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Rethinking China's Rural Revitalization: The Development of a Sense of Community Scale for Chinese Traditional Villages

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Abstract: Improving the sense of community (SOC) in Chinese traditional villages is crucial to preventing population loss and conserving the cultural heritage of China's rural areas. These factors are important components of China's rural revitalization policy, and thus, it is necessary to measure the SOC of villagers as part of the process. This study has developed a new SOC scale for Chinese traditional villages based on McMillan and Chavis's four-factor theory involving membership, influence, need fulfillment, and emotional connections. An initial proposed sense of community scale for Chinese traditional village (SCSCTV) was structured as a four-factor scale with 28 items, including items from existing SOC studies and new items created by considering the features of Chinese traditional village communities. The scale was tested in the studies of three traditional villages in Chongqing by using two different methods. The findings provide guidance for the study of villages in the context of Chinese rural societies and a reliable scale for measuring villagers' SOC.

Keywords: rural revitalization; sense of community; rural community; traditional village; scale development



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1. Introduction

Currently, one of the most prevalent social issues in the Chinese countryside is that numerous villagers have lost their sense of community (SOC). More than 600 million rural residents have moved to cities since 1980 [1], and rural areas in China have experienced population hollowing, together with abandoned land and houses [2]. Rural hollowing also threatens the existence of villages. It is reported that the number of villages declined from 3.63 million to 2.71 million during the period 2000–2010 [3]. The aim of this research is to develop and validate a new scale to assess SOC in Chinese traditional villages.

China's central government proposed the concept of the "traditional village" in 2012 to highlight the value of villages with cultural heritage, such as vernacular elements of buildings, rituals, and performance arts [4,5]. At the time of writing, a total of 8171 villages have been included in the five lists of "traditional villages" in China, which refers to villages that are rich in cultural heritage and historical resources, and these villages are usually formed by clan settlements [6]. Villages on the five lists were allocated considerable financial support from the central and local governments to preserve heritages and prevent these villages from disappearing. However, the existing research highlighted that most of the funds were spent on reconstructing the physical environment of villages, many for tourism purposes, rather than focusing on improving the quality of life for villagers [7]. Preserving traditional villages is a crucial aspect of rural revitalization policies in China, which were set up to promote people-oriented strategies with an emphasis on improving villagers' livelihoods. Additionally, from the heritage preservation perspective, traditional villages are considered living heritage sites; thus, the benefits for local communities and opinions of villagers should be considered by professionals and other stakeholders [8,9]. In order to achieve this aim, it is necessary to develop and increase SOC among villagers of traditional villages, and therefore, the establishment of a suitable scale for measuring

SOC in the community of Chinese traditional villages is important to provide guidance for assessment and policy making.

SOC is not widely discussed in Chinese literature, and studies on the measurements of SOC are limited. Some Chinese scholars have developed SOC scales or directly used scales from the western literature, but these scales have neither clear theoretical support nor validation analysis [10–12]. This study therefore attempts to adapt McMillan and Chavis (1986) SOC theory for Chinese traditional village communities and to develop a sense of community scale for Chinese traditional villages (SCSCTV). The items in the existing SOC scales were selected or revised, and new items were created based on the characteristics of Chinese rural communities. The SCSCTV and its items were tested and validated in the case studies.

2. Assessment Item Selection and Creation

2.1. Items from SOC Scales Developed in the West

McMillan and Chavis [13] first define SOC as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” [13]. Further to the definition, McMillan and Chavis [13] construct a theory model that incorporates four factors as follows:

- (1) **Membership:** the feeling that an individual belongs to a specific group or community;
- (2) **Influence:** the mutual relationship between the personal perception and group;
- (3) **Integration and fulfillment of needs:** the benefits people earn from groups;
- (4) **Shared emotional connections:** emotional interaction and communication between members.
- (5) As McMillan and Chavis’ [13] four-factor theory model was regarded as the fundamental theory of SOC, many scholars developed SOC scales based on their own requirements. One of the best-known SOC scales is the Sense of Community Index (SCI), a four-factor model with 12 items developed by Chavis to confirm the validity of McMillan and Chavis’ [13] theory empirically. It was first published in the appendix of Perkins et al. [14,15]. However, existing studies suggest that the four-factor SCI failed to support McMillan and Chavis’s [13] theory in a number of aspects [14,16]. Chipuer and Pretty [16] suggest that the SCI can be used as a one-factor model rather than a four-factor model. Although the one-factor SCI reported better fit indices than the four-factor SCI when assessing SOC in residential blocks, adult neighborhoods and workplaces, and adolescents’ neighborhoods, it was proven to have a poor fit of results in other studies [15,17,18]. In addition, the one-factor SCI has been criticized for lacking the theoretical richness offered by McMillan and Chavis’ [13] theory [17,18].

To compare the one- and four-factor SCI directly, Long and Perkins [15] employed Confirmatory Factor Analysis (CFA) to test these two models by using the same data sample from Perkins, Florin, Rich, Wandersman, and Chavis [14]. As both SCI models reported poor fits, Long and Perkins [15] gave up using the original SCI and developed the Brief Sense of Community Index (BSCI) based on three factors (social connections, mutual concerns, and community values) with five items from SCI and three new face-valid items. However, Long and Perkins [15] could not provide further evidence for the new three-factor theory of SOC. Based on the criticism of Long and Perkins [15], Obst and White [19] returned to the original SCI, excluding two items and reassigning the ten items into the four factors. Although the revised four-factor SCI model shows good results in all fit indices and can support McMillan and Chavis’ [13] theory, it still needs further replication to be widely accepted [20].

The dispute over whether the SCI is a one- or a four-factor model has not concluded, but the SCI has been widely used as a one-factor measure [21]. Peterson et al. [22] suggest that the unexpected assessment results of the SCI based on McMillan and Chavis's (1986) theory resulted from a measurement flaw rather than a theoretical weakness, therefore "there is no justification at this point for throwing out McMillan and Chavis's theoretical model" [17]. Nevertheless, many argue that the four-factor theory still needs to be revised despite agreeing with the multi-factor structure of SOC. Tartaglia [23] investigated three latent factors (place attachment, need fulfillment and influence, and social bonds) of the Italian Sense of Community Scale (ISCS) proposed by Prezza et al. [24]. Drawing upon Tartaglia's [23] work, Prezza, Pacilli, Barbaranelli, and Zampatti [21] constructed the Multidimensional Territorial Sense of Community Scale (MTSOCS) based on McMillan and Chavis's [13] theory. The MTSOCS is a five-factor model and has been tested across different samples with good fits, yet it is rarely replicated in follow-on studies.

Returning to McMillan and Chavis' [13] theory, Peterson, Speer, and McMillan [22] developed the four-factor Brief Sense of Community Scale (BSCS), with each factor embracing two items. Consistent with Long and Perkins' [15] methodology, Peterson, Speer, and McMillan [22] used CFA to test the one- and four-factor BSCS. The four-factor BSCS reported a better fit than the one-factor BSCS, and it became another widely used SOC scale and has been confirmed in the following studies [25,26]. Despite the fact that the one-factor SCI and the four-factor BSCS are both frequently used in SOC studies, the four-factor BSCS is much less controversial because it is constructed based on McMillan and Chavis theory [13], which is considered to be the predominant theoretical framework in SOC studies.

