0.18	5.14	0.24	4 > 1,2,3,5
	(1.15)	(0.83)	(0.39)	(2.51)	(0.59)	
Number of hospital janitors in network	0.46	0.44	0.00	1.57	0.19	4 > 1,2,3,5
	(0.67)	(0.89)	(0.00)	(1.28)	(0.61)	

Note: a: network; n_1 (group 1) = 41; n_2 = 100; n_3 = 17; n_4 = 14; n_5 = 100.

Group 1: Large network and strong bonding

On average, this group was the youngest among the five clusters, being significantly younger than Clusters 2 and 5. The percentage (31.%) having a history of drug abuse was the second highest among the five clusters. The average length of current hospitalization (45.37) was the shortest, although Scheffe's test didn't show a significant difference between any two clusters. The members in this group ranked second best in social functioning, worse only than Cluster 4 (not significant).

Table 5
Tests for differences among clusters on contact occupation, and social functioning

Clusters / Mean (SD) / Variables	Large Net.[a] Strong Bond (1)	Ward Net. Low Bond (2)	Low Capital (3)	Strong Net. High Bond (4)	Ward Net. Bonding (5)	Post-hoc Comparison
Contact Occupation						
Labor work within the ward	1.27 (2.16)	1.51 (1.53)	0.06 (0.24)	2.21 (2.26)	1.85 (1.19)	2,4,5 > 3
Attending day hospital or occupational therapy	0.63 (1.07)	0.18 (0.63)	0.00 (0.00)	0.93 (1.07)	0.26 (0.72)	4 > 2,3,5 1 > 2
Doing work in shelter or supportive employment	1.63 (1.89)	0.78 (1.57)	0.00 (0.00)	2.00 (1.62)	0.53 (0.88)	1,4 > 2,3,5
Social Functioning						
Occupation/employment	6.56 (1.32)	5.13 (1.95)	5.13 (2.36)	6.92 (1.17)	5.59 (1.75)	1,4 > 2
Communication	9.64 (2.21)	7.79 (2.49)	7.75 (2.72)	10.25 (1.60)	9.18 (2.58)	4,1,5 > 2
Independence-Competence	11.31 (1.65)	9.64 (2.65)	8.50 (4.12)	12.00 (0.00)	10.67 (2.09)	4,1 > 2,3
Independence-Performance	9.22 (3.14)	6.18 (3.14)	6.81 (3.19)	9.58 (2.54)	8.08 (2.92)	5,4,1 > 2
Recreation	10.75 (3.44)	8.51 (3.27)	7.81 (2.88)	11.83 (2.89)	10.48 (3.41)	4,1,5 > 2 > 3 4 > 3
Prosocial	10.28 (3.43)	7.10 (3.49)	5.63 (3.91)	12.00 (3.44)	9.96 (3.26)	4,1,5 > 2,3
Overall Social Functioning	57.75 (10.76)	44.34 (11.21)	41.63 (13.50)	62.58 (9.36)	54.25 (11.73)	4,1,5 > 2,3

Note: a: network; n_1 (group 1) = 41; n_2 = 100; n_3 = 17; n_4 = 14; n_5 = 100.

Group 4: Strong network and high bonding

The members in this cluster were younger in age than those in Clusters 2, 3 and 5 (not significant). This cluster had the highest percentage (58.3%) of members with a history of drug abuse. Their average length of current hospitalization was the second shortest. They scored the highest on every subscale of social functioning, and significantly better than clusters 2 and 3. This cluster had the widest range of contact occupations, especially better than clusters 2, 3 and 5.

Group 5: Ward network and bonding

This group had a mean age of 39.05, which was the oldest among the five clusters. The percentage (18.6%) of history of drug abuse ranked the second lowest. Their length of hospitalization was the third longest. Overall, this cluster had better social functioning than Clusters 2 and 3. This group had more familiar people doing labor work in the hospital than Cluster 3.

