IJRiCE
http://ppsfip.ppj.unp.ac.id

International Journal of Research in Counseling and Education
Volume 07 Number 01 2023
ISSN: Print 2620-5750 – Online 2620-5769
DOI: https://doi.org/10.24036/00631za0002

Received June 15th, 2023; Revised August 10th, 2023; Accepted September 9th, 2023

Psychometric properties of Sense of Community Scale using Nigerian secondary school students

Christian S. Ugwuanyi[1]
[1]Faculty of Education, University of The Free State, South Africa
*Corresponding author, e-mail: ugwuanyiCS@ufs.ac.za

Abstract
The populous of Nigeria is fleeing in dread as a result of the obscene security breaches. The school-age teens who may not have a strong feeling of their community are those who are most impacted. Due to the lack of comparable studies in Nigeria, this study carried out the factorial validation of a 36-item SoCS created by Cicognani et al. (2006). The tool was accepted and verified. For this study, a sample of 489 secondary school students was selected using a straightforward random selection procedure. Factor analysis was used to evaluate the validity and reliability of the instrument as part of the factorial validation process. In addition, the exploratory and confirmatory factor analyses were conducted using the principal component matrix with Varimax rotation, and the data model fit was assessed using the root mean square approximation (RMSEA) and confirmatory factor index (CFI). The study's findings revealed that SoCS in the Nigerian setting exhibited good model fit (RMSEA =.041, CFI =.951) and reliability (0.89). The sense of community among teenagers enrolled in school can be measured with the SoCS.

Keywords: Psychometric properties, Secondary school students, Sense of community scale.

How to Cite: Ugwuanyi, C.S. (2023). Psychometric properties of Sense of Community Scale using Nigerian secondary school students. *International Journal of Research in Counselling and Education*, 7 (1): pp. 50-57, DOI: https://doi.org/10.24036/00631za0002

Introduction

Nigeria is now dealing with a number of security issues, including those caused by Boko Haram, the Eastern Security Network (ESN), banditry, and more. Ogundele and Ogundele (2021) claim that a number of problems, like as kidnapping, insurgency, homicides caused by armed robbery, abductions, rapes, etc., have a negative impact on the level of living for the Nigerian population. Furthermore, Attah et al. (2020) pointed out that practically all of Nigeria's 36 states and the Federal Capital Territory have experienced extended periods of insecurity. Given the aforementioned, one would start to ask how Nigeria's present security concerns will affect teenagers' sense of community (SoC). According to Li et al. (2021), citing McMillan and Chavis (1986), SoC is the resident's impression of the community, including its social and physical characteristics. To put it another way, a sense of community refers to an individual's sense of or sense of belonging to the group they have found themselves in.

SoC is significant to a person's impressions of the environment in or around the community as well as to their socioeconomic level and personal qualities (Liu, Zhang, Liu, Li, & Wu, 2017). According to Bottini (2018), a positive social environment contributes greatly to SoC by fostering a stable and secure atmosphere. Yu (2021) discovered that a person's environment has a big impact on how they feel about their community. Studies have shown that SoC is a crucial aspect for promoting the development of the community, according to Talö et al. (2014). According to Cicognani et al. (2012), pleasant interactions with peers and adults in a variety of contexts—including schools, churches, markets, etc.—increase adolescents' SoC. Additionally, SoC aids in the formation of an adolescent's social and personal identities as well as beneficial developmental outcomes (Cicognani et al., 2012). According to Grady (2017), knowing how teenagers experience their communities is based on their psychological sense of belonging.

Literature revealed that despite the wide array of significant consequences of students' feeling of community, no measures exist with fully established psychometric features (Prati et al., 2017). Although the

preliminary evidence of SoC's psychometric quality was encouraging, the scale still requires additional validation (Story, 2018). In a cohort of in-school adolescents in Italy, both versions of the SoC scale—complete, 36 items, and short, 20 items—had satisfactory psychometric qualities (Cicognani et al., 2012). Similar research revealed that the scale has a high reliability index utilizing students in the Italian city of Genoa (Prati et al., 2017). According to Peterson et al. (2008), the SoC scale's items and its subscales have excellent levels of internal consistency and dependability. There are many different measures of sense of community, but they have serious psychometric issues like reliability and validity (Jason et al., 2015). Three Italian samples' confirmatory and exploratory factor studies of the SoC scale revealed that it was unidimensional and had strong internal consistency (Prati et al., 2020).