Even so, Cope, Ward, Jackson, Muirbrook, and Andre [18] rightly argue that there is currently no universally acknowledged SOC measurement because "it is unlikely that any one measure of sense of community is going to capture all the important dynamics across various communities" [27]. Thus, although a range of scales and items have been developed in previous literature from the West, it is not certain whether these scales and items are useful in a Chinese rural context. In addition to the scales discussed above, the Neighborhood Sense of Community Scale (NSCS) developed by Nasar and Julian [28] is also adapted to be used in this study because the Chinese traditional village community is a neighborhood community. The NSCS is a one-factor model with 11 items based on Glynn's SOC theory [29], which is another SOC related theory but was not widely accepted because of its complex framework.

In total, nine measurement scales of SOC have been reviewed in this study. Before applying these items to the communities of a traditional Chinese village the similarities and differences were analyzed by comparing the neighborhood community in rural China and the differences from the context and theories for communities sense developed in the West (as detailed in Section 2.2). Following this, further revision excluded some items for the following reasons:

Firstly, negatively worded items have been revised positively to maintain the consistency of all the questions. For example, the term 'I don't care whether this X does well' can be changed into 'I care whether this X does well or not'. Positively worded expressions can also make the questionnaire easier to understand [30].

Secondly, some items in different models have similar meanings in Chinese. For example, the items 'I have good friends in this X' (MTSOCS), 'I have NO friends in this X on whom I can depend' (NSCS), and 'I have a good bond with others in this X' (BSCS). In this case, the simple description was chosen to maintain the clarity of meaning for the question.

Thirdly, items that did not reflect the reality of a Chinese rural area or were not relevant to a Chinese context have been removed. For example, as the police force at the village level is limited in China, each police station usually governs several villages, and the majority of traditional villages are located in economically underdeveloped areas, which are not usually the locations of police stations [31]. Thus, the villagers seldom meet police in

their neighborhoods, and the item “the police in this neighborhood are generally friendly” can be deleted.

2.2. Items Created in the Context of a Chinese Traditional Village Community

All the discussed items were originally developed in the western urban context. There are both similarities and significant differences between western and Chinese communities, as well as those between urban and rural areas. In western communities, individuals affiliate with an established framework and subsequently cultivate interpersonal connections through the framework, and there are clear boundaries between individuals. In contrast, traditional Chinese rural communities are characterized by a social structure comprised of interlocking webs of individuals who are interconnected by diverse forms of social ties, and each network within this structure can be likened to a succession of undelimited ripples that lack a clearly defined boundary. Additionally, the interrelationships within western communities are upheld in accordance with laws, while governance of traditional Chinese rural communities primarily relies on behavioral norms that are acknowledged by all members [32]. Thus, in order to measure SOC in traditional Chinese villages, it is necessary to create items based on the features of the Chinese rural communities that may influence villagers’ willingness to live in their own villages. The three main features of traditional Chinese village community are as follows:

Firstly, Chinese rural communities were based on consanguinity (xueyuan) and regionalism (diyuan). Consanguinity determines the dominant feature of Chinese rural society. Weber and Gerth [33] explain this relation as the sibling association, which disappeared in medieval western countries but performed important functions “in the administration of the smallest political units as well as in the operation of associations” in traditional Chinese society. Regionalism refers to the relationship between inhabitants and place and is responsible for contractual obligations in a home region [32]. Thus, villagers in traditional rural societies were isolated from outsiders (waicunren). Events in villages, ranging from daily conversations to weddings and funerals, could not be separated from families and clans [34]. The clan is an important governance system in traditional Chinese rural communities [35,36]. Despite the fact that the power of clans has been weakened following the establishment of the People’s Republic of China in 1949, clans remain an interest group that cannot be ignored since Chinese society is still nepotistic in character [35,36]. For example, if a villager becomes a village cadre, there are possibilities that his or her clan members may want to interfere in village affairs decision-making processes [37]. On the other hand, if the ancestors of a family have contributed to the development of the village, the offspring of the family usually receive more respect from fellow villagers [38].

Secondly, the village compact (cunguiminyue) is a particular social contract in rural China [39]. It is a way of village self-governance and refers to the norms and agreements of rural communities that regulate villagers’ behaviors [40]. In 1982, the constitutions of the PRC recognized the significance of village compacts [41]. Along with the development of the Chinese legal system, village compacts became the connections between government management and the self-governance of villages. In 2013, the central government claimed that 98% of the country’s villages had formulated village compacts [41]. Village compacts often refer to the specific realities of that village, closely related to the daily lives of the villagers, which are of great significance to guarantee the villagers’ vital interests [42]. Therefore, village compacts play important roles in building social orders, solving social conflicts, and constraining the behaviors of villagers [41]. In addition, the administration system of the village in China shifted from the family production unit to production teams during the period from the 1950s to the 1980s. After the 1980s, the Household Responsibility System was re-established, which provided rural families with more autonomy in production. However, the village committees still play an important role as part of the village management system. The existing study found that both top-down and bottom-up measures are important to ensure the benefits applied can reach both communities and individuals. Top-down measures are directions given from funding sources and encour-

agement for the use of specific knowledge and technologies that are filtered down through administration systems, and bottom-up approaches are where individuals and groups of villagers work innovatively in developing new opportunities for their benefit [43,44].

Thirdly, SOC is closely related to the shared historical connections within a community, and the practice of intangible heritage [45]. Intangible heritage is a form of social memory that is embedded in daily performance and communication and needs residents or other people to act socially [46]. However, intangible heritage has not been practiced or performed in villages in the present day as much as it has in the past, despite the fact that some handicrafts, rituals, and ceremonies were developed to bring direct economic benefits to villagers from the tourism industry.

Based on these three different aspects, five items were created as follows: “My ancestors contributed a lot to the development of the village”, “I can benefit from my family or clan currently”, “I mastered one of the traditional craftsmanships of the village”, “I am willing to participate in rituals and ceremonies of the village”, and “I think village compacts are important”.

By analyzing the SOC items in the Western literature and creating new items according to the features of Chinese rural traditional village communities, a four-factor Sense of Community Scale for Chinese traditional villages (SCSCTV) is proposed with 28 items based on the McMillan and Chavis theory [13], listed in Table 1. In the following section, the validity of the proposed scale used in three case studies in Chongqing, southwest China, is discussed and tested.

Table 1. A 28-item sense of community scale for Chinese traditional villages.

		Items	Source	Model
Membership	ME1	I feel like a member of this village.	Peterson et al. (2008) [22]	BSCS
			Davidson and Cotter (1986) [47]	
			Tartaglia (2006) [23]	ISCS
	ME2	I think my village is a good place for me to live.	Chipuer and Pretty (1999) [16]	SCI
			Long and Perkins (2003) [15]	
			Obst and White (2004) [19]	Revised SCI
	ME3	I care whether this village does well or not.	Tartaglia (2006) [23]	ISCS
			Nasar and Julian (1995) [28]	NSCS
	ME4	It is very important to me to live in this particular village.	Chipuer and Pretty (1999) [16]	SCI
			Long and Perkins (2003) [15]	
			Obst and White (2004) [19]	Revised SCI
	ME5	I expect to live in this village for a long time.	Chipuer and Pretty (1999) [16] Long and Perkins (2003) [15]	SCI
	ME6	When I travel, I am proud to tell others where I live.	Davidson and Cotter (1986) [47]	
			Tartaglia (2006) [23]	ISCS
			Prezza et al. (2009) [21]	MTSOCS

Table 1. Cont.

