



DEVELOPMENT OF SOCIAL CAPITAL SCALE FOR ADOLESCENT, VALIDITY, AND RELIABILITY STUDY FOR TURKISH POPULATION

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Abstract:

Aim: In recent years, the relationship between social capital (SC) and issues that concern people and society, especially health, has been a matter of curiosity. Most of the studies on social capital in the literature are for adults, and there is no wide-scale for adolescents. This study aimed to develop the Social Capital Scale for Adolescent. The child and adolescents' ecological environment and its interaction, structure, and social networks are important factors that affect the child and adolescents' biopsychosocial well-being. SC gives ecological environments level. The concept of SC is handled in different ways in terms of its plane (micro, mezzo, and macro), form (horizontal and vertical), intensity (strong and weak), and quality (binding, unifying, and bridging). **Methods:** This study is a methodological type of research. Participants were adolescents aged 13-19 who could be reached online, volunteered to participate in the study. A non-probability sampling method was used. **Results:** A total of 5946 adolescents participated in the study. Explanatory factor analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied to the dataset. As a result of EFA, the Social Capital Scale for Adolescents (SCS-A), consisting of 75 items and 17 factors, was obtained. The Cronbach's Alpha coefficient of the scale was 0.936, and the variance explained by the ranking was 66,3%. CFA satisfactory fit results were obtained in all fit indices. **Conclusion:** The SCS-A is valid, reliable, and sufficient for the Turkish population. This scale, which was created by considering all the elements of the concept of social capital, is thought that can be used in studies in the fields of social and health sciences.

Keywords: adolescent; social capital scale for adolescent; social capital; validity; reliability

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1. Introduction

The concept of capital, which has many dimensions, is one of the most frequently discussed topics in both sociology and economics literature and is treated in association with many variables. "Economic Capital" as the monetary equivalent of the investment, "Physical Capital" as the equivalent of machinery, equipment, equipment, infrastructures and immovables, the provision for competition and productivity in social values, human relations, education, knowledge, competence, business, sports, art and cultural environment. "Human Capital" as "Human Capital", "Knowledge Capital", which describes the information produced, used and stored for later use in society, "Cultural Capital", which provides socio-economic advantage to societies, creates value in life and as the counterpart of cultural accumulation, the physical, spiritual and emotional of the society. "Health Capital", which indicates health and well-being, and social togetherness, "Social Capital-SC", which describes the relationship and accumulation of trust created between individuals and with every segment of society, are the different dimensions of the concept of capital (Nahapiet and Ghoshal, 1998; Kundnani, 1999; Kuşçu, 2006; Ardahan, 2012).

After understanding the importance of logical, emotional and spiritual bonds, mutual relations, which form the basis of society and created between people, places and institutions, on economic and social development, the concept of SC has begun to be discussed in every aspect in scientific studies and practices in the fields of business administration, management and sociology. It has been a subject that has attracted the attention of researchers since the 1990s (Tüylüoğlu, 2006).

Many researchers have discussed and defined the concept of SC with many different dimensions such as values in the adult world, relationships, representation, belonging, success, productivity, competition, social values, and norms. One of the main problems with SC is the lack of consensus on its definition. The major definitions of SC can be listed as follows;

- Coleman (1988) defined SC as *"public property created by individuals in the society, living and using together"*.
- Putnam (1993) defined SC as *"the sum of the relations formed by social networks, trust and social norm in processes that have not been interfered with"*.
- Putnam et al. (1993), Kawachi et al. (1997) and Fukuyama (1995) defined SC as *"the sum of the values that a team, community or society created and/or spontaneously formed by others and that they experience in their relationships"*.
- Dasgupta and Serageldin (1997) defined SC as *"contrary to some authors, social capital is not as a public good but as an individual's place in society and the individual value he sees in society"*.
- Smith (1998) defined SC as *"an environment of social solidarity and trust"*.
- Grootaert-Van Bastelaer (2002), defined SC as *"the sum of the contributions of the relations and values that individuals establish/maintain with other individuals and the institutions they interact with, to social, social and economic development and change"*.

- Fukuyama (1999) defined SC as *“the unity of social norms that creates the harmony, cooperation and coordination created by the individuals forming the society, ensures its continuity and is based on sincerity”*.

When the common features of the definitions given above are brought together, SC is *“a network created between individuals that affect and are affected by social norms, reflects the value of the individual and society, affects the ability to act together in the realization of the goals defined/supported by the group or society, and the sum of norms and values that hold individuals together, and includes institutions formed by individuals”* (Tüylüoğlu, 2006). The three most basic elements of social capital are voluntariness, trust and reciprocity (Ören, 2007).

It is analyzed in terms of the form of SC as *“horizontal”* and *“vertical”*. Horizontal networks include networks formed by members of equal or equivalent status, such as family, neighborhood, friendship relations, and hobby group membership, and relations are mostly informal in nature. Vertical networks, on the other hand, represent a hierarchical structure where there is a status difference between members. Educational institutions and government offices are examples of this structure. Relationships of this nature are mostly of a formal nature (Ferlander, 2007).

The analysis of social capital in terms of severity means the classification of SC networks according to their influence. It is the most accepted classification with Granovetter's definition of strong and weak networks. Strong networks; It refers to relationships that contain emotional and continuity such as elementary family, kinship, close friend groups, where trust, norm and cooperation elements are at the forefront, and where there is a fast, reliable and comprehensive information flow. Weak network relationships also define the network of superficial, sparse and distant relationships (Ferlander, 2007; Granovetter, 1973).

SC is classified by Putnam as *“connecting”* and *“bridging”* SC in terms of its nature. *“Binding”* social capital encompasses the network of relations among its members such as family, kinship and closed group memberships, which tend to be permanent, and where the concept of trust is important. *“Bridging”* SC, on the other hand, characterizes relations between groups rather than individuals and includes extraterritorial or distant relations. To these two concepts of Putnam, Woolcock added the concept of *“unifying”* SC. The unifying SC is the networks that are established despite hierarchical differences such as status, power and economic level differences. Workplaces, government offices, educational institutions, religious organizations are included in the unifying social capital networks in terms of their nature (Putnam, 1993, 2000; Woolcook, 1998).