Table 6
Statistical tests on sample characteristics by cluster membership

Characteristics	Mean (SD) / Clusters	Large Net.[a] Strong Bond (1)	Ward Net. Low Bond (2)	Low Capital (3)	Strong Net. High Bond (4)	Ward Net. Bonding (5)	Post-hoc Comparison χ^2 tests (p)
Demographic variables							
Sex	Males	53.7%	63.0%	64.7%	78.6%	63.0%	$p = .563$
	Females	46.3%	37.0%	35.3%	21.4%	37.0%	
Age		34.59	38.81	38.76	37.08	39.05	1 < 2,5
		(5.85)	(7.96)	(5.39)	(7.06)	(6.61)	
Marital	Not married	87.2%	79.8%	88.2%	91.7%	76.1%	$p = .335$
	Married	0	11.2%	11.8%	8.3%	12.5%	
	Other	12.8%	9.0%	0	0	11.4%	
Education	Junior high	33.3%	46.1%	47.1%	25.0%	44.3%	$p = .448$
	High school	46.2%	42.7%	52.9%	50.0%	42.0%	
	College	20.5%	11.2%	0	25.0%	13.6%	
Illness variables							
Diagnosis	Schizophrenia	94.9%	87.6%	0	83.3%	96.6%	$p = .076$
	Other	5.1%	12.4%	100.0%	16.7%	3.4%	
Drug abuse	No	68.4%	75.6%	88.2%	41.7%	81.4%	$p = .020$
	Yes	31.6%	24.4%	11.8%	58.3%	18.6%	
Number of hospitalizations		3.94	4.32	3.53	5.55	4.01	NS
		(2.75)	(3.38)	(2.48)	(6.80)	(2.33)	
Length of hospitalization (months)		45.37	84.47	104.24	67.67	82.14	$p = .019$
		(47.39)	(78.70)	(71.61)	(69.45)	(68.31)	

Note: a: network; n_1 (group 1) = 41; $n_2 = 100$; $n_3 = 17$; $n_4 = 14$; $n_5 = 100$.

Group 2: Ward network and low bonding
The members of this group had a mean age of 38.81. About one quarter of the members had a history of drug abuse. Their average length of current hospitalization was the second longest. This cluster functioned significantly better on recreation than Cluster 3. Like Cluster 5, this group had more familiar people doing labor work in the hospital than Cluster 3

Group 3: Low social capital
The members of this cluster were the third oldest. They had the smallest percentage (11.8%) of members with a history of drug abuse. The average length of current hospitalization was the longest. They scored the lowest on almost all of the measures of social functioning. Again, they had the poorest networks.

DISCUSSION AND IMPLICATIONS

The sample in this study was a group of consumers who had the potential for rehabilitation, who were in a long-term institution. Although the measures of social capital included all the

locations where the consumers' transactions could take place, i.e. within the ward, the hospital and the town of Yuli, very few consumers in this study built social networks in the community outside the hospital. Thus, the results mainly reflected the social capital built within the institution.

Social capital: a holistic and field embedded concept

The factor analysis in this study supports Rohe (2004), where reciprocal help (investment or engagement), bonding, level of seeking help (mobilization) and network resources (social network) are the core measurements of social capital. Bonding and reciprocal help are highly correlated with each other and they are field specific, as Woolcock (2004) proposed.

Most of the consumers in this study had built considerable social capital within the ward, and in the hospital in the cases of Clusters 1 and 4. This may be because the consumers were living in the institution and so they had to interact with each other; nevertheless, building social capital also depends on whether the physical environment and treatment programs facilitate such network building and transactions, as well as the efforts of individual consumers. Over the years, YLVH has developed various recreational and skill development groups and occupational programs that might be conducive to the building of social capital. Consumers' lack of social capital in Yuli Town might be due to negative community attitudes towards these consumers, or it could also be due to the limited availability of work for the consumers.

Consumers tended to mobilize network resources within the ward

'Level of seeking help' loaded with other bonding and reciprocity items, indicating that consumers tended to mobilize the network resources embedded within the ward. Such a pattern is similar to the behavior of most people outside a mental health institution, who usually seek help from family members and friends first when they encounter problems. In general, the consumers' network was mainly within the ward. The mean number of familiar people within the ward (4.18) was much higher than the number in the hospital (0.71).