		Items	Source	Model
Influence	IN1	People in this village are good at influencing each other.	Peterson et al. (2008) [22]	BSCS
	IN2	I care about what my neighbors think of my actions.	Chipuer and Pretty (1999) [16] Obst and White (2004) [19]	SCI Revised SCI
	IN3	I have the right to decide how to construct the village.	Peterson et al. (2008) [22] Davidson and Cotter (1986) [47] Prezza et al. (2009) [21]	BSCS MTSOCS
	IN4	People in this village can solve problems and reach their goals when they are well organized.	Chipuer and Pretty (1999) [16] Long and Perkins (2003) [15] Tartaglia (2006) [23] Prezza et al. (2009) [21]	SCI BSCI ISCS MTSOCS
	IN5	If someone does something good for this village, that makes me feel good.	Nasar and Julian (1995) [28]	NSCS
	IN6	My ancestors contributed a lot to the development of the village.	Newly created	
Needs fulfillment	NF1	I like the house (dwelling unit) in which I live.	Davidson and Cotter (1986) [47] Tartaglia (2006) [23]	ISCS
	NF2	This is a pretty village.	Davidson and Cotter (1986) [47] Tartaglia (2006) [23]	ISCS
	NF3	I feel safe here.	Tartaglia (2006) [23]	ISCS
	NF4	It is easy to get around this village.	Davidson and Cotter (1986) [47]	
	NF5	I can get help from other people in the village, and I am always ready to help others.	Prezza et al. (2009) [21] Nasar and Julian (1995) [28]	MTSOCS NSCS
	NF6	If I need help, this village has many excellent services available to meet my needs.	Davidson and Cotter (1986) [47] Tartaglia (2006) [23] Prezza et al. (2009) [21]	ISCS MTSOCS
	NF7	I would say that I am involved in a lot of different activities here.	Davidson and Cotter (1986) [47] Tartaglia (2006) [23] Prezza et al. (2009) [21]	ISCS MTSOCS
	NF8	Currently, I can benefit from my family or clan.	Newly created	
Emotional connections	EC1	Villagers know each other well.	Chipuer and Pretty (1999) [16] Long and Perkins (2003) [15] Obst and White (2004) [19]	SCI BSCI Revised SCI
	EC2	Most of the villagers are kind and easy to make friends with.	Prezza et al. (2009) [21] Davidson and Cotter (1986) [47] Tartaglia (2006) [23]	MTSOCS ISCS
	EC3	My friends in this village are part of my everyday activities.	Nasar and Julian (1995) [28]	NSCS
	EC4	In this village, there are customs and traditions that I usually respect.	Tartaglia (2006) [23]	ISCS
	EC5	I have mastered at least one of the village's traditional handicrafts.	Newly created	
	EC6	I am willing to participate in the rituals and ceremonies of the village.	Newly created	
	EC7	I often communicate with other villagers.	Newly created	
	EC8	I think village compacts are important.	Newly created	

3. Materials and Methods

3.1. Study Areas and Site Selection

Chongqing, is located towards the southwest of China, along the upper reaches of the Yangtze River (Figure 1). This area is characterized by mountains and rivers, is rich in natural resources, and is dominated by the central subtropical moist monsoon climate throughout the year. The mean daily temperature of the Chongqing area is 18.4 °C, the mean annual rainfall is 1100 mm, and the mean annual non-frost period is 345 days. These data indicate that Chongqing is a suitable place for living and farming [48]. Three traditional villages were selected as case studies in the west, northeast, and southeast of Chongqing, and they have representative significance for the cultures in these three different districts (Figure 1). These three villages are analyzed as follows:

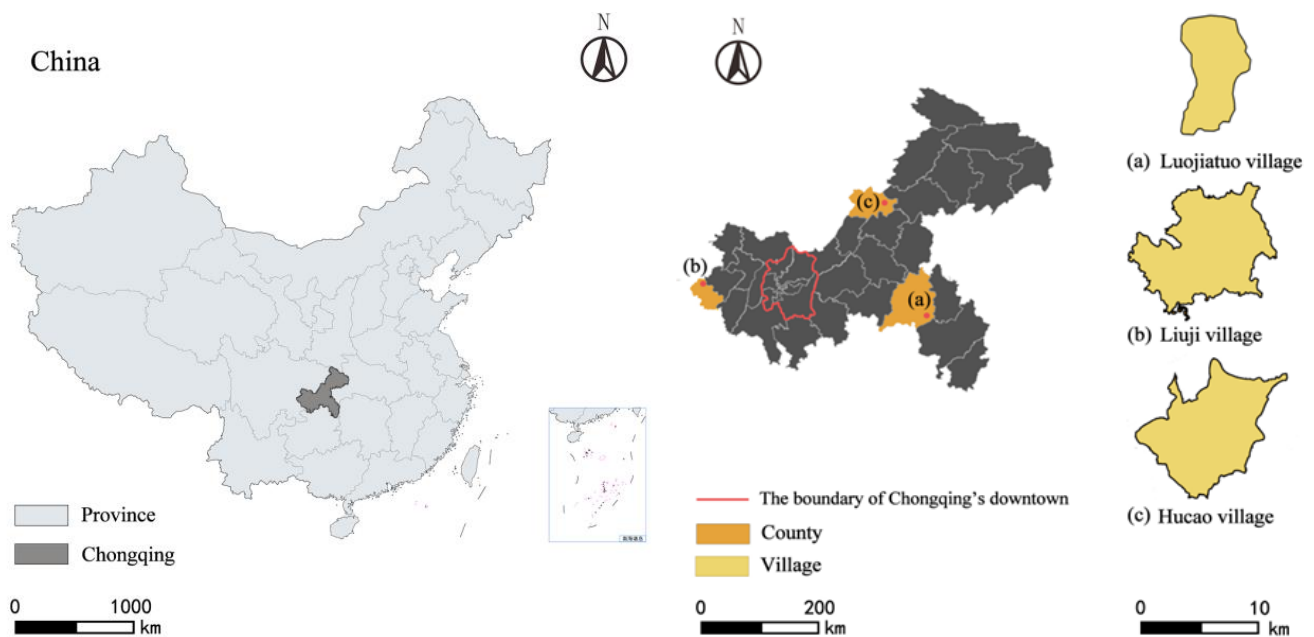


Figure 1. The map of the study area. (a) Luojiatuo village (b) Liuji village (c) Hucao village.

The first case Luojiatuo (LJT) village is located in Pengshui County, in southeastern Chongqing. It is a single-clan village, whose surname is Luo, and the village is named after the clan surname. The first ancestor of the Luo clan was Luo Daomeng, who immigrated from Jiangxi to Chongqing in the Qing Dynasty (1636–1911). Until now, the village has nourished 17 generations of descendants of the Luo clan. Worshipping ancestors has been an important tradition in LJT village, and the villagers constructed an ancestral hall with the help of the local government to place memorial tablets of their major contributing ancestors. In the ancestral hall, an antithetical couplet hung in the middle: the upper scroll (shanglian) states that “梅发千枝根其本” (one plum tree can have thousands of branches), the lower scroll (xialian) is “江水源同流万派” (rivers from the same origin can reach thousands of destinations), and the horizontal scroll (hengpi) is “孝思先奉” (to be devoted descendants) (Figure 2). The meanings of the couplets are to remind the descendants of the Luo clan to remember their origins and to always be supportive of each other. Currently, the couplet has become part of the village compact of Luojiatuo village.