In general, the resources produced by the participation of individuals in social networks and the norms of trust and reciprocity that emerge from these interactions are defined as SC (Murayama et al. 2012; Payne et al. 2011).

SC is a concept that has often studied by social scientists. To examine the relationship between SC and health and to create intervention programs in this area, first, the concept of SC should be known by health professionals (Hyde-Peters and Simkiss, 2016).

The concept of SC is handled in different ways in terms of its plane (micro, mezzo, and macro), form (horizontal and vertical), intensity (strong and weak), and quality (binding, unifying, and bridging). Like in Bronfenbrenner's theory of ecological systems, each plane that affects the child's growth and development is a complementary structure that interacts with the structures within itself and other planes. The individual and the society influence each other (positively or negatively) and form SC (Hyde-Peters and Simkiss, 2016).

The child and adolescents' ecological environment and its interaction, structure, and social networks are important factors that affect the child and adolescents' biopsychosocial well-being (Hyde-Peters and Simkiss, 2016). The elements that makeup SC and Bronfenbrenner's theory of ecological systems are very similar. SC, which tries to explain the functional structure and impact of life in society, can contribute to understanding and preventing crime and criminal behaviour among adolescents, preventing abuse and neglect of children, and promoting the optimum development of young people (Aslund et al. 2010; Marmot, 2022; McPherson et al. 2013; Narayan and Cassidy, 2001). For this reason, studies in SC and health are becoming increasingly important. It is thought that it is essential that social pediatricians/pediatricians work together with social sciences on this concept and contribute to the concept of SC, which cannot be fully agreed upon in defining it from a health and child perspective with their knowledge (Hyde-Peters and Simkiss, 2016).

2. Measuring Social Capital

Many scales designed to measure SC have also been developed for adults. In some studies, SC has been studied by reducing it only to the factor of trust (Aminzadeh et al. 2013; Ehsan et al. 2019; Murayama et al. 2012). In the study of Narayan and Cassidy, one of the most comprehensive measurement studies, the characteristics of the group, generalized norms, associations, assertiveness, neighborhood connections, volunteerism, and trust were examined (Narayan and Cassidy, 2001).

There are very few studies to measure the SC of children and adolescents. Looking at the SC literature, there are only one SC scale developed by Huang (2008) and adapted to Turkish by Ardahan and Ezici (2014) for primary school students and SC scale for adults developed by Onxy and Bullen (2000) and adopted to Turkish by Ardahan (2012). But there is no SC scale for adolescent.

One of the most comprehensive studies to measure the SC of adolescents is Paiva et al. (2014). This scale includes social cohesion, sense of belonging, trust, autonomy, and control, and it is seen that it is insufficient to explain each element of SC.

Little is known about the links between SC and health among adolescents. Even when adolescents were the subject of research, studies often used questionnaires designed for adults. Considering the current literature SC scale for adolescent, prepared with a perspective that covers the specific period of adolescents and sees them as active social factors is needed. According to Streiner et al. (2022), developing a valid, reliable

assessment tool is not a trivial task, and it is recommended to use previously designed and tested tools in studies. In this study, it was aimed to develop the Social Capital Scale for Adolescents (SCS-A) with an interdisciplinary working principle by a social science researcher, a social pediatrician, and a pediatrician experienced in SC, and to make its validity and reliability for the Turkish population.

3. Methods

3.1 Working Design

This is a methodological study. It was conducted between 17 Nov 2020 and 19 Feb 2021. The study was conducted following the principles of the Declaration of Helsinki. Individuals between the ages of 13 and 19, to whom the online questionnaire can be delivered across Turkey, were included in the study. Ethical approval was obtained from the Clinical Research Ethics Committee of Akdeniz University Faculty of Medicine (25.11.2020 KAEK-833).

3.2 Calculating the Number of Samples

The total number of adolescents aged 13-19 in Turkey, which constitutes the universe of the study, is around 7 million, and the number of samples calculated with a 95% confidence interval ± 2 error margin was 2393. Since it was decided to use the halving method to perform Explanatory and Confirmatory factor analysis in the scale development study, it was aimed to reach 4786 people who were twice the number of samples.

3.3 Data Collecting

A non-probability sampling method was used in this study, and adolescents aged between 13-19 years across Turkey were invited to the survey via social media, telephone message groups, or e-mail through an electronic questionnaire sent to all schools affiliated to the Ministry of National Education.

Before starting the survey, participants were briefed on a questionnaire form about the purpose, methodology, expected benefits, foreseeable risks, and the right to withdraw from the study at any time. If they are volunteer to continue, they start to answer the rest of questionnaire form.

3.4 Survey Content

The questionnaire consisted of demographic data and an item pool prepared for the development of the SCS-A. A two-stage process was followed while creating the item pool. In the first stage, under the leadership of Ardahan, an experienced academician in SC scale studies, a three-person working group consisting of a social pediatrician and a pediatrician created an item pool consisting of 105 items in 17 groups in total. The theoretical dimensions of SC have been carefully studied from various sources (Narayan and Cassidy, 2001; Aminzadeh et al. 2013; Ehsan et al. 2019; Streiner et al. 2022; Ardahan,

2012; Ardahan, 2020; Ardahan and Ezici, 2014; Eriksson et al 2011; Ferlander, 2007; Kawachi et al. 2008; Looman, 2006; Putnam, 2000; Vyncke, 2013). For the creation of the item pool can be listed as follows;

- Social Capital Scale developed by Onxy and Bullen (2000) and adapted to Turkish by Ardahan (2012),
- Primary School Students' Social Capital Scale, developed by Huang (2008) and adapted into Turkish by Ardahan and Ezici (2014),
- Quality of Life Scale developed by Ardahan (2022),
- Social Capital Scale developed by Uçar (2016),
- Paiva et al. (2014) Developed Social Capital Scale for Adolescent Students,

In the second stage, face-to-face and online interviews were conducted with 15 male and 15 female adolescents with different demographic characteristics about the clarity of the items and whether there were any missing or misunderstood items. While the survey items were being prepared, the Likert Scale was used to score each item (1: Absolutely No, 2: Often No, 3: Often Yes, 4: Definitely Yes). In line with the specific suggestions of approximately 80%, some items were changed in writing, some were removed, new ones were added, and the final version of the questionnaire was created.