The aforementioned has shown how SoC affects adolescents' psychological health and ability to contribute to their community. According to the literature, the concept of SoC has a substantial impact on any society's efficiency (Halamová, Kanovsky & Nanitová, 2018). However, it was noted from the literature review that there is a lack of actual data on the psychometric features of the SoC scale in different parts of the world. A small number of studies were found to have been done in Italy, but none had been done in any of the African nations that include Nigeria. Therefore, the purpose of this study was to evaluate the SoC scale's factorial validity using secondary school students in Enugu State, Nigeria. With regard to exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), the study construct specifically confirmed the SoC scale.

Method

489 secondary school students who attended senior secondary government-owned institutions in Enugu State, Nigeria, were the participants in this study. In order to choose pupils who are prone to insecurity, the researchers conveniently sampled this group of individuals. The measure created by Cicognani et al. (2006), the Sense of Community-scale (SoCS), was verified by this study. According to Cicognani et al., the SoCs scale is a 36-item survey with a 5-point scale ranging from 0 (not at all true) to 4 (totally true). Examples of such items include "*There are enough initiatives available for young people in my place, young people find it easy to obtain information about things that interest them in my place, there are many opportunities for young people to pass the time, I have easy access to a variety of activities in my place, young people have a variety of activities to engage in, and young people like me have a variety of situations and initiatives that involve them*." The scale is divided into five subscales: opportunities for influence subscale (5), support and emotional connection with peers subscale (2), support and emotional connection with community subscale (3), and sense of belonging subscale (4). The first subscale measures the satisfaction of needs. Subscales 1 and 2 each had seven items with a Cronbach alpha of .82, subscales 3 and 6 had six items with a Cronbach alpha of .81, subscales 4 and 5 had nine items with a Cronbach alpha of .85, and subscales 1 and 5 had four items with a Cronbach alpha of .71.

The Department of Science Education at the University of Nigeria, Nsukka's committee on research ethics was consulted in order to obtain ethical approval for the conduct of this study. As a result, the ethical approval was properly granted. Additionally, before taking part in the research, individuals had to fill out and sign informed permission forms. Copies of the measure were printed and given to participants at their various school sites in order to assess the construct validity of the SoCS in the Nigerian context. The researcher split themselves into several groups of two each to facilitate simple administration and gathering of copies of the measure. Participants in each of the sampled universities had 30 minutes to answer the measure's items. The filled-out copies of the measure were collected from the participants at the conclusion of the 30-minute period, sorted, and arranged appropriately for analysis. The data was analyzed using exploratory and confirmatory factor analysis with SPSS and IBM SPSS AMOS, respectively. Principal component analysis with varimax rotation was used for the exploratory factor analysis, while IBM SPSS AMOS was used for the confirmatory factor analysis. Confirmatory factor index (CFI), the Chi-square goodness of fit test, and root mean square error of approximation (RMSEA) were used to evaluate the model's fit to the data. This analytical approach has been used in research by Ugwuanyi and Okeke (2020a, 2020b), Ene et al. (2021), and Ugwuanyi et al. (2021).

Results and Discussion

Table 1. *Kaiser-Meyer-Olkin (KMO) and Bartlett's Test for the Exploratory factor analysis (EFA)*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.856
Bartlett's Test of Sphericity	Approx. Chi-Square	1985.89
	Df	845
	Sig.	.000

Table 1 demonstrates that a suitable sample size for the factor analysis is one with a value of .856 for the KMO measure for the EFA of the instrument. The correlation matrix is not an identity matrix, as indicated by Bartlett's test of sphericity, which is significant at p >.05.