Figure 2. The village compact of LJT village, photo by Wei Wang in 2021.

The second case Liuji (LJ) village is located in Rongchang County, in western Chongqing. Yin and Chen are the major clans of the village, but the village was named after Liu Ji, who was a captain of the People's Liberation Army (PLA), to remember his sacrifice and contribution to expel bandits and save villagers' lives. The village compact of LJT village outlines the villagers' responsibilities to their families, neighbors, communities, society, and the nation.

The third case Hucao (HC) village is located in Liangping County, in northeastern Chongqing. The village was named after the first clan to settle in the area, the Hu clan. However, all the members of the Hu clan moved to the county center when the clan became rich. Then, Chen and Tang became the major clans of the village, and the descendants of those two clans have lived in Hucao village to the present day. The village compact of HC village includes regulations related to sanitary conditions, family togetherness, harmonious neighborhood relations, safety, economic development, and civic responsibilities.

3.2. Data Collection

After selecting three case studies, field studies were conducted. The questionnaire included two sections: (a) a questionnaire to obtain information on demographic characteristics, and (b) the 28-item Sense of Community Scale for Chinese Traditional Villages based on Table 1. Responses were given on a 5-point Likert scale (5 = strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, 1 = strongly disagree). The internal reliability for 'Membership' was 0.91, for 'Influence' 0.88, for 'Needs and fulfillment' 0.90, and for 'Emotional connections' 0.83.

3.3. Data Sample

Table 2 shows the demographic characteristics of the three villages' participants, and four key findings are noted: firstly, a larger proportion of women were found in LJT village (67.7%), while the number of women and men were similar in LJ village (45.9% vs. 54.1%) and HC village (47.2% vs. 52.8%); secondly, more than half (54.5%) of the participants are aged between 50–69, while only 12.4% of the participants are aged below 50; thirdly, nearly half (48.8%) of the participants are at the educational level of primary school and below; and fourthly, nearly half of the participants in the LJT and LJ villages have an annual income below CNY 3000 (about USD 431.28), while slightly over a half of the participants in LJT village have an annual income between CNY 3000 and CNY 10,000 (about USD 431.28–1437.59). These data represent the current demographic characteristics of the majority of traditional Chinese villages.

Table 2. Demographic characteristics of participants.

	LJT Village <i>n</i> = 31	LJ Village <i>n</i> = 37	HC Village <i>n</i> = 37	Total <i>n</i> = 121
Gender				
Male	10 (32.3%)	17 (45.9%)	25 (47.2%)	52 (43.0%)
Female	21 (67.7%)	20 (54.1%)	28 (52.8%)	69 (57.0%)
Age				
<50	3 (9.7%)	6 (16.2%)	6 (11.3%)	15 (12.4%)
50–69	17 (54.8%)	23 (62.2%)	26 (49.1%)	66 (54.5%)
≥70	11 (35.5%)	8 (21.6%)	21 (39.6%)	40 (33.1%)
Educational level				
Primary school and below	22 (71.0%)	17 (45.9%)	20 (37.7%)	59 (48.8%)
Middle school	8 (25.8%)	13 (35.1%)	21 (39.6%)	42 (34.7%)
High school and above	1 (3.2%)	7 (18.9%)	12 (22.6%)	20 (16.5%)
Income (CNY)				
<3000	15 (48.4%)	15 (40.5%)	10 (18.9%)	40 (33.1%)
3000–10,000	14 (45.2%)	16 (43.2%)	32 (60.3%)	62 (51.2%)
>10,000	2 (6.5%)	6 (16.2%)	11 (20.8%)	19 (15.7%)

3.4. Analysis Procedure

Confirmatory factor analysis (CFA) is a method to “test the hypothesis that a relationship between the observed variables and their underlying latent construct(s) exists” [49]. As the SCSCVT is a multi-factor construct, CFA is the proper method for testing and validating the scale. Two different testing methods were proposed in this study: method 1 is to use CFA as the only test tool, as in most scale development studies [50]; and method 2 is to use mixed methods of both qualitative analysis and CFA. A CFA was performed using the statistical modeling software Mplus 8.0. The technical routes of this study are shown in Figure 3.