3.5 Statistical Analysis

An electronic survey was conducted between 17/11/2020-19/02/2021, and 5946 responses that could be used for analysis were reached. The data were divided into two according to the order of arrival; Explanatory Factor Analysis (EFA) was applied to the first half (n=2973), and Confirmatory Factor Analysis (CFA) was applied to the other half (n=2973). SPSS 23.0 package program was used for statistical analysis.

The item-total correlation was applied to the factors obtained due to factor analysis. Cronbach's alpha coefficients of the sub-dimensions formed as a result of EFA were used, and Pearson's correlation coefficients were used to examine the relationship between the scale factors obtained. The results were questioned at the 0.01 and 0.05 significance levels. Varimax rotation method was used in the study.

4. Results

A total of 5946 adolescents participated in the study, and 70.6% (n=4197) of the participants were girls, and the mean age was 15.24±1.27.

EFA was applied to the list of 105 items created for the scale. Thirty items with a total variance value of less than 0.5 and factoring out the required factor were removed. EFA was reapplied to the remaining 75 items.

In the final analysis, the KMO (Kaiser-Meyer-Olkin) value is 0.927 (above the value of 0.60 as predicted by Kaiser), Bartlett's Test of Sphericity $p < 0.05$, Chi-square=118597,259 and SD=2775, $p < 0.01$ was calculated. The Cronbach's Alpha coefficient of the SCS-A scale was 0.936, and the variance explained by the scale was 66,3%. The results are summarized

in Table 1. The correlation values of the items in the SCS-A and 17 factors are given in Table 2.

Scree Plot of SCS-A was given in Figure. Accordingly, it can be said that the factorization number of 17 factors is appropriate.

As a result, SCS-A consisting of 75 items and 17 factors was obtained. Factors obtained as a result of EFA; Family Relationship, Consanguineous Relationship, Relationship with Teachers and School, Relationship with Friends, Physical Neighborhood, Trust in Public Institutions, Participation in Local Committee, Distant Relationship Pressure, Digital Neighborhood, Considering-Caring, Tolerance to Difference, Sensitivity to Social Problems, Role in Civil Society, Being Cared-Feeling Valued, Taking Initiative, Close Relationship Pressure, Safe Environment (Table 3).

Confirmatory Factor Analysis was applied to the data set, and statistically, good fit results were obtained in all fit indices. The results are summarized in Table 4. Degree of Freedom was calculated as 3.63. According to Sümer (2000), and Schreiber et al. (2006), it shows a standard fit. Absolute fit indices score Çokluk et al. (2018), according to Marsh et al. (2006), good agreement in GFI and AGFI; it showed excellent understanding in RMSEA, RMR, and SRMR. Incremental fit indices; According to Sümer (2000), it has perfect fit scores in CFI, NFI, NNFI, IFI, and good fit scores in PGFI. With these findings, it is possible to say that the model is acceptable.

4.1 Calculation of SCS-A Total Score

The Newton-Raphson method was used to calculate the total score of the SCS-A, as Erkuş (2014) mentioned in his study. Since the Total Social Capital Score (TSCS) will give a value that can be used in many comparisons, an idea of that sample will provide the opportunity to compare TSCS with scores obtained from different samples at different times. The following steps were followed in the calculation of TSCS (Table 5).

a. First Process Step

Each factor's mean value (FMV) must be found. $FMV = (\sum_{i=1}^t Mi)/t$ is used to see this. 't' is the total number of items in that factor. 'Mi' is the value of the answer given to item 'i'. This process should be done for 17 factors and data entry for each person in the SCS-A.

b. Second Process Step

The FMV value found for each factor is multiplied by the contribution (Xi) over 100 of the explained variance in Table 1. TSCS is found by summing the new values obtained for each factor. In further studies to be conducted using this scale, it is recommended that its validity and reliability be repeated. AVi and Xi values should be calculated according to the new AFA and included. AVi values should be taken from the % of the Rotated Variance row, as shown in Table 2. If EFA is not desired, values from the original scale can be used.

c. Third Process Step

In determining the contribution of each factor to the TSCS, the contribution value over 100 to the explained variance of the $\sum_{i=1}^f (AV_i * 100) / 62,623$ scales will be accepted as a coefficient. "f" is the number of factors in the scale. E.g. It will be found as $(6,845 * 100) / 66.328 = 10.319925$ for F01, $(4.117 * 100) / 66.328 = 6.207032$ for F08.

d. Fourth Process Step

The FAV_i values of each factor are multiplied by the constant Xi of that factor. TSCS is obtained by summing the values for each factor ($\sum_{i=1}^f FAV_i * X_i$) at the end of the multiplication. The 'f' in the formula is the number of factors on the scale. The TSCS value will be between 100-400 for each individual.

5. Discussion

One of the main goals is to enable children, youth, and adults to maximize their abilities and gain control over their lives. It is essential and necessary for schools, families, and communities to work in partnership to reduce inequalities in children, adolescents and young people's health, well-being, and resilience (Hyde-Peters and Simkiss, 2016; Marmot, 2022). The critical report 'Fair Society, Healthy Lives' presented six evidence-based policy recommendations to reduce health inequalities in the UK. Three of these goals and recommendations (Policy Goals B, E, and F) talk about the importance of the SC of the child and society to ensure the whole biopsychosocial well-being of children and offer suggestions for improving them (Marmot, 2022). Early intervention and preventive studies are the most effective approaches in health (Hyde-Peters and Simkiss, 2016; Marmot, 2022).

Interdisciplinary and multidisciplinary work of health and social sciences on SC is critical for improving social and community capital and reducing individual social isolation (Hyde-Peters and Simkiss, 2016; Marmot, 2022; Vyncke et al. 2013). The Royal College of Paediatrics and Child Health emphasized the importance of doctors knowing SC, contributing to the concept of SC of children with pediatricians' knowledge, and taking an active role to achieve better health outcomes for children (Hyde-Peters and Simkiss, 2016).