Network resources in the hospital and bonding differentiated consumers

The results of the cluster analyses revealed heterogeneous patterns of social capital among the consumers. Two clusters (1 and 4) were distinguished from the other three by establishing networks and bonding relationships with people not in their immediate environment. In particularly, Cluster 4 could make transactions with a wide range of people with different occupational statuses, including medical professionals. Nevertheless, consumers with the strongest network resources did not necessarily exert the highest social energy or develop the strongest bonding, which can be seen when comparing Cluster 4 and Cluster 1. In addition, Cluster 2 and Cluster 5, which had similar patterns of network resources, demonstrated significantly different amounts of bonding and reciprocity within the ward. Based on the factor analysis, bonding and reciprocity accounted for more variance among the social capital measures than network resources. Thus, Cluster 1 should be classified as having the highest social capital, with Cluster 4 having the second, Cluster 5 the third and Cluster 2 the fourth highest.

Correlates of social capital

The tests in this study were based on correlation, which is not proof of causal relationship. However, the results provide some information about each cluster. Three variables distinguished Clusters 1 and 4 from the others: younger age, a history of drug abuse and a shorter length of stay in the hospital. Being younger and having a shorter hospitalization seem to be advantages for extending social capital, which might imply that consumers were less institutionalized and had more hope for their future lives. Thus they might be more willing and have more ability (social functioning) to build social capital. The association between a history of drug abuse and high social capital (Clusters 1 and 4) is noteworthy, especially in Cluster 4. This association might have to do with the characteristics of people with drug use history, namely an outgoing and sociable nature. If that is the case, professionals could treat such characteristics as strengths for building social capital and, in turn, facilitating rehabilitation. Attention should be paid to enhancing bonding and reciprocal help with others for consumers like those in the Cluster 4.

Social functioning measures seem to distinguish Cluster 5 from Cluster 2. Social functioning has been a major area in rehabilitation of consumers. This concept and social capital might be two sides of the same coin. The former is the means; the latter reflects both the intermediate (action) and final outcomes. Thus, enhancement of social functioning might be the key to successful community living. The low social capital group was characterized by the longest hospitalization and the lowest level of social functioning, which may reflect a greater degree of institutionalization.

Implications for the rehabilitation of consumers into community living

This study targeted a group of consumers with potential for rehabilitation in a long-term institution. It is certainly encouraging to learn that consumers have the ability to establish social capital by making connections with other people. Of course, a long-term hospital is a protected environment, whereas the community may not be a friendly place and therefore consumers could face frustration. Anthony (1993) and others (Anthony *et al.*, 2002; Deegan, 1988) have been promoting rehabilitation programs to facilitate consumer recovery over the past two decades. Rebuilding social capital could be one of the ingredients in those programs. With professional support, consumers might be able to make their way in the community using their inherent ability. As shown in this study, the programs at YLVH seem helpful in fostering consumers' ability to establish and maintain meaningful contacts with those not in their immediate environment.

The setting and sample limit the degree to which this study can be generalized. Future study could explore the extent of social capital of consumers living in the community. Finally, the measures of social capital used in this study were an initial attempt and designed for institutional living. Given the complexity of this concept, the measures used in this study were just samples. The major weakness is lack of items directly measuring trust. Modifications would be needed for application to a community environment. However, this study showed the validity and reliability of essential measures of social capital, which are engagement, social network and level of seeking help (mobilization).

ACKNOWLEDGEMENTS

This research was supported by grant number NHRI-EX91–9032PP from the National Health Research Institutes, Taiwan, ROC.

REFERENCES

ANTHONY, W.A. (1993) Recovery from mental illness: the guiding vision of the mental health service system in the 1990s. *Psychosocial Rehabilitation Journal*, **16**(4), 11–23.

ANTHONY, W., COHEN, M., FARKAS, M. & GAGNE, C. (2002) *Psychiatric Rehabilitation*. Boston, MA: Center for Psychiatric Rehabilitation, Boston University.