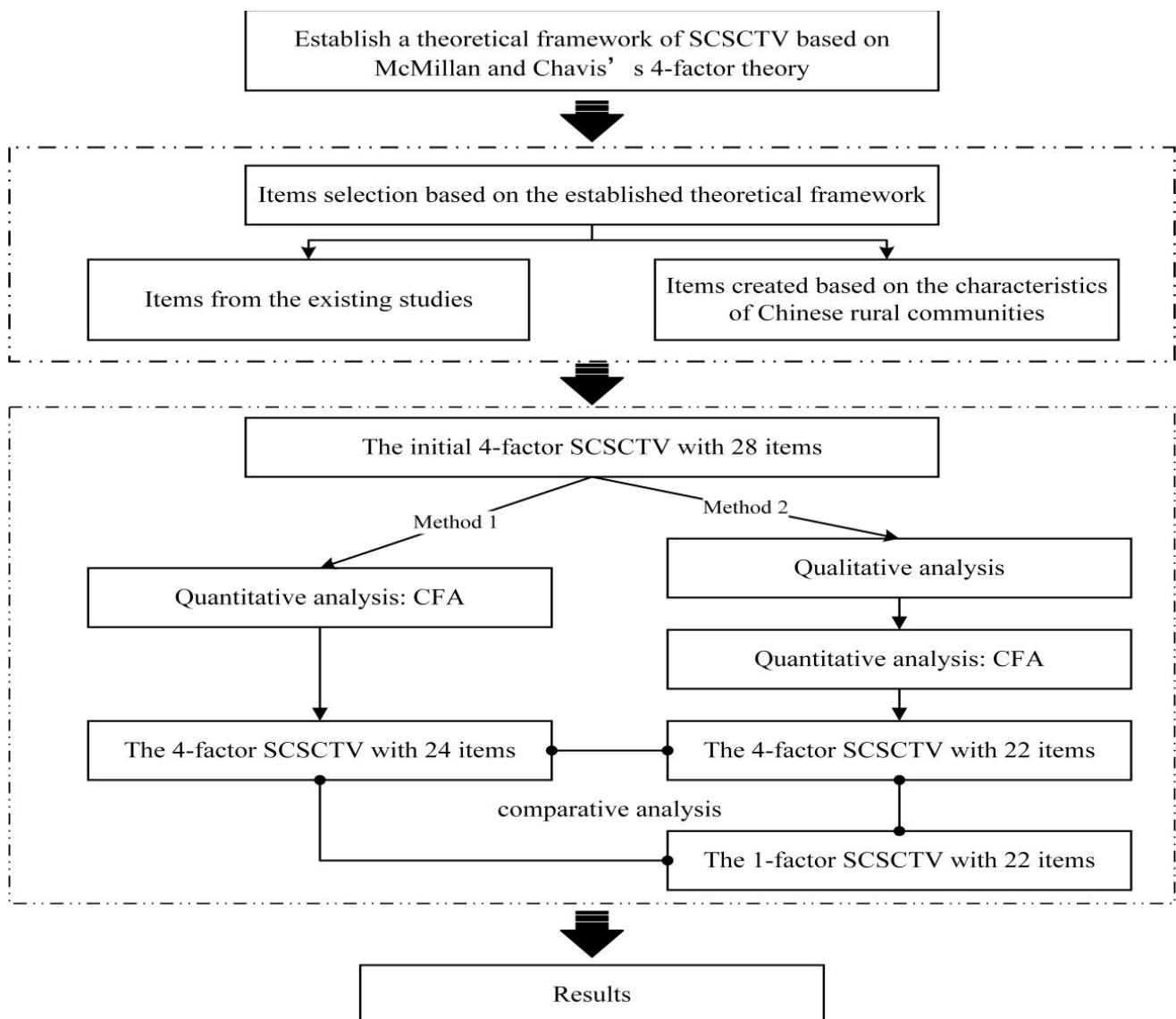


Figure 3. Technical Routes.

4. Results

4.1. Demographic Differences

Table 3 displays the mean scores of the SCSCCTV items based on demographic characteristics. In terms of gender, the responses of men and women were similar for all these statements, with mean scores of 3.51 and 3.41, respectively. In terms of age, participants younger than 50 years old showed the lowest level of SOC, with a mean score of 1.92, while participants older than 70 years old showed the highest level of SOC, with a mean score of 4.14. For educational level, participants with primary school education and below reported the highest SOC score of 3.59, while participants with a high school education and above showed the lowest SOC score of 2.83. For income, participants with an income between CNY 3000 and 1000 a year reported the highest SOC mean score of 3.54, participants with an income of less than CNY 3000 a year reported a slightly lower score of 3.50, and participants with an income of over CNY 10,000 a year reported the lowest mean score of 2.81.

Table 3. Demographic characteristics of participants.

	Gender		Age			Education			Income		
	Male	Female	<50	50–69	≥70	Primary School	Middle School	High School	<3000	3000–10,000	>10,000
ME1	4.77	4.41	4.53	4.52	4.65	4.51	4.64	4.55	4.53	4.52	4.79
ME2	3.23	3.41	2.00	2.98	4.40	3.59	3.19	2.85	3.43	3.45	2.74
ME3	3.44	3.41	1.73	3.11	4.57	3.63	3.45	2.75	3.60	3.55	2.63
ME4	3.21	3.43	1.93	3.03	4.37	3.68	3.12	2.80	3.53	3.44	2.63
ME5	3.13	3.03	1.20	2.80	4.23	3.39	2.98	2.35	3.27	3.24	2.11
ME6	3.50	3.48	2.00	3.39	4.20	3.58	3.67	2.85	3.53	3.65	2.89
IN1	3.08	2.93	1.20	3.15	3.40	3.14	3.10	2.35	3.20	3.03	2.42
IN2	3.48	3.12	1.33	3.11	4.27	3.53	3.21	2.65	3.47	3.39	2.47
IN3	2.90	2.74	1.27	2.74	3.58	2.83	2.98	2.55	2.57	3.13	2.42
IN4	3.15	3.06	1.27	2.82	4.25	3.31	3.10	2.50	3.10	3.35	2.26
IN5	3.50	3.61	2.07	3.32	4.52	3.71	3.64	2.95	3.65	3.68	3.00
IN6	3.54	3.49	1.47	3.55	4.23	3.61	3.76	2.70	3.65	3.66	2.74
NF1	3.31	3.17	1.27	3.11	4.18	3.51	3.14	2.60	3.58	3.26	2.42
NF2	4.19	4.16	4.20	4.14	4.23	4.17	4.12	4.30	4.17	4.16	4.21
NF3	4.40	4.33	4.33	4.36	4.38	4.31	4.45	4.35	4.23	4.44	4.42
NF4	3.27	3.26	2.07	3.56	3.23	2.92	3.76	3.25	2.65	3.74	3.00
NF5	3.83	3.36	1.67	3.89	3.73	3.53	3.90	2.95	3.35	3.94	2.79
NF6	2.92	2.57	1.07	2.73	3.33	2.81	2.71	2.45	2.60	2.90	2.37
NF7	2.92	2.75	1.13	2.70	3.68	3.03	2.83	2.20	2.90	2.92	2.83
NF8	2.96	3.00	1.33	2.74	4.00	3.31	2.83	2.35	3.18	3.03	2.43
EC1	4.37	4.30	4.20	4.26	4.50	4.42	4.26	4.20	4.43	4.31	4.21
EC2	4.12	4.13	4.07	4.05	4.27	4.14	4.14	4.05	4.05	4.23	3.95
EC3	2.96	3.13	1.13	2.86	4.10	3.49	2.98	1.95	3.37	3.19	1.95
EC4	4.08	4.20	4.13	4.15	4.15	4.19	4.19	3.95	4.20	4.18	3.95
EC5	2.65	2.49	1.20	2.53	3.13	2.68	2.69	1.95	2.60	2.66	2.16
EC6	2.67	2.72	1.13	2.73	3.50	2.92	2.71	2.05	2.83	2.94	2.21
EC7	3.19	3.52	1.40	3.08	4.63	3.90	3.21	2.20	3.37	3.19	1.95
EC8	3.40	2.97	1.33	2.83	4.37	3.42	3.17	2.35	3.10	3.35	2.26
Mean	3.52	3.32	1.92	3.29	4.14	3.59	3.44	2.83	3.50	3.54	2.81

According to Table 3, SCSTV varied with the demographic factors of age, educational level, and income. However, Table 4 shows that only age was significantly associated with the SCSTV ($r = 0.640$, $p < 0.01$) and its subscales, and with the subscales of membership ($r = 0.629$, $p < 0.01$), influence ($r = 0.609$, $p < 0.01$), needs fulfillment ($r = 0.484$, $p < 0.01$), and emotional connections ($r = 0.646$, $p < 0.01$). Age was also significantly associated with educational level ($r = 0.606$, $p < 0.01$) and income ($r = -0.542$, $p < 0.01$). Consequently, age differences were fundamentally responsible for the discrepancies in SOC scores across educational levels and socioeconomic groups, which is consistent with the findings of Peterson, Speer, and McMillan [22].

Table 4. Demographic characteristics of participants.

Variables	Gender	Age	Educational Level	Income
SOC	−0.050	0.640 *	−0.166	−00.93
Membership	0.015	0.629 *	−0.193	−0.144
Influence	−0.067	0.609 *	−0.151	−0.096
Needs fulfillment	−0.078	0.484 *	−0.105	−0.027
Emotional connections	0.016	0.646 *	−0.258	−0.178
Gender	-	0.124	−0.429	−0.253
Age	0.124	-	−0.606 *	−0.542 *
Educational level	−0.429 *	−0.606 *	-	0.739 *
Income	−0.253 *	−0.542	0.739 *	-

* $p < 0.01$.