Studies in SC have generally been conducted with adults (Murayama et al. 2012; Hyde-Peters and Simkiss, 2016; McPherson et al. 2013). When examining the structure of adolescents' social networks, it should be considered that they differ from adults due to the ongoing growth and development process. Each step of the child's ecological environment, the mutual interaction in these steps, the child's perception of these interactions, and the behaviours he shows against them should be included in the concept of SC. While this scale was being developed, the scales previously made with adults and a small number of children were carefully examined, but this was not enough. These concepts, which are essential for SC, were also included. The researchers carefully examined the theories related to SC in the study group. The social structure of adolescents

was tried to be explained comprehensively, taking into account the biopsychosocial characteristics of adolescents. The presence of a social scientist experienced in SC, a social pediatrician, and a pediatrician in the study group may have contributed to the synthesis of the perspectives of social and health sciences.

Studies conducted by reducing a broad concept such as SC to only one aspect may be insufficient in examining the relationship between SC and children's health and even lead to wrong conclusions. SC assessment tools specifically designed for adolescents can contribute significantly to the research and understanding of health and well-being-related behaviours (Murayama et al. 2012; McPherson et al. 2013; Vyncke et al. 2013).

One of the innovations in this study is that the researchers in the study group added the concept of "digital neighbourhood" to the scale, which has not been studied in SC scales until now. While the item pool was being created, it was estimated that digital neighborhood contributes significantly to the interaction between SC platforms (micro/mezzo/macro) and horizontal and vertical SC networks, especially among adolescents and, is also an SC element that 'bridges.' After the explanatory factor analysis of the study, it was seen that 4 of the eight items related to the digital neighborhood came together and factored significantly and differentiated from other items.

SC is seen as a resource that individuals can use rather than own. Adolescents must have social networks and the ability to use them (Vyncke et al. 2013; Çokluk et al. 2018). Therefore, in this study, the item pool of the scale was created by considering how adolescents perceive their social networks, how they feel about the relationships they have, their ability to produce solutions, take the initiative, how they behave against pressures, and the interchange of the connections. As predicted, as a result of the Explanatory factor analysis, seven under the title of "Considering-Caring," three under the title of "Being Cared - Feeling Valued," two under the title of "Taking Initiative," three under the title of "Distant Relationship Pressure," three under the title of "Close Relationship Pressure," seven under the title of "Tolerance to Difference" and, six items were factored under the title of "Sensitivity to Social Problems."

Narayan and Cassidy (2001), in their study, thought that measuring SC-based only on the elements that make up it was an incomplete effort and added the questions they developed based on the results of SC to the survey questions. Putnam, who has essential studies on the concept of SC, states that depending on the quality of SC, it can have adverse effects and positive results on individuals. It is emphasized that SC, which is fully affirmed at first, as it facilitates individuals to act in cooperation and effectively, should be evaluated according to the nature of networks, taking into account the negative externalities that may later produce (Putnam, 2007). All these crucial points were considered while creating the item pool in this study. Because in the literature, it has been seen that the mistake of treating each of the different dimensions of the concept as if it were SC itself (McPherson et al. 2001; Ehsan et al. 2019). Although each of these dimensions adds value to the idea, none of them is sufficient to explain the concept by itself fully. The 75-item wide SC scale of 17 factors developed for adolescents in this study may enable comprehensive evaluations in future studies.

5.1 Strengths and weaknesses of the study

One of the most substantial aspects of this study is that social and health scientists have created the SC scale by working with the interdisciplinary working principle. Another strength of the study is its large sample size, including children aged 13-19 in Turkey living in rural and urban areas.

The weak aspect of the study is that gender equality could not be achieved due to more returns by the female gender. The questionnaires were sent to the adolescents randomly, regardless of gender, on the online platform, but the responses were mostly (70.2%) of the female gender. This situation has consulted the statistician, and the statistician did not recommend that the data be selected or modified to achieve gender equality.

6. Conclusion

While the concept of SC, which tries to explain the functional structure and effect of life in society, is handled, the adolescent age group should be specifically addressed. Using the scales used for adults in studies with children may affect the reliability of the results.

To examine the relationship between SC and health and create intervention programs in this area, health professionals should first know the concept of SC. The fact that health and social scientists work in a multidisciplinary and interdisciplinary manner and address such a broad subject can increase the efficiency and effectiveness of the studies to be carried out.

As a result of the analysis, it can be said that the Social Capital Scale for Adolescents developed is valid, reliable, and sufficient for the Turkish population. This scale, which was created by considering all the elements of the concept of SC; is thought that can be used in studies in the fields of social and health sciences aimed at determining the protective and risk factors for children and understanding the effects of children's ecological environment, in studies to explain the relationship between SC and health, in studies in the field of child abuse and neglect.

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Conflict of Interest Statement

The author declares no conflicts of interest.

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Table 1: Factor loads, common variance values

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.																	,927			
Bartlett's Test of Sphericity																	118597,259		33792,063	
																	2775		2556	
																	,000		,000	
Items	Factor Loads																	Variance	X±SS	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
FR 1	,767																	,705	3,56±0,71	
FR 2	,759																	,649	3,75±0,60	
FR 3	,746																	,674	3,73±0,58	
FR 4	,732																	,649	3,60±0,72	
FR 5	,691																	,608	3,68±0,60	
FR 6	,663																	,623	3,34±0,85	
CR 1		,755																,729	3,20±0,90	
CR 2		,730																,689	3,27±0,89	
CR 3		,703																,652	3,13±0,87	
CR 4		,698																,646	2,77±1,01	
CR 5		,655																,644	2,72±1,00	
CR 6		,633																,710	3,14±0,89	
RTS 1			,712															,683	3,38±0,77	
RTS 2			,660															,593	2,96±0,94	
RTS 3			,657															,690	3,26±0,79	
RTS 4			,609															,623	3,02±0,89	
RTS 5			,564															,504	3,28±0,82	
RTS 6			,539															,584	3,28±0,77	
PN 1				,763														,649	3,14±0,91	
PN 2				,722														,598	2,97±1,02	
PN 3				,711														,565	3,00±0,97	
PN 4				,691														,554	2,58±1,05	
PN 5				,672														,562	3,21±0,89	
TPI 1					,789													,692	2,82±1,03	
TPI 2					,762													,703	3,21±0,94	
TPI 3					,735													,623	2,54±1,07	
TPI 4					,684													,627	3,3±0,89	
TPI 5					,680													,522	2,46±1,18	
PLC 1						,857												,790	1,74±0,93	
PLC 2						,845												,784	1,75±0,94	
PLC 3						,781												,684	1,68±0,90	
PLC 4						,762												,671	1,86±1,00	
RFi 1							,712											,680	3,37±0,75	
RFi 2							,668											,631	3,15±0,85	
RFi 3							,653											,614	3,31±0,74	
RFi 4							,632											,581	3,07±0,91	
RFi 5							,584											,657	3,38±0,73	