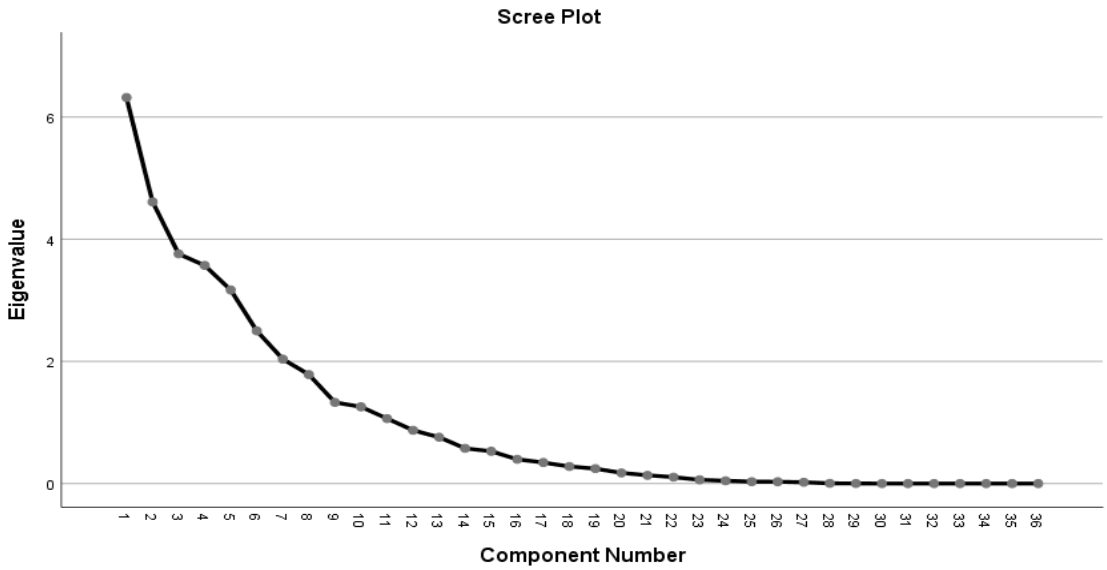


Figure 1. Scree plot for the EFA of the SoCS items

Table 2. Extraction and rotation sum of squares loadings associated with the Factors

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.319	17.554	17.554	6.319	17.554	17.554
2	4.611	12.808	30.361	4.611	12.808	30.361
3	3.760	10.444	40.805	3.760	10.444	40.805
4	3.571	9.918	50.724	3.571	9.918	50.724
5	3.169	8.803	59.527	3.169	8.803	59.527

The five SoCS subscales' eigenvalues are shown in Table 2 to vary from 3.169 to 6.319, with the highest eigenvalue explaining 17.554% of the data and the lowest eigenvalue explaining 8.803%. Additionally, Table 3 demonstrated that there was little difference in the values of the rotation and extraction eigenvalues. This indicates that, at the level of extraction, the majority of the SoCS items loaded highly on the five criteria.

Table 3. Rotated Component Matrix for the Items of SoCS

s/no	**Item statement** **Satisfaction of needs α = .82 for the original version**	1	2	3	4	5
1	Enough initiatives are available for young people in my place	.565				
2	Young people find it easy to get information about things that interest them in my place	.662				
3	There are many opportunities for young people to amuse themselves	.585				
4	I have an easy opportunity to do many different things in my place	.709				
5	Young people have many activities to do in my town	.444				
6	Young people like me have so many situations and initiatives that involve them	.425				
7	My place gives me ample opportunities to meet others	.528				

s/no	Item statement	1	2	3	4	5
	Satisfaction of needs α = .82 for the original version					
	Support and emotional connection with peers α = .90 for the original version					
8	In my place, I play with other adolescents a lot		.405			
9	In my place, most of my friends are young people		.640			
10	In my place, staying with adolescents interests me the most		.468			
11	In my place, I feel freely sharing experiences as well as interests with other young people		.530			
12	In my place, I share a lot in common with other young people		.528			
13	I have people that are willing to stay beside me if I need it in my place		.512			
14	I usually ask for a help from someone if the need be in my area		.611			
15	I usually find someone to talk or chat with if I wish in my town		.443			
16	In terms of moral support for me, I have people who are important sources of it		.402			
17	In taking decisions, I find it difficult in my place to find someone that can give some advice		.489			
	Support and emotional connection with community α = .81 for the original version					
18	There is a collaboration among people in my town			.468		
19	My people have minds of supporting each other			.510		
20	In terms of improving things, my people work together			.464		
21	There are people in my place who are willing to help each other			.453		
22	In order to get along well, my people look for each other			.579		
23	In my place, people are willing to share things with others			.499		
	Sense of belonging α = .85 for the original version					
24	I find my place as a place to live in				.409	
25	My place is a pretty town				.490	
26	I feel much belonging in my place				.553	
27	In my place, I feel safe				.776	
28	My place has many advantages compared to others				.702	
29	Very nice and well-organized local holidays and celebrations attract many people to my place				.469	
30	During local holidays and celebrations, I feel very proud to live in my place				.440	
31	Noticing that many people participate and get involved when some local events are organized interests me				.476	
32	Many places are loved and appreciated by all inhabitants in my place				.521	
	Opportunities for influence α = .71 for the original version					