4.2. Results of Method 1

Table 5 presents the first- and second-order factor loadings of the SCSCTV. The loadings of ME1, NF2, EC2, and EC4 were below 0.5 (Figure 4), which means these four items were not valid in this model. Additionally, the four-factor SCSCTV with 28 items provided a poor fit to the data (Table 5). After removing these four items and reloading, although the four-factor SCSCTV with 24 items reported a better fit than the former one and the loadings of the 24 items were over 0.5 (Table 5 and Figure 5), it still did not meet all the acceptable fit indices and had poor validity.

Table 5. Fit statistics for SCSCTV confirmatory factor analysis.

Measures of Fit	Acceptable Fit	Models	
		Four-Factor SCSCTV with 28 Items	Four-Factor SCSCTV with 24 Items
χ^2	-	574.818	473.572
df	-	344	284
χ^2/df	<3	1.67098256	1.66750704
RMSEA	<0.10	0.074	0.072
CFI	>0.90	0.898	0.901
TLI	>0.90	0.888	0.890

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; and LI = root mean square error of approximation.

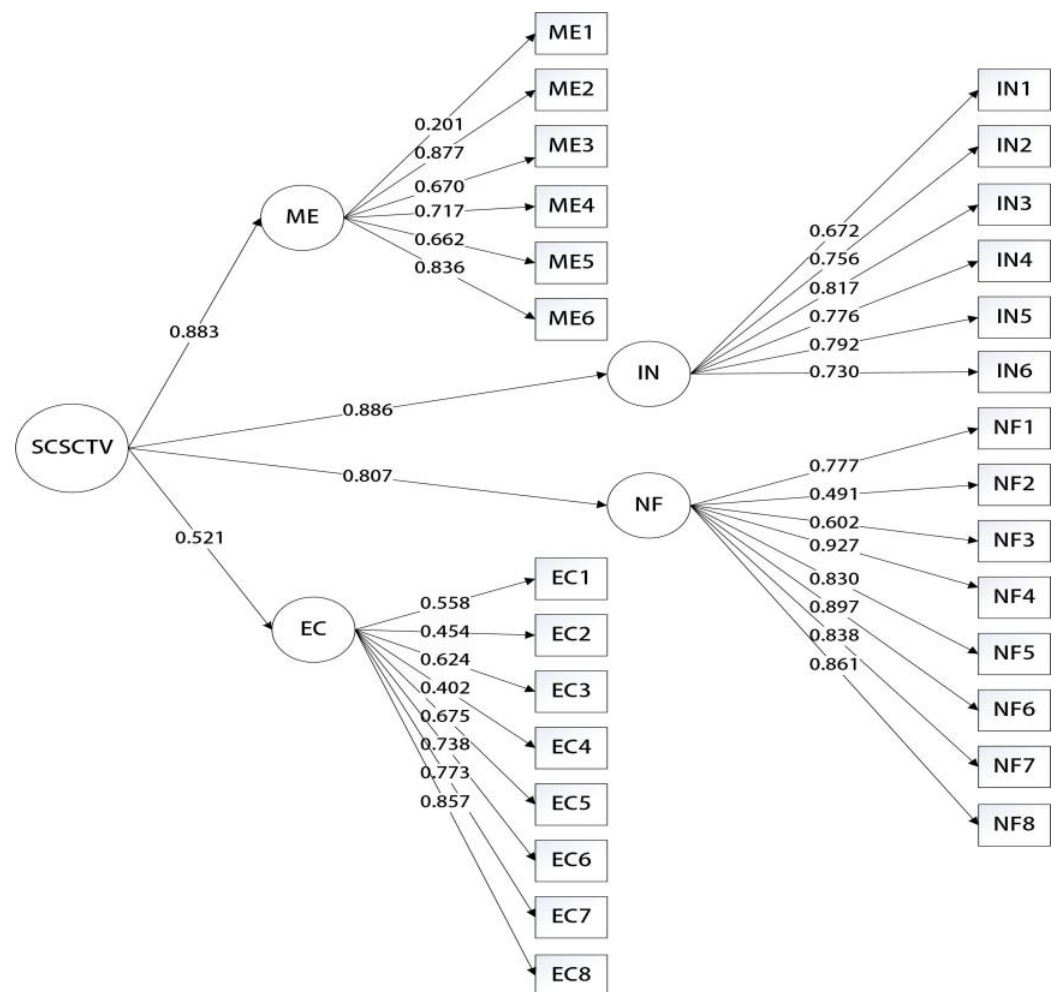


Figure 4. Factor loadings of the four-factor SCSCTV with 28 items.

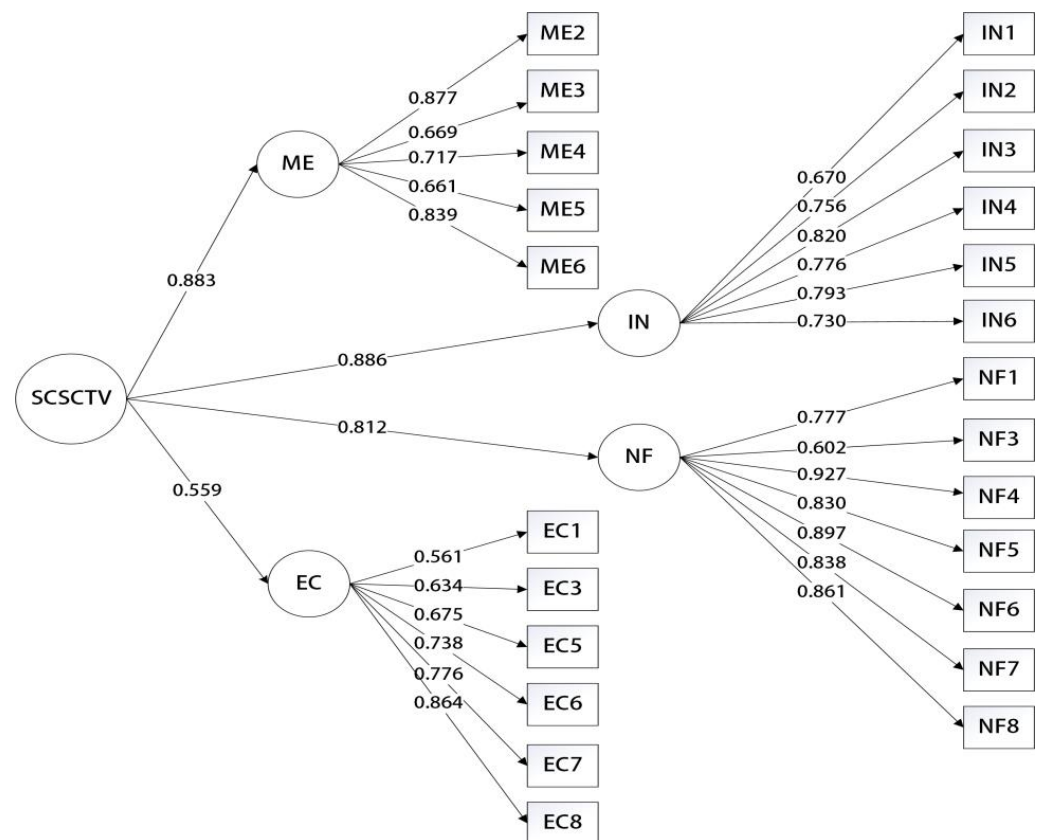


Figure 5. Factor loadings of the four-factor SCSCTV with 24 items.