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Table 2: Item correlation values

Items	Factor Loads and Correlation Values																
	F01	F02	F03	F04	F05	F06	F07	F08	F09	F10	F11	F12	F13	F14	F15	F16	F17
FR 1	,841**	,515**	,445**	,284**	,318**	,053**	,421**	,073**	,069**	,267**	,154**	,333**	,121**	,280**	,019	,192**	,250**
FR 2	,815**	,460**	,403**	,248**	,268**	,026**	,370**	,042**	,103**	,217**	,182**	,304**	,140**	,185**	,005	,196**	,222**
FR 3	,846**	,501**	,465**	,270**	,310**	,027**	,435**	,054**	,098**	,262**	,166**	,324**	,129**	,218**	,003	,222**	,242**
FR 4	,816**	,498**	,442**	,283**	,309**	,063**	,398**	,076**	,097**	,266**	,170**	,354**	,118**	,213**	,026*	,225**	,252**
FR 5	,787**	,476**	,389**	,260**	,304**	,019	,391**	,040**	,079**	,220**	,161**	,279**	,121**	,176**	,003	,207**	,281**
FR 6	,807**	,545**	,432**	,262**	,330**	,070**	,391**	,039**	,075**	,225**	,143**	,386**	,134**	,206**	,025	,170**	,281**
CR 1	,539**	,854**	,499**	,323**	,388**	,122**	,418**	,095**	,029*	,407**	,132**	,406**	,065**	,356**	,073**	,179**	,295**
CR 2	,525**	,837**	,488**	,343**	,378**	,156**	,384**	,119**	,037**	,388**	,154**	,428**	,060**	,342**	,108**	,188**	,274**
CR 3	,458**	,790**	,434**	,320**	,390**	,116**	,420**	,094**	,037**	,357**	,157**	,375**	,087**	,281**	,074**	,166**	,321**
CR 4	,454**	,803**	,456**	,359**	,352**	,204**	,395**	,140**	,037**	,412**	,155**	,472**	,080**	,363**	,142**	,178**	,274**
CR 5	,463**	,784**	,446**	,325**	,356**	,178**	,391**	,101**	,061**	,323**	,147**	,481**	,109**	,319**	,116**	,153**	,280**
CR 6	,553**	,805**	,476**	,347**	,362**	,136**	,420**	,126**	,033**	,426**	,155**	,411**	,074**	,469**	,086**	,181**	,271**
RTS 1	,428**	,470**	,825**	,281**	,406**	,135**	,488**	,116**	,040**	,397**	,216**	,387**	,066**	,304**	,072**	,268**	,217**
RTS 2	,358**	,412**	,766**	,279**	,365**	,184**	,429**	,150**	,059**	,360**	,205**	,424**	,070**	,306**	,115**	,253**	,175**
RTS 3	,426**	,443**	,755**	,261**	,372**	,143**	,441**	,113**	,029*	,403**	,191**	,355**	,066**	,396**	,077**	,238**	,193**
RTS 4	,415**	,468**	,772**	,279**	,398**	,156**	,438**	,085**	,082**	,324**	,200**	,443**	,102**	,254**	,082**	,208**	,238**
RTS 5	,403**	,444**	,742**	,256**	,361**	,148**	,446**	,116**	,054**	,334**	,225**	,372**	,069**	,269**	,118**	,247**	,204**
RTS 6	,377**	,387**	,713**	,256**	,371**	,079**	,440**	,090**	,066**	,303**	,233**	,309**	,092**	,224**	,051**	,230**	,338**
PN 1	,234**	,282**	,257**	,794**	,169**	,057**	,278**	,166**	,063**	,257**	,195**	,242**	,092**	,253**	,037**	,164**	,201**
PN 2	,282**	,354**	,292**	,777**	,209**	,097**	,279**	,141**	,045**	,283**	,151**	,279**	,070**	,303**	,069**	,132**	,226**
PN 3	,229**	,271**	,250**	,746**	,144**	,073**	,257**	,171**	,088**	,231**	,179**	,267**	,077**	,248**	,048**	,156**	,178**
PN 4	,205**	,298**	,240**	,745**	,183**	,184**	,232**	,212**	,039**	,289**	,126**	,318**	,065**	,332**	,139**	,135**	,204**
PN 5	,292**	,360**	,298**	,720**	,244**	,069**	,305**	,130**	,049**	,275**	,175**	,255**	,082**	,278**	,050**	,159**	,270**
TPI 1	,296**	,377**	,404**	,193**	,828**	,084**	,221**	,036**	-,052**	,341**	,041**	,236**	,023	,183**	,028*	,078**	,182**
TPI 2	,343**	,378**	,442**	,228**	,817**	,074**	,283**	,050**	,006	,309**	,103**	,241**	,045**	,186**	,025	,169**	,194**
TPI 3	,281**	,392**	,382**	,191**	,792**	,089**	,210**	,032*	-,023	,321**	,060**	,260**	,047**	,207**	,046**	,075**	,190**
TPI 4	,367**	,362**	,434**	,233**	,747**	,059**	,294**	,058**	,038**	,281**	,144**	,247**	,067**	,177**	,020	,208**	,203**
TPI 5	,213**	,294**	,309**	,153**	,748**	,108**	,157**	,024	-,033**	,261**	,021	,207**	,012	,137**	,039**	,065**	,150**
PLC 1	,048**	,170**	,164**	,112**	,110**	,882**	,135**	,233**	,040**	,168**	,132**	,323**	,078**	,239**	,442**	,176**	,097**
PLC 2	,044**	,157**	,155**	,107**	,089**	,879**	,137**	,231**	,053**	,175**	,148**	,326**	,090**	,259**	,463**	,188**	,111**
PLC 3	,019	,130**	,134**	,099**	,073**	,819**	,117**	,226**	,046**	,161**	,123**	,288**	,077**	,222**	,467**	,185**	,091**
PLC 4	,074**	,185**	,182**	,125**	,093**	,833**	,145**	,214**	,041**	,191**	,134**	,317**	,083**	,237**	,455**	,204**	,118**
RFi 1	,380**	,383**	,481**	,272**	,231**	,108**	,816**	,192**	,103**	,269**	,256**	,364**	,146**	,320**	,088**	,266**	,270**
RFi 2	,407**	,416**	,462**	,283**	,253**	,144**	,785**	,181**	,116**	,227**	,240**	,423**	,160**	,285**	,125**	,262**	,277**
RFi 3	,398**	,393**	,427**	,261**	,262**	,082**	,748**	,118**	,114**	,221**	,238**	,314**	,149**	,227**	,060**	,258**	,284**
RFi 4	,284**	,323**	,422**	,281**	,142**	,170**	,769**	,239**	,131**	,251**	,275**	,388**	,125**	,310**	,148**	,287**	,210**
RFi 5	,443**	,422**	,484**	,284**	,253**	,092**	,760**	,160**	,064**	,300**	,207**	,340**	,124**	,377**	,070**	,246**	,219**
DN 1	,080**	,126**	,134**	,196**	,038**	,188**	,223**	,831**	,061**	,163**	,158**	,231**	,072**	,338**	,170**	,173**	,107**
DN 2	,080**	,125**	,135**	,192**	,044**	,183**	,191**	,832**	,043**	,187**	,129**	,225**	,050**	,301**	,146**	,143**	,116**
DN 3	,063**	,089**	,105**	,165**	,020	,242**	,179**	,792**	,035**	,136**	,127**	,223**	,056**	,290**	,192**	,155**	,091**
DN 4	-,022	,097**	,089**	,130**	,057**	,225**	,135**	,692**	,020	,191**	,125**	,228**	,056**	,337**	,179**	,102**	,066**