BAUM, F.E. & ZIERSCH, A.M. (2003) Social capital. *Journal of Epidemiology and Community Health*, **57**(5), 320–323.

BOURDIEU, P. (1986) The forms of capital. In *Handbook of Theory and Research for the Sociology of Education* (ed. John B. Richardson). Westport, CT: Greenwood Press.

BRIGGS, X. DE S. (2004) Social capital: easy beauty or meaningful resource? *Journal of the American Planning Association*, **70**(2), 151–158.

BURT, R.S. (2001) Structural holes versus network closure as social capital. In *Social Capital: Theory and Research* (eds N. Lin, K. Cook & R.S. Burt). New York: Aldine De Gruyter.

CARLSON, E.D. & CHAMBERLAIN, R.M. (2003) Social capital, health, and health disparities. *Journal of Nursing Scholarship*, **35**(4), 325–331.

COLEMAN, J. (1990) *Foundations of Social Theory*. Cambridge, MA: Belknap Press of Harvard University Press.

DEEGAN, P.E. (1988) Recovery: the lived experience of rehabilitation. *Psychosocial Rehabilitation Journal*, **11**(4), 11–19.

HENDERSON, S. & WHITEFORD, H. (2003) Social capital and mental health. *The Lancet,* **362**, 505–506.

KAWACHI, I. & BERKMAN, L.F. (2001) Social ties and mental health. *Journal of Urban Health*, **78**(3), 458–467.

LIN, N. (1986) Conceptualizing social support. In *Social Support, Life Events, and Depression* (eds N. Lin, A. Dean & W. Ensel). Orlando, FL: Academic Press.

LIN, N. (2001) *Social Capital: A Theory of Social Structure and Action*. New York, NY: Cambridge University Press.

LINSTRÖM, M. (2004) Social capital, the miniaturization of community and self-reported global and psychological health. *Social Science & Medicine*, **59**, 595–607.

O'BRIEN, M.S., BURDSAL, C.A. & MOLGAARD, C.A. (2004) Further development of an Australian-based measure of social capital in a US sample. *Social Science & Medicine*, **59**, 1207–1217.

PUTNAM, R.D. (2000) *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

ROHE, W. (2004) Building social capital through community development. *Journal of the American Planning Association*, **70**(2), 158–164.

SCHMID, A.A. (2002) Social capital: critical perspectives. *Journal of Economic* Issue, **36**(3), 824–826.

SONG, L. (2001) The development and validation of a social functioning scale – A focus on practice applicability. *Formosa Journal of Mental Health*, **14**(3), 33–65.

STAVEREN, I.V. (2003) Beyond social capital in poverty research. *Journal of Economic Issues*, **37**(2), 415–423.

TURNER, B. (2003) Social capital, inequality and health: the Durkheimian revival. *Social Theory & Health*, **1**, 4–20.

WOOLCOCK, M. (2004) Why and how planners should take social capital seriously. *Journal of the American Planning Association*, **70**(2), 183–189.

Li-yu Song, PhD, Professor at the Department of Social Policy and Social Work, National Chi Nan University, Taiwan, ROC.

Ly-yun Chang, PhD, Research Fellow, Institute of Sociology, Academia Sinica, Taiwan, ROC.

Chih-yuan Lin, MD, Director of Psychiatric Department, Yu-li Veteran Hospital.

Chaiw-yi Shih, PhD, Associate Professor, the Department of Social Policy and Social Work, National Chi Nan University, Taiwan, ROC.

Lieh-yung Ping, MD, Visiting Staff of Psychiatric Department, Yu-li Veterans Hospital.

Nai-yen Wang, MD, Visiting Staff of Psychiatric Department, Yu-li Veterans Hospital.

Correspondence to Li-yu Song, PhD, Professor at the Department of Social Policy and Social Work, National Chi Nan University, Taiwan, ROC, 1 University Road, Puli, Nantou, Taiwan 545 ROC.
Email: lysong@ncnu.edu.tw