s/no	Item statement	1	2	3	4	5
	Satisfaction of needs α = .82 for the original version					
33	It is my wish that young people will be greatly improved when we engage more in my place					.427
34	I think that we could be able to specially organise something in my place if only we had the opportunity					.560
35	Having a good chance of reaching my people's desired goals is dependent on our people being very well organised					.500
36	Things that are not working properly for the community can be changed by my people if an opportunity is given					.457

Table 3 shows the rotated factor loadings of the items of SoCS that survived the factor analysis. It showed that all 36 items had factor loadings of more than 0.35. This shows that the items of the original version of SoCS by Cicognani et al. (2006) had good factor loadings using Nigerian secondary school students.

Table 4 . Reliability estimates of the subscales

Subscale	Cronbach Alpha (α)
Satisfaction of needs	.780
Support and emotional connection with peers	.865
Support and emotional connection with community	.890
Sense of belonging	.756
Opportunities for influence	.801
SoCS	**.899**

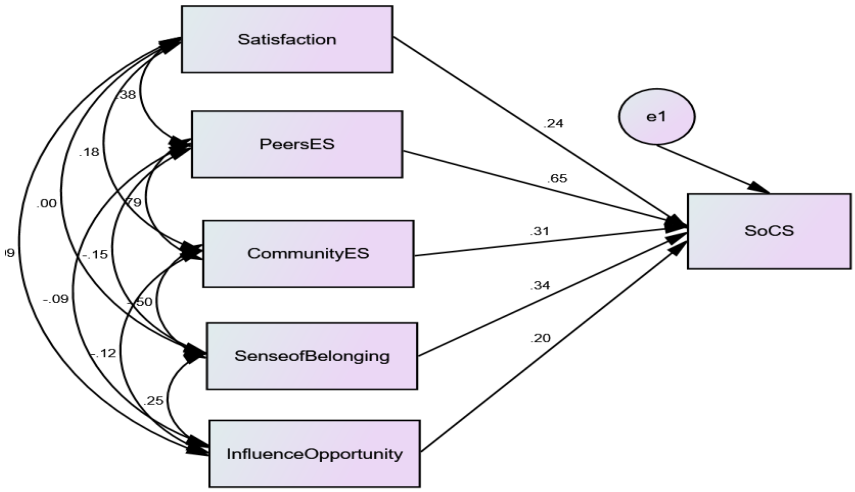
In contrast to the 0.82 value obtained by Cicognani et al. (2006), Table 4 demonstrated that the internal consistency reliability index of the items of subscale 1 (Satisfaction of Needs) is .780. In a similar manner, subscale 2 (Support and emotional connection with peers) had a reliability index of .865 using the Nigerian sample as opposed to .90 for the original version. Subscale 3 (Support and emotional connection with community) had a reliability index of .865 as against .810; subscale 4 had a reliability index of .756 against .850; and subscale 5 had a reliability index of .801 as opposed to 0.71 for the original version. Additionally, the overall reliability score of SoCS for the Nigerian sample was .899, indicating that SoCS had a high-reliability index for the sample of university students in Nigeria.

Table 5. Model Fit Indices for the TSES Data

Model	CFI	RMSEA	PCFI	$\chi 2$	p
Default model	.951	.041	.956	197.84	<.050

CFI= Confirmatory Factor Index, $\chi 2$ = Chi-Square, p = Probability value, RMSEA = Root Mean Square Error of Approximation, PCFI = Parsimony Confirmatory Factor Index,

Table 5 showed the different goodness-of-fit indices of the SoCS data. It revealed that that the default *CFI* = .951, *RMSEA* = .041; *PCFI* = .956, $\chi 2$ (781) = 197.84, p <.050. Thus, SoCS data had an adequate model fit due to the fact that the RMSEA value was less than .05 and the CFI value was higher than .90. Besides, the standardized regression weights for the five-factor model were statistically significant with the regression coefficients of the 5 subscales ranging between .20 and .65 as shown in Figure 2.