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DRP 1	,087**	,035**	,055**	,058**	-,023	,050**	,116**	,051**	,952**	-,065**	,188**	,117**	,519**	,033**	,045**	,173**	,070**
DRP 2	,095**	,044**	,063**	,071**	-,021	,050**	,125**	,061**	,938**	-,058**	,183**	,119**	,477**	,041**	,043**	,175**	,067**
DRP 3	,112**	,056**	,085**	,078**	-,008	,047**	,143**	,029**	,890**	-,066**	,215**	,120**	,643**	,027**	,048**	,188**	,086**
CC 1	,226**	,310**	,356**	,264**	,247**	,122**	,404**	,133**	-,007	,752**	,168**	,298**	-,014	,292**	,076**	,185**	,143**
CC 2	,292**	,570**	,388**	,284**	,386**	,135**	,227**	,061**	-,085**	,801**	,053**	,319**	-,070**	,313**	,073**	,090**	,171**
CC 3	,198**	,410**	,353**	,397**	,335**	,183**	,227**	,133**	-,078**	,335**	,809**	,087**	,337**	-,052**	,432**	,117**	,132**
CC 4	,303**	,299**	,541**	,251**	,322**	,063**	,276**	,069**	-,004	,656**	,168**	,259**	-,028**	,203**	,012	,199**	,120**
CC 5	,040**	,232**	,196**	,179**	,202**	,241**	,150**	,422**	-,071**	,676**	,068**	,292**	-,057**	,463**	,180**	,098**	,127**
CC 6	-,045**	,109**	,093**	,094**	,089**	,184**	,060**	,137**	-,066**	,604**	,069**	,165**	-,043**	,352**	,131**	,072**	,065**
CC 7	,545**	,383**	,401**	,267**	,313**	,034**	,306**	,075**	,009	,576**	,145**	,260**	-,004	,186**	,011	,222**	,160**
TD 1	,133**	,120**	,204**	,164**	,041**	,119**	,237**	,136**	,179**	,115**	,854**	,216**	,167**	,160**	,089**	,362**	,128**
TD 2	,125**	,094**	,163**	,143**	,016	,112**	,250**	,141**	,186**	,063**	,815**	,188**	,192**	,153**	,089**	,329**	,130**
TD 3	,168**	,157**	,237**	,175**	,059**	,146**	,245**	,144**	,169**	,112**	,788**	,252**	,163**	,180**	,111**	,356**	,148**
TD 4	,200**	,214**	,276**	,206**	,170**	,121**	,269**	,122**	,134**	,180**	,722**	,229**	,159**	,192**	,099**	,304**	,188**
SSP 1	,229**	,410**	,328**	,384**	,257**	,322**	,272**	,189**	,067**	,351**	,155**	,776**	,087**	,405**	,218**	,201**	,209**
SSP 2	,240**	,319**	,548**	,227**	,294**	,267**	,311**	,146**	,064**	,309**	,196**	,728**	,098**	,262**	,158**	,238**	,150**
SSP 3	,006	,154**	,125**	,136**	,071**	,344**	,159**	,382**	,088**	,204**	,153**	,592**	,109**	,381**	,250**	,139**	,115**
SSP 4	,364**	,643**	,382**	,281**	,284**	,266**	,324**	,160**	,065**	,345**	,162**	,778**	,094**	,336**	,177**	,200**	,233**
SSP 5	,230**	,222**	,295**	,214**	,070**	,188**	,569**	,215**	,157**	,177**	,299**	,633**	,145**	,240**	,151**	,287**	,188**
SSP 6	,630**	,437**	,414**	,261**	,269**	,141**	,355**	,112**	,096**	,249**	,204**	,653**	,128**	,214**	,089**	,257**	,247**
CRP 1	,147**	,094**	,096**	,091**	,058**	,109**	,174**	,082**	,319**	-,040**	,171**	,152**	,840**	,098**	,106**	,199**	,154**
CRP 2	,099**	,052**	,035**	,072**	,010	,072**	,134**	,065**	,532**	-,066**	,165**	,111**	,863**	,040**	,072**	,165**	,116**
CRP 3	,150**	,104**	,129**	,095**	,053**	,065**	,156**	,043**	,650**	-,042**	,211**	,140**	,853**	,063**	,060**	,203**	,107**
BCFV 1	,047**	,172**	,151**	,129**	,038**	,206**	,179**	,225**	,041**	,274**	,159**	,237**	,059**	,759**	,175**	,136**	,117**
BCFV 2	,186**	,321**	,282**	,230**	,172**	,237**	,340**	,516**	,230**	,340**	,176**	,358**	,073**	,815**	,203**	,185**	,190**
BCFV 3	,380**	,532**	,466**	,524**	,319**	,216**	,401**	,194**	,009	,485**	,172**	,443**	,053**	,774**	,146**	,219**	,252**
RCS 1	,027**	,095**	,065**	,074**	,012	,419**	,118**	,177**	,039**	,091**	,109**	,189**	,086**	,174**	,867**	,162**	,094**
RCS 2	,029**	,115**	,136**	,092**	,047**	,413**	,117**	,175**	,056**	,104**	,117**	,210**	,068**	,180**	,823**	,148**	,085**
RCS 3	-,021	,100**	,082**	,064**	,048**	,530**	,084**	,197**	,023	,134**	,074**	,236**	,081**	,212**	,809**	,134**	,081**
TI 1	,166**	,190**	,274**	,156**	,110**	,241**	,275**	,191**	,139**	,193**	,335**	,316**	,161**	,239**	,194**	,825**	,116**
TI 2	,193**	,178**	,264**	,156**	,135**	,157**	,283**	,133**	,154**	,182**	,339**	,241**	,143**	,167**	,116**	,806**	,104**
TI 3	,224**	,130**	,197**	,149**	,096**	,111**	,241**	,099**	,162**	,070**	,326**	,174**	,227**	,126**	,105**	,712**	,153**
SE 1	,229**	,286**	,215**	,218**	,183**	,119**	,280**	,114**	,068**	,148**	,147**	,230**	,137**	,218**	,124**	,123**	,895**
SE 2	,326**	,335**	,311**	,288**	,228**	,095**	,290**	,098**	,074**	,197**	,184**	,254**	,122**	,201**	,056**	,154**	,863**