4.3. Results of Method 2

4.3.1. Qualitative Analysis

As all the statements are positive descriptions, higher scores reflected higher levels of participants' feelings for SOC. However, for items ME1, NF2, NF3, EC1, EC2, and EC4, participants from the three villages provided similar scores (Table 3), and the reasons for this are discussed below:

For ME1 (I feel like a member of this village), the responses to this statement are related to China's Hukou system. The Hukou system geographically restricts people's right to get access to public resources; for example, migrant children can attend primary and middle schools in cities, but they are barred from city high schools as they can only take college entrance examinations in their household registration places (HRP) [51]. In this sense, migrant workers prefer to regard themselves as members of the HRP rather than where they work and live. Thus, most of these participants agree that they are members of their villages.

For NF2 (this is a pretty village), the sites for Chinese traditional villages are often very close to mountains or rivers [6]. The natural environments surrounding Chinese villages are better than those in cities, especially when traditional villages are less influenced by industry. Villagers can enjoy beautiful natural scenery and fresh air and are less worried about pollution and noise. Thus, most participants' responses to this statement are positive.

For NF3 (I feel safe here), EC1 (villagers know each other well), and EC2 (most of the villagers are kind and easy to make friends with); these three statements are related to the nepotistic Chinese rural society. Firstly, in a village, many villagers are relatives. Some villages only have one clan, which means all the villagers are relatives. Secondly, compared to cities, villages cover smaller areas, and villagers' daily lives are carried out in a limited district with familiar neighbors, thus outsiders can be easily recognized once they enter villages. Although the existing studies also report general safety issues when

the majority of young male villagers leave to work in the cities [52], because the studied villages have only one or two clans, there are fewer problems with safety compared to other villages.

For EC4 (in this village there are customs and traditions that I usually respect), usually, the customs and traditions of traditional villages have been handed down through generations. Even if for some customs there are difficulties in tracing their origins, many Chinese people in the countryside, whether old or young, still choose to believe them [53].

In conclusion, items ME1, NF2, NF3, EC1, EC2, and EC4 do not work when used to assess a sense of community in traditional Chinese villages; therefore, these items are excluded from the testing model. As a result, the four-factor, 28-item model has been revised into a four-factor, 22-item model. In the following section, the suitability of these two models for studying Chinese villages are further tested.

4.3.2. Quantitative Analysis

The standardized regression weights in Figure 6 demonstrate that each of the SCSTV items has strong loadings on the four factors and that each factor has a strong loading on the SCSTV construct. All first- and second-order loadings are significant at the 0.001 level. The second-order standardized regression weights are at least 0.636, and the first-order standardized regression weights are at least 0.630 (Figure 6).

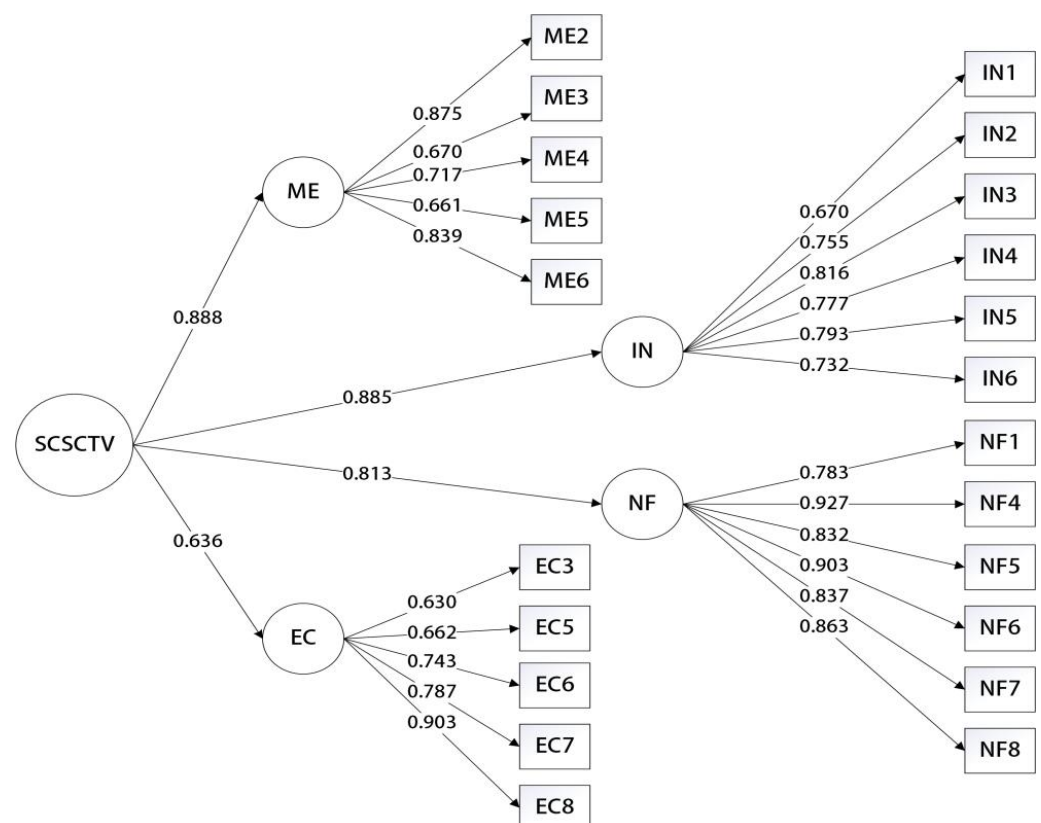


Figure 6. Factor loadings of the four-factor SCSTV with 22 items.

As can be seen in Table 6, the one-factor SCSTV with 22 items presented the poorest fit to the data from the sample: the discrepancy-to-ratio value was greater than 3.0; the value for RMSEA was over 0.08; and the values for CFI and TLI were below 0.9. Although the discrepancy-to-ratio value and the value for RMSEA are within the threshold for an acceptable fit, the values for CFI and TLI are not acceptable. The four-factor SCSTV with 22 items has all these fit indices within the threshold for acceptable fit, which means this model has the best fit. These results demonstrate that the McMillan and Chavis theory

model [13] is also a useful framework for assessing SOC in these Chinese cases and that qualitative analysis can be used to improve the results.

Table 6. Fit statistics for SCSTV confirmatory factor analysis.

Measures of Fit	Acceptable Fit	Models	
		Four-Factor SCSTV with 22 Items	One-Factor SCSTV with 22 Items
χ^2	-	333.735	762.289
df	-	203	209
χ^2/df	<3	1.64401478	3.64731579
RMSEA	<0.10	0.073	0.148
CFI	>0.90	0.929	0.699
TLI	>0.90	0.919	0.667

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; and LI = root mean square error of approximation.

In addition, after controlling for demographics, the partial correlations revealed in Table 7 demonstrate the strong relationship between SCSTV and the four factors, and the range of partial correlations between the four factors is from 0.407 to 0.846. These results provide support for the four-factor structure of SCSTV and McMillan and Chavis theory as a robust model for measuring SOC in the studied cases.

Table 7. Partial correlations between SCSTV and its subscales.