Note: Satisfaction = Satisfaction of needs; PeersES = Support and emotional connection with peers; CommunityES = Support and emotional connection with community; SenseofBelonging = Sense of belonging; InfluenceOpportunity = Opportunities for influence, SoCS = Sense of Community Scale

Figure 2. Path diagram for the regression coefficients of the subscales of SoCS

The purpose of this study was to establish the validity of the sense of community scale (SoCS) that Cicognani et al. (2006) established. Since there is presently no Nigerian-validated scale of SoC to assess secondary school students' sense of community in the context of various insecurity problems, this research was necessary. It was found that all the 36 items of the SoCS by Cicognani et al. (2006) were extracted using the Nigerian sample, according to the findings of this validation study. This is an indication that SoCS is a reliable instrument for measuring the community sense of belonging of the secondary school students. Ogundele and Ogundele (2021) uncovered evidence that a string of crises in Nigeria have a negative effect on the general population's standard of living. Additionally, Attah et al. (2020) pointed out that practically all of Nigeria's 36 states and the Federal Capital Territory have experienced extended periods of insecurity.

Despite the fact that some of the SoCS items in the Nigerian context were found to be factorially impure, the items of its subscales showed strong reliability indices. This result is consistent with those of other authors who have validated the same scale in several nations, particularly Italy. According to Cicognani et al. (2012), an Italian population of in-school adolescents found that both the 36-item and the 20-item versions of the SoCS showed strong psychometric qualities. The SoCS was shown to have a high dependability index by Prati et al. (2017) using students in the Italian city of Genoa. According to Peterson et al. (2008), the SoC scale's items and its subscales have excellent levels of internal consistency and dependability. Three Italian samples' confirmatory and exploratory factor studies of the SoC scale revealed that it was unidimensional and had strong internal consistency (Prati et al., 2020). Moreover, Ugwuanyi et al. (2022) found that revealed that SoCS in the Nigerian setting exhibited good model fit and reliability using undergraduate students enrolled into Mathematics, Chemistry and Physics, education programs. In the Nigerian setting, this study was able to establish the psychometric qualities of SoCS. These results, then, have implications for the expertise of educational managers and assessors. The educational administration will have access to the psychometrically sound measure for assessing the pupils' sense of community thanks to the study's findings. In a similar manner, educational evaluators will be able to assess the validity and reliability of the instrument used to precisely and consistently measure students' feeling of community by using the research's findings

Conclusion

Using the Nigerian sample, this study was able to assess the psychometric characteristics of the 36 items in the SoCS. There has not been any prior research employing the Nigerian sample that is known to be comparable to this study. Thus, the researcher came to the conclusion that SoCS showed good dependability utilizing the Nigerian sample based on the data that were available. Based on these results, it was advised that school officials make an effort to evaluate the learners' sense of community levels using the validated sense of community scale.

References

Attah, N. E., Sambo, U., Sule, B., Bello, M. A., & Yoserizal, M. (2020). *COVID19 and Increased Security Challenges in Northern Nigeria : Interrogating Armed Banditry in Northwestern Nigeria*. 33–44.

Bottini, L. (2018). The effects of built environment on community participation in urban neighbourhoods: an empirical exploration. *Cities*, *81*, 108-114.

Cicognani, E., Zani, B., & Albanesi, C. (2012). *Sense of community in adolescence*. *December*.

Ene, C.U., Ugwuanyi, C.S., Okeke, C.I.O., Nworgu, B.G., Okeke, A.O., Agah, JJ., Oguguo, B.C., Ikeh, F.E., Eze, K.O., Ugwu, F.C., Agugoesi, O.J., Nnadi, E.M., Eze, U.N., Ngwoke, D.U., & Ekwueme, U.H. (2021). Factorial Validation of Teachers' Self-Efficacy Scale using Pre-Service Teachers: Implications for Teacher Education Curriculum. *International Journal of Higher Education,* 10(1), 114-121. https://doi.org/10.5430/ijhe.v10n1p113

Jason, L. A., Stevens, E., & Ram, D. (2015). Development of a three-factor psychological sense of community scale. *Journal of community psychology*, *43*(8), 973-985. https://doi.org/10.1002/jcop

Grady, L. (2017). *The world of adolescence: using photovoice to explore psychological sense of community and wellbeing in adolescence with and without an intellectual disability*. Victoria University (Melbourne, Vic.).