Table 3: Factor names and items

F01 Family Relationship	FR 1	I feel valued in my relationship with my family.
	FR 2	I consider myself a part of my nuclear family.
	FR 3	I feel safe in my relationship with my family.
	FR 4	I can get support from my family when necessary in solving my financial, emotional, social, and school problems.
	FR 5	Members of my family trust each other.
	FR 6	I think my family gives me enough time.
F02 Consanguineous Relationship	CR 1	I feel safe in my relationship with my relatives.
	CR 2	When I think of all the members of my close relatives, I see myself as a part of them.
	CR 3	My close relatives trust each other.
	CR 4	I can get support from my relatives to solve my financial, emotional, social, and school problems.
	CR 5	I think my relatives spend enough time with me.
	CR 6	I feel valued in my relationship with my relatives.
F03 Relationship with Teachers and School	RTS 1	I feel safe with my teachers.
	RTS 2	I feel valued in my relationship with my teachers.
	RTS 3	I can get support from my teachers when necessary to solve my financial, emotional, social, and school problems.
	RTS 4	I think my teachers give me enough time.
	RTS 5	I see myself as part of the school.
	RTS 6	I feel safe at school.
F04 Physical Neighborhood	PN 1	We can borrow things I (we) need from our neighbors.
	PN 2	I can ask our neighbors for help when I need it.
	PN 3	I find our neighborly relations at a sufficient/satisfactory level.
	PN 4	We visit our neighbors as a family.
	PN 5	Our neighbors are respectful to other individuals living in the same place.
F05 Trust in Public Institutions	TPI 1	Works are done as they should be in government institutions.
	TPI 2	When people have a problem, they can easily apply to a government institution to solve their problems and seek their rights.
	TPI 3	The institutions in the society I live in are not discriminatory.
	TPI 4	There are institutions where people will seek their rights when faced with an injustice.
	TPI 5	You do not need an acquaintance to run things in this country.
F06 Participation in Local Committee	PLC 1	In the last two years, I have joined the voluntary social movement for any emergency response such as environmental pollution, public transport problem.
	PLC 2	I have voluntarily participated in a social project in the immediate area and supported the work in the last two years.
	PLC 3	I voluntarily participated in a project to fulfill a new service related to my field in an organization such as youth centers, scout centers, child care, and entertainment for the disabled.

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	PLC 4	I have been involved in any initiative on behalf of my school/neighborhood in the last two years, including health, environment, education, religion, administration.
F07 Relationship with Friends	RF 1	I feel safe with my friends.
	RF 2	I can get support from my friends when necessary to solve my financial, emotional, social, and school problems.
	RF 3	I think my friends spend enough time with me.
	RF 4	My friends trust each other.
	RF 5	I feel valued in my relationship with my friends.
F08 Digital Neighborhood	DN 1	I chat with my followers on social media, like their posts, and interact with them.
	DN 2	I follow the posts of my followers about their daily life.
	DN 3	I share about my daily life or activities on social media.
	DN 4	I think my life has been enriched thanks to my followers on social media.
F09 Distant Relationship Pressure	DRP 1	If my followers on social media pressure my lifestyle or preferences, it will not affect my decisions/behaviors.
	DRP 2	If people I don't know pressure my lifestyle or preferences, it will not affect my decisions/behaviors.
	DRP 3	If my neighbors pressure my lifestyle or preferences, it will not affect my decisions/behaviors.
F10 Considering-Caring	CC 1	I care about what my friends think of my attitude and behavior.
	CC 2	I care about what my relatives think about my attitudes and behaviors.
	CC 3	I care about what my neighbors think of my attitude and behavior.
	CC 4	I care about what people I don't know think about my attitudes and behaviors.
	CC 5	I care about what my social media followers think about my attitudes and behaviors.
	CC 6	I care about what my teachers think about my attitudes and behaviors.
	CC 7	I care about what my family thinks about my attitudes and behaviors.
F11 Tolerance to Difference	TD 1	I enjoy living among individuals with different lifestyles.
	TD 2	I don't worry about making friends with people with different lifestyles.
	TD 3	I believe that individuals from different geographies/cultures enrich the place I live in (school, neighborhood, apartment, etc.).
	TD 4	A foreigner from a different culture who has moved to our neighborhood or just started school is readily accepted.
F12 Sensitivity to Social Problems	SSP 1	We talk about social issues with my neighbors.
	SSP 2	I talk to my teachers about social problems.
	SSP 3	We talk about social problems with my followers on social media.
	SSP 4	We talk about social problems with my relatives.
	SSP 5	I talk about social problems with my friends.
	SSP 6	I talk to my family about social problems.
F13 Close Relationship Pressure	CRP 1	If my family pressures my lifestyle or preferences, it will not affect my decisions/behaviors.
	CRP 2	If my teachers pressure my lifestyle or preferences, it will not affect my decisions/behaviors.
	CRP 3	If my friends pressure my lifestyle or preferences, it will not affect my decisions/behaviors.
F14	BCFV 1	I feel valued in my relationships with people I don't know.

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Being Cared – Feeling Valued	BCFV 2	I feel valued in my relationship with my followers on social media.
	BCFV 3	I feel valued in my relationship with my neighbors.
F15 Role in Civil Society	RCS 1	I am a member of any club, association, or society, such as sports, crafts, social clubs, and associations.
	RCS 2	I am a community member at my school, such as an arm activity or sports club.
	RCS 3	I am a member of the management and organizing committee of any club, association, or community.
F16 Taking Initiative	TI 1	Even if I am not asked or told, I take the necessary initiative to solve social problems.
	TI 2	When I have a disagreement with anyone about stray animals, using common areas or occupying the general plan, etc., I am willing to take a conciliatory stance.
	TI 3	When I need something to make an important decision or complete a task, I get what I need myself, even if no one is supportive.
F17 Safe Environment	SE 1	I feel safe walking around our neighborhood after dark.
	SE 2	The neighborhood where I live is known as a safe place.

Table 4: DFA compliance index values

χ^2	= 8532.99 / 2352 = 3,63 (Normal Fit)		
GFI	= 0.93 (Good Fit)	CFI	= 0.99 (Perfect Fit)
AGFI	= 0.91 (Good Fit)	NFI	= 0.98 (Perfect Fit)
RMSEA	= 0.030 (Perfect Fit)	NNFI	= 0.98 (Perfect Fit)
RMR	= 0.025 (Perfect Fit)	PGFI	= 0.77 (Good Fit)
SRMR	= 0.026 (Perfect Fit)	IFI	= 0.99 (Perfect Fit)

Table 5: Calculation of contribution to total social capital score

Factors F _i	Factor Average Value FAV _i	% of Rotated Variance (AV _i)	Contribution out of 100 to the Explained Variance (X _i)	Contribution to TSCS FAV _i * X _i
F01	FAV ₁	6,845	10,319925	FAV ₁ *10,319925
F02	FAV ₂	5,877	8,860511	FAV ₂ *8,860511
F03	FAV ₃	5,007	7,548848	FAV ₃ *7,548848
F04	FAV ₄	4,507	6,795019	FAV ₄ *6,795019
F05	FAV ₅	4,410	6,648776	FAV ₅ *6,648776
F06	FAV ₆	4,409	6,647268	FAV ₆ *6,647268
F07	FAV ₇	4,295	6,475395	FAV ₇ *6,475395
F08	FAV ₈	4,117	6,207032	FAV ₈ *6,207032
F09	FAV ₉	3,889	5,863285	FAV ₉ *5,863285
F10	FAV ₁₀	3,753	5,658244	FAV ₁₀ *5,658244
F11	FAV ₁₁	3,560	5,367266	FAV ₁₁ *5,367266

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F12	FAV ₁₂	2,965	4,470209	FAV ₁₂ *4,470209
F13	FAV ₁₃	2,699	4,069171	FAV ₁₃ *4,069171
F14	FAV ₁₄	2,673	4,029972	FAV ₁₄ *4,029972
F15	FAV ₁₅	2,656	4,004342	FAV ₁₅ *4,004342
F16	FAV ₁₆	2,547	3,840007	FAV ₁₆ *3,840007
F17	FAV ₁₇	2,117	3,191714	FAV ₁₇ *3,191714
Total Social Capital Score TSCS		$66,328 = \sum_{i=1}^f AV_i$	$100 = \sum_{i=1}^f (AV_i * 100) / 66,328$	$= \sum_{i=1}^f FAV_i * X_i$

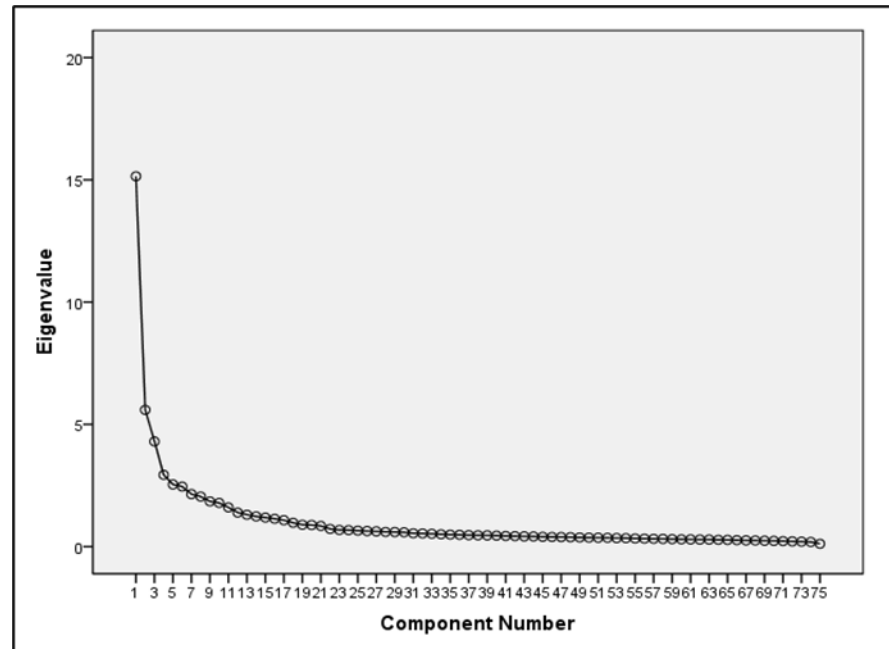


Figure 1: SCS-A Scree Plot

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