Variables	SCSTV	Membership	Influence	Needs Fulfillment	Emotional Connections
SCSTV	-	0.790 *	0.846 *	0.818 *	0.692 *
Membership		-	0.649 *	0.463 *	0.407 *
Influence			-	0.560 *	0.448 *
Needs Fulfillment				-	0.447 *
Emotional Connections					-

* $p < 0.01$.

5. Discussion

Villagers' SOC may significantly influence their willingness to live in their villages, and it can also provide guidance for rural revitalization policies in China. Although numerous studies have focused on developing a sense of community scale, no SOC measurement scale is universally acknowledged. Additionally, these studies were mostly conducted in the West, which cannot fully capture the significance of communities in Chinese traditional villages and may lead to unexpected results. In this sense, this study developed a place-based Sense of Community Scale for Chinese Traditional villages (SCSTV), based on McMillan and Chavis's (1986) theory, which is the classical theory in the field of SOC, and examined the reliability and validity of the scale.

Initially, the SOC scales were reviewed along with all their items gleaned from existing studies, and items were selected that could be used directly in this study. Further revised items were introduced in order to allow for a better understanding by the villagers, and some items were excluded that were irrelevant to the realities of Chinese traditional village communities. Next, four new items were created based on the characteristics of traditional Chinese village communities that the existing studies did not mention, referring to kinship society, village compact, and intangible heritage. Finally, a 28-item scale SCSTV was developed, and these items were reassigned into the four factors (membership, influence, need fulfillment, and emotional connections) of McMillan and Chavis's theory. Following these adaptations, the newly developed SCSTV was tested in three Chinese traditional villages in Chongqing, southwest China. As Peterson, Speer, and McMillan [22] indicated, measurement weaknesses may lead to inaccurate results in SOC scale development; as a

result, two methods were proposed to test the four-factor SCSCSTV. The first method used the collected data directly in confirmative factor analysis (CFA), similar to the normal scale development process [54]; and the second method used qualitative analysis to initially exclude invalid items and then used CFA.

The results showed that using the second method can lead to a better result, as the four-factor SCSCSTV with 22 items provided a better fit. Additionally, the second-order and first-order factor structures of the SCSCSTV had been confirmed, and the four-factor SCSCSTV with 22 items also provided a better fit than its one-factor version. This provides strong empirical evidence for the underlying theory proposed by McMillan and Chavis [13]. As for demographic characteristics, gender is not an element that significantly influences the villagers' SOC, and men and women participants reported similar mean SOC scores. Although participants with different ages, educational levels, and incomes showed different levels of SOC, age is the only element that leads to a significant difference in terms of the villagers' sense of community.

One of the strengths of this study is that it developed a comprehensive SOC scale with consideration for both existing studies and the characteristics of traditional Chinese village communities. The second strength is that it introduced qualitative analysis as a complementary method in the scale development process.

The findings of this study contribute to the existing studies on the subject in three aspects. Firstly, Cruz and High [50] point out that using CFA is the best way to identify and selected valid items now and in the future. The authors suggest here that combining qualitative analysis with CFA may be more effective, which may encourage other scholars to consider more flexible methods in scale development studies. Secondly, intangible heritage has been confirmed as an important element for the SOC of villagers in Chinese traditional villages, while only Tartaglia [23] introduces the concept of intangible heritage with only one item in the literature of the West. Thirdly, the findings of this study strongly support McMillan and Chavis's four-factor theory, based on studies in three traditional villages in Chongqing, southwest China. The authors also suggest that, rather than regarding SCI as a one-factor measure, which might cast doubt on the validity of McMillan and Chavis's theory [16,55], it is better to use a SOC scale with a better fit to the four-factor construct [22].

However, more research is needed to test the four-factor theory by exploring more cases with larger populations to confirm its reliability and validity. Likewise, the proposed four-factor SCSCSTV should be further tested by applying it to more villages in Chongqing or villages in other regions of China. In addition, many scholars use data collected in one area as a single sample so they can then compare the differences in validity in different areas or verify the developed scales more than once in their studies [54,56], but this method is limited by the population size of Chinese traditional villages.

6. Conclusions

This study developed a reliable scale that included 22 items for the analysis and assessment of the SOC in rural China. In the literature review of the existing studies on the topic, McMillan and Chavis' original definition of sense of the community was used, one that focuses on group cohesiveness. The authors also found agreement with McMillan and Chavis' attempts to explore the dynamic interactions of various elements that work together to produce the experience of sense of a community. However, this project recognized significant differences between rural China and the urban environment that produced McMillan and Chavis's four factor assessment methods and incorporated new assessment items to reflect the differences.

The assessment methods of the sense of community, such as the one developed by McMillan and Chavis and others, are based on the history of western urban development, where typological spatial divisions and zoning were formed based on zoning laws, which represented a spatial manifestation of the labor division of zones [57]. Individuals affiliated with an established framework in the social structure cultivated interpersonal connections

through the framework, which created clear boundaries between individuals. There is an inverse relationship between urbanism (privacy and anonymity) and neighboring preferences (preference for frequent neighbor interaction), although pro-urbanism decreases as perception of safety increases [13].

The development of villages in China has experienced combined influences from both traditional social relationships such as consanguinity and regional links and the administrative systems that have been implemented since the 1950s. As a result, the sense of community is closely related to social relationships that work with both bottom-up and top-down approaches [43]. Bottom-up approaches are where individuals and groups of villagers work innovatively to seek new opportunities based on a social structure comprised of many social networks. Individuals are interconnected by diverse forms of social ties. Top-down measures include policies, funding streams, and other support mechanisms and services that are filtered down through the administration system. Both top-down and bottom-up measures work together to impact the sense of community.

The differences between those two social systems are reflected in the different understandings of the rural environment and neighborhood. In China today, as demonstrated by this study, the pro-urbanism approach is associated with job opportunities and higher income opportunities in cities, which are the main reasons that led to the phenomenon of empty villages. Pro-urbanism does not particularly relate to preferences for privacy and anonymity; therefore, in these assessment methods for rural China, the authors included four new items referring to traditional kinship society, the village compact and new administration systems, and intangible heritage. Finally, a 28-item SCSTV was developed and tested with case studies of three villages.

The four-factor SCSTV with 22 items has all the fit indices within the threshold for acceptable fit, which means this model provides a good fit. These results demonstrate that by adapting the McMillan and Chavis theory model and combining it with qualitative analysis that led to new assessment items, it can create a useful framework for assessing SOC in those Chinese cases and one that can be used to improve the assessment results.

Given the limitations, this study provides a tentative step towards the application of McMillan and Chavis's SOC theory and the development of a SOC scale in the communities of Chinese traditional villages. To the authors knowledge, this is the first study to verify the essential four-factor SOC theory in China and develop a SOC scale in the context of Chinese traditional villages.

However, the SCSTV is not yet a perfect scale as there is a lack of theoretical analysis on industrial development, land ownership, and village governance, all of which are important factors contributing to the improvement of villagers' SOC in China. The authors therefore suggest that a necessary improvement to this study is to seek to introduce more factors related to the Chinese rural context into the theoretical framework, and to adapt McMillan and Chavis's four-factor SOC theory. The authors believe that the findings of this study have value for future researchers as they can further facilitate additional investigation and comprehension of the role of SOC in China's rural revitalization.

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