Halamová, J., Kanovský, M., & Naništová, E. (2018). Development and psychometric analysis of the sense of community descriptors scale. *Psychosocial Intervention, 27*, 44–55. https://doi.org/10.5093/pi2018a8

Li, X., Li, Z., Jia, T., Yan, P., Wang, D., & Liu, G. (2021). The sense of community revisited in Hankow , China : Combining the impacts of perceptual factors and built environment attributes. *Cities*, *111*(August 2019), 103108. https://doi.org/10.1016/j.cities.2021.103108

Liu, Y., Zhang, F., Liu, Y., Li, Z., & Wu, F. (2017). The effect of neighbourhood social ties on migrants' subjective wellbeing in Chinese cities. *Habitat International*, *66*, 86-94.

Ogundele, M.O. & Ogundele, A.G. (2021). Managing safe school initiatives for sustainability and national security of Nigerian education. *Sapientia Global Journal of Arts, Humanities and Development Studies (SGOJAHDS), 4*(2), 68 – 74.

Peterson, N. A., Speer, P. W., & McMillan, D. W. (2008). Validation of a brief sense of community scale: Confirmation of the principal theory of sense of community. *Journal of community psychology*, *36*(1), 61-73. https://doi.org/10.1002/jcop

Prati, G., Cicognani, E., & Albanesi, C. (2017). Psychometric properties of a multidimensional scale of sense of community in the school. *Frontiers in Psychology*, *8*, 1466. https://doi.org/10.3389/fpsyg.2017.01466

Prati, G., Procentese, F., Albanians, C., Cicognani, E., Wedding rings, A., Cats, F., Mannarini, T., Rochira, A., Tartaglia, S., Boyd, N., Nowell, B. & Kitten, S. (2020). Psychometric properties of the Italian version of the sense of community responsibility scale. *Journal of Community Psychology*, 1-21. 10.1002/jcop.22366 Available at http://hdl.handle.net/2318/1744221

Story, E.R. (2018). Measurement Invariance and Construct Validity of the Sense of Community Index. PhD diss., University of Tennessee. https://trace.tennessee.edu/utk_graddiss/5014

Talò, C., Mannarini, T., & Rochira, A. (2014). Sense of community and community participation: A meta-analytic review. *Social indicators research*, *117*(1), 1-28. https://doi.org/10.1007/sl

Ugwuanyi, C.S., Ene, C.U., Okeke, C.I.O., Eze, U.U, Okeke, A.O., & Ikeh, F.E. (2021). Factorial Validation of Children's Depression Inventory in Primary Schools in Nigeria. *International Medical Journal, 28*(1), 12 – 15.

Ugwuanyi, C.S. & Okeke, C.I.O. (2020a). Determinants of University students' interest in Science, Technology, Engineering and Mathematics Education in Nigeria: A case of a structural equation modelling. *International Journal of Mechanical and Production Engineering Research and Development,* 10(3): 6209–6218. http://dx.doi.org/10.24247/ijmperdjun2020590 Scopus and Schimago

Ugwuanyi, C.S., & Okeke, C.I.O. (2020b). Psychometric Properties of the Pain Self-Efficacy Questionnaire Using Nigerian University Students with Chronic Pain. *Indian Journal of Public Health Research & Development,* 11 (6):1517-1522. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Ugwuanyi%2C+C.S.%2C+%26+Okeke%2C+C.I.O.+%282020%29.+Psychometric+Properties+of+the+Pain+Self-Efficacy+Questionnaire+Using+Nigerian+University+Students+with+Chronic+Pain.+Indian+Journal+of+Public+Health+Research+%26+Development%2C+11+%286&btnG=

Ugwuanyi, C. C., Ugwuanyi, C. S., Onu, E. A., Kalu, I. A., Eze, B. A., Ani, M. I., Metu, I. C., Ezeaku, F. N., Onuoha, J. C., Ugwu, C. B. A., Okeke, A. M., Odo, I. O., Ugwuanyi, C. K., & Eze, U. N. (2022). Factorial validation of

sense of community scale using Nigerian mathematics, science, and social science education students: Implication for educational administrators and evaluators. *Journal of Community Psychology*, *50*, 1257–1268. https://doi.org/10.1002/jcop.22713

Yu, A. (2021), Open space and sense of community of older adults: a study in a residential area in Hong Kong, *Archnet-IJAR*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ARCH-11-2020